



The potential for recall insurance to improve food safety

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Abstract

This paper explores the food safety implications of insurance products that compensate for business losses when food contamination causes a processing firm to initiate a recall. Discoveries of meat and poultry product contamination, in particular life-threatening pathogens, are increasing. The financial losses that follow a recall can be substantial as illustrated by several recent U.S. cases—Hudson Foods, Bil Mar, and Thorn Apple Valley Inc. Additionally, contaminated food product that escapes the current recall system poses a threat to consumer safety. The conceptual analysis presented here suggests that insurance underwriters could motivate earlier recalls and more diligent implementation of Hazard Analysis and Critical Control Point (HACCP). With sound underwriting, these changes could ultimately reduce the incidence of illness and death from foodborne pathogens. © 2001 Elsevier Science Inc. All rights reserved.

1. Introduction

Improvements in the U.S. food safety system are clearly needed. Foodborne pathogens are estimated to cause 76 million illnesses and 5,000 deaths in the U.S. each year, as reported in the most recent and most comprehensive study to date (Mead et al., 1999). Prior studies have suggested higher death numbers but significantly lower illness numbers. Buzby, Roberts, Jordan Lin, and MacDonald (1996) use the prior studies to estimate societal cost of six dominant foodborne pathogens to be between \$2.9 and \$6.7 billion per year.

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One mechanism used to prevent the consumption of contaminated products in the U.S. is a product recall, implemented by the company that created the problem and tracked by the government. Both the frequency and severity of food contamination recalls are increasing. Meat and poultry processors have undergone numerous recalls in recent years, creating significant economic loss for their firms. Hudson Foods and Thorn Apple Valley Inc., are no longer in business primarily due to recall episodes. In addition to the consequences to the firm, the distribution and subsequent recall of tainted food items has implications for both the general public and the responsible company. The consumer risks illness or even death from a tainted food product that has been purchased and consumed prior to recall notification and implementation. The company risks the direct recall costs associated with announcing the recall and disposing and replacing the product. Additionally, the company could suffer from product liability lawsuits, brought by victims of the contamination, as well as a permanently damaged reputation, especially in the case of a serious outbreak or a highly publicized case. The expenses required to remove the product from the market may be minor compared to the lost consumer confidence, damaged brand strength, and reduced sales that follow the bad publicity (Dwyer, 1999). Some companies are simply unable to survive the negative publicity and financial challenges of a product recall. Further down the supply chain, a retailer's reputation can also be badly damaged when its product is linked to an outbreak of foodborne illness. Therefore, retailers who purchase from processors are also paying greater attention to the safety controls of upstream suppliers. In some cases, retailers are buying exclusively from one or two processors to establish relationships that will reduce the asymmetric information.

Recognizing the significant business risk posed by food safety related recalls, and thus a potential new risk-sharing market, some insurance companies now offer recall insurance products to help protect processing firms from both direct and indirect recall expenses. In the past 5 years, there has been significant growth in such insurance products. The purpose of this paper is to discuss the potential impact that recall insurance products may have on the food safety incentives of meat and poultry processing firms. Will the insurance products create more diligent food safety management and thus reduce the risk of foodborne illness? The answer is not clear. It can be argued that processing firms will share more information with food safety inspectors if they feel that information can help them manage their risk. This should lead to better systems. However, the firms may also become reluctant in sharing information that could lead to an increase in their recall insurance premiums.

As motivation and background, key social and technological trends responsible for the increase and severity of food safety incidents are highlighted. The background section also includes a brief review of some recent high-profile recalls as well as national recall statistics. A description of the new recall insurance products guides the primary discussion regarding the potential impact of insurance products on a firm's food safety behavior. Such products could change the role of government in implementing the new procedures for inspecting meat and poultry processing plants. Under the right conditions, an insurance underwriter could be more effective than a government meat inspector in getting a processor to change their behavior in the desired fashion. Still, the government must be there to identify any problems that are created by contaminated products. The government may also have an important role to play in monitoring and lowering information cost for an effective insurance

policy that insures recalls. This is particularly important to assure that insurance providers control for moral hazard problems that may emerge after food processors purchase recall insurance. If such behavior cannot be controlled, then recall insurance may actually increase the risk of releasing contaminated food products.

2. Food safety trends

As compared to 30 years ago, consumers today are eating more food away from home, demanding more processed food, and are less experienced with proper handling techniques for safe cooking of raw foods when they do prepare food at home. Today, when people prepare their own meals they depend on others for their food safety (Layden, 1994). These lifestyle changes have resulted in a reliance on the food retailing system for food safety and a demand for better tasting, longer-lasting, ready-to-eat food.

The demand for ready-to-eat food with longer-lasting freshness may have indirectly contributed to the spread of foodborne illness. Improvements in food packaging and storage that give foods longer shelf life may also lead to an increased presence of foodborne bacteria (Layden, 1994). The processing-to-consumption period has been extended, potentially allowing more bacteria to develop in certain products. The enhanced shelf life, coupled with a superior transportation system, allows packaged food to be spread over wide geographic regions very quickly (Layden, 1994). Today's mass production of food only further increases the probability that contemporary food contamination problems will become multistate or national events rather than localized incidents.

Increased press coverage of pathogens and their presence in meat and poultry products has helped reshape consumer perceptions about food safety. Outbreaks of foodborne illness and death have received significant national news coverage and widespread political attention, creating greater public concern and awareness about food safety. In turn, the pressure on government and industry to minimize or eliminate the presence of such pathogens has increased, especially from consumer interest groups.

Historically, food safety regulation has focused on preventing the mislabeling of food products and detecting the presence of extraneous material. These concerns were superseded when new technologies permitted the discovery of dangerous microscopic pathogens in the food supply. Food safety regulation has not, however, been able to adequately address this new concern. The inability to trace contamination to the source (i.e., identifying a culpable entity) has been part of the problem. Emerging technologies may help eliminate this issue. A recent joint report from the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) states that a new technology, pulsed-field gel electrophoresis, will give the U.S. Centers for Disease Control and Prevention (CDC) a new tool for promptly locating the source of a foodborne outbreak (USDA/FDA, 2000).

Prior to distribution, the food processor can enhance monitoring mechanisms to prevent the sale of contaminated products. However, once the product is distributed to downstream suppliers, the primary means to control a food contamination outbreak is the use of a product recall, which publicizes the problem and minimizes the risk of purchase or consumption of the contaminated product.

3. Recall decisions and cases

Decisions to recall meat or poultry product suspected of contamination are ultimately made by the company producing the food product. The U.S. government does not possess the authority to mandate such food recalls for meat and poultry processors. The division of the USDA responsible for the inspection of meat and poultry products, the Food Safety and Inspection Service (FSIS), states that all recalls are “voluntary actions carried out by industry in cooperation with Federal and State Agencies” (FSIS Online Recall Information Center). If government inspectors suspect a contamination or find evidence of pathogens during a routine inspection, the government can request that the product be recalled. If the company refuses, it may risk further action on the part of the government, such as the closure of the plant. In the absence of any government discovery, a company can initiate a recall on its own initiative USDAFI (2000a,b).

In their Online Recall Information Center, the FSIS recorded a total of 62 recalls for 1999, with *Listeria* contamination involved in 31 of those cases. The total FSIS recalls from 1995 to 1999 are shown in Fig. 1. As of March 24, 2000, 13 recalls were already issued for 2000. Another figure worthy of consideration is the total pounds of food product recalled (Fig. 2). During 1995–1999, the level of recalled product spikes dramatically in 1998. This increase can be largely attributed to the £35 million recall of *Listeria* contaminated hot dogs and packaged lunchmeats by the Bil Mar plant in Michigan. The 1997 total consists primarily of a £25 million recall of *Escherichia (E.) coli* 0157:H7 contaminated ground beef by Hudson Foods (Table 1).

The total amount of recalled product does not, however, represent the actual amount of food product withdrawn from the marketplace after distribution. Generally, the amount of recovered product is significantly smaller than the amount of product recalled. For example, in the Hudson Foods case, only 40% of the recalled ground beef was actually recovered.

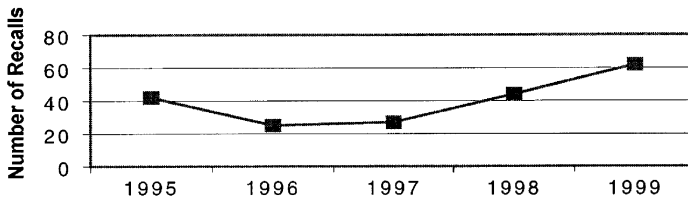


Fig. 1. Total FSIS recalls, 1995–1999.

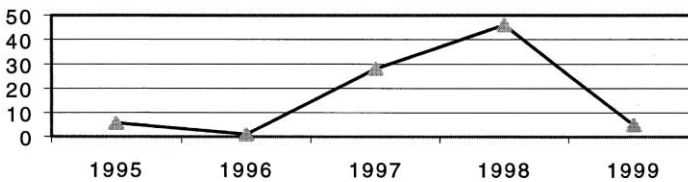


Fig. 2. Total pounds of food product recalled through FSIS, 1995–1999 (£1,000,000).

Table 1
Total bacterial-related recalls through FSIS (1995–1999)

	1995	1996	1997	1998	1999
<i>Listeria</i>	11	6	3	6	31
<i>Salmonella</i>	2	1	1	3	6
<i>E. coli</i> 0157:H7	5	2	6	13	10
Other bacteria	0	1	4	0	0
Total bacterial-related recalls	18	10	14	22	47

Presumably, an unsuspecting public consumed the remainder. According to the FSIS Recall Information Center, the Bil Mar case is still officially open, so recovered product figures are still undetermined.

A brief review of some recent high-profile recall cases provides insights into recall decisions and the type of losses that are created by recalls. Four cases are considered: (1) the 1998 Bil Mar Foods *Listeria* case; (2) the 1997 Hudson Foods *E. coli* 0157:H7 contamination; (3) the 1998 Thorn Apple Valley Inc., *Listeria* case; and (4) the 1998 suspected Colorado Boxed Beef *E. coli* 0157:H7 contamination.

Bil Mar Foods: A meatpacking plant in Michigan, supplies deli meats and hot dogs to the Sara Lee Corporation. A *Listeria* contamination from October to December of 1998, possibly caused by the dismantling of a refrigeration unit and condensation in the plant, resulted in the eventual recall of an estimated £35 million of food product, the illnesses of at least 100 people, and the deaths of 21. The recall was complicated by a number of factors, as outlined by Perl (2000). One factor was the previously mentioned lack of regulatory power: the USDA cannot require the mandatory recall of a food product. Another factor was the conflict within the food safety bureaucracy. While officials at the CDC believed that the Bil Mar plant was the source of the *Listeria* outbreak, the USDA was reluctant to request that the company issue a recall due to fear of potential legal implications and a belief that the CDC did not possess enough evidence (Perl, 2000). At least 10 lawsuits have been filed against the Sara Lee Corporation due to the outbreak (Perl, 2000). Removing the tainted food products and shutting down production during the outbreak cost the company an estimated \$76 million (Dwyer, 1999).

Hudson Foods: A large beef processor based in Arkansas, initially recalled £20,000 of ground beef in August of 1997 due to suspected *E. coli* 0157:H7 contamination after state investigators in Colorado determined that several people who had eaten the food product had become ill. The recall mushroomed, however, with Hudson eventually extending the recall to a total of £25 million of food product, of which 10 million were actually recovered. The reaction of the government was swift with many resources from FSIS diverted to inspect the plant. Following the discovery, the Hudson plant voluntarily shut down on August 21 (Associated Press, 1997). Tyson Foods subsequently bought the entire Hudson Foods company for \$642 million in September 5, 1997 (Associated Press, 1997).

Thorn Apple Valley Inc.: A meat and poultry processing company based in Michigan, filed for bankruptcy in January 1999 after recalling £30 million of food product produced at a

plant in Arkansas. According to the press release issued by FSIS on January 22, 1999, the agency discovered that 5 of 20 samples taken from the plant tested positive for *Listeria*. None of the lots from which these samples came were released to the public, but FSIS suspended plant operations on December 31, 1998 “based on the plant’s non-compliance with pre-operational and operational sanitation requirements” (FSIS press release). As a result, Thorn faced losses in production and sales amounting to \$5.1 million (Associated Press, 1999). The company had reported debts to creditors of \$182 million. It has since been bought by Iowa Beef Producers Inc., for \$115 million (Associated Press, 1999).

Colorado Boxed Beef: It also experienced difficulty with a recall. This Florida based company repackages ground beef for retail sales. In the fall of 1998, this firm was suspected of producing some contaminated product, although it was never fully confirmed. The company voluntarily recalled £359,000 of ground beef due to suspected *E. coli* 0157:H7 contamination; however, only £1 was recovered (Demetrakakes, 1999). The low recovery rate was largely due to the timing of the recall. The product was produced during October 29 to November 2, 1998 with sell-by dates of November 7–11. FSIS pressured Colorado Boxed Beef to issue a recall after a sample of the product was found to have *E. coli* 0157:H7 by a state department of agriculture official during a routine check. However, the press release announcing the recall was issued November 24, 1998, the date of the recall meeting (FSIS Recall Information Center), well after the sell-by date and presumably well after the consumption of the product. No illnesses linked to this *E. coli* incident have ever been reported.

The test performed on the sample was “a ‘presumptive positive,’ meaning that it should have been confirmed by a more accurate 48 h incubation test before any enforcement action was taken . . . neither the state health department nor the agriculture department could replicate the results” (Demetrakakes, 1999, p. 18). Colorado Boxed Beef asked that the recall be removed from the FSIS website announcing all such recalls. Demetrakakes, however, implies that the company was reluctant to pursue the matter further, because pressing the issue could threaten their working relationship with FSIS inspectors. This case demonstrates the power of government in influencing a recall. Mistakes can be made and the recourse for correcting them may be imperfect.

4. A new role for government?

The Pure Food and Drug Act of 1906 and the Meat Inspection Act of 1906 were major legislative steps in connecting regulation and public concern about food safety and government response to this concern (Antle, 1995). Numerous laws have been passed since that time, changing and refining the role of the government in maintaining a safe food supply. These laws have also mandated the adoption of certain quality control systems, such as recent legislation requiring implementation of a Hazard Analysis and Critical Control Point (HACCP) plan. As the name implies, firms are to identify and pay particular attention to critical processing points where problems may emerge. Storage temperatures, cooking temperatures, and cleanliness at certain points in the process are major components.

While HACCP is not new, as of January 25, 2000, such plans are required for all meat and poultry processing plants. Requiring HACCP may improve safety, yet it is unlikely that the incentives are in place to take full advantage of this system. Under a command and control system, the HACCP system creates the wrong incentives. Since firms have to be in compliance with the HACCP standards they set, they have the incentive to set the minimum standards that will be accepted by regulators. Still processors may have every intention of performing above these minimum standards. HACCP does not require recall plans, although FSIS encourages firms to have them. When processors have such plans, they may be very simplistic and incomplete (Mikel, 2000).

While our food safety laws are sincere in their intent to provide safe food, they are often criticized for their insistence on government regulations as the sole tool used to reach this goal. On the other hand, they are also criticized for not regulating industries more completely, and food safety incidents are often attributed to a government regulatory system that allows tainted food to enter the system.

The numerous laws regulating food safety retard the government's ability to respond to changing food safety needs and conditions. Layden supports the idea that the layers of food safety laws create many of the problems in the food safety system. U.S. food safety laws have been passed piecemeal over the past century. There is significant lack of coordination, different mandates, and different standards of risk among the various agencies responsible for food safety. As Layden argues, USDA suffers from "internal confusion" of both "promoting agriculture and protecting the public (p. 22)." Ultimately, the government's food safety system suffers. The cases described earlier demonstrate the confusion about when to shut down a plant. Again, when a problem is discovered in a meat or poultry processing plant, USDA cannot force a recall. Regulators can only recommend a recall and develop press releases describing the problem. Inspectors can shut the plant down, but rarely do so.

The government is clearly needed to assist the food contamination discovery process. Without government information systems, such as those provided by the CDC, the origin of many foodborne illnesses would go undiscovered. There would be little or no accountability or incentives for recall. Both consumers and producers would remain uninformed about the source of the problem. However, if the government creates a sense of complacency by making consumers believe that the government processes are better at discovery than they actually are, then consumers may lack the incentives to be more diligent in consumption choices and food preparation.

Since most government regulation has not solved the food safety problem and, in some cases, may be contributing to the problems associated with foodborne illness, the government needs to move away from a regulating role, towards a more advisory and information broker role. For markets to work smoothly, information must be accessible to both consumers and producers. Knowledge about the relative safety of food products is not accessible to most consumers. This asymmetry in information creates problems in efficient markets for food safety. Weiss (1995) highlights this issue as a principal agent problem. Even more troublesome, there are many cases where neither the supplier of food nor the consumer will know whether or not a product is contaminated. Antle refers to this as "symmetric imperfect information." Imperfect information puts an extra burden on the food

system. Technology used to discover food contamination is critical and yet cost prohibitive for many small food processing firms.

5. New recall insurance products: an alternative to regulation

The recall insurance products currently being offered by insurance companies fall into two categories: (1) a supplement or endorsement to the general liability policies available to commercial policyholders, and (2) exclusive product recall policies. According to MacDougall (2000), only three companies currently offer the latter option. Liability limits are significantly larger with the exclusive product recall insurance. Further, these policies are more likely to cover some of the product reputation losses as well. Table 2 shows a general overview of the two types of products targeted at food processing companies.¹

The insurance products cover both direct recall expenses (publicity, transportation, disposal, and replacement) as well as indirect expenses (third party expenses, loss of profit, and business interruption). Third party expenses refer to those that occur when a downstream retailer of the product loses business as a result of the contamination. Loss of profit covers such instances where the recall damages consumer confidence in the particular brand of product such that the current or next business cycle is negatively affected. It can cover expenses associated with brand protection and rehabilitation. Business interruption covers expenses resulting from periods where the processing plant is shut down.

Among the most comprehensive products written are those offered by the American Meat Institute, which are sold by MRM MacDougall Risk Management and underwritten by Lloyd's of London.² With these insurance products, damages due to malicious product tampering are indemnified for up to \$75 million while damages due to accidental product contamination are indemnified for up to \$50 million. Under the accidental section of the policy, losses are categorized into four areas: (1) recall expenses; (2) lost gross profit; (3) rehabilitation expenses; and (4) crisis response. The second category covers loss for "12 months following discovery" or lost profit during a smaller period where the "sales revenue remain less than the level that could have been reasonably projected had the product tampering not occurred (sample copy of MRM policy)." Indemnities are even paid to rebuild the lost market share.

Many of the new recall products are in the infant stages of market development; the first true recall product was offered in 1993. Several of the products listed in Table 2 are only a few years old. The procedures for measuring and underwriting the food safety risks vary across insurance companies. Some underwriters are now using information from HACCP to measure the level of risk exposure present in a food processing firm. Thorough safety audits or plant inspections by insurance underwriters are rare at this point. Even the comprehensive MRM product does not require plant inspections by insurance underwriters. At this point in time, the insurance providers seem to be more concerned with developing the fledgling recall insurance market rather than following standard underwriting procedures. Therefore, they are selling products with premium rates set high enough to cover the risks they expose themselves to when they fail to require full plant inspections.³ As with other types of insurance, premium rate discounts are available when firms can prove they have

Table 2
New insurance products for recall and product contamination

Company	Product	Description
AIG insurance	Recall plus	Includes First Party Recall, Third Party Product Recall Expenses and Third Party Impaired Property Expenses. The First Party Recall covers the traditional recall expenses and also has a “rehabilitation coverage option that covers the cost of restoring the company’s sales or market share to the level expected prior to the product recall” ^a
Fireman’s fund	Liability insurance and product withdrawal expense coverage	Covers expenses for recalls, including communications, office supplies, additional labor costs, shipping, and the costs to dispose withdrawn products. “If a defective product is discovered, you can act quickly and confidently by initiating a withdrawal without obtaining prior approval.” Also offers business interruption coverage ^b
Liberty mutual	Product recall expense insurance	Covers expenses for recalls, including communications, overtime compensation, and product disposal. Included as a general liability endorsement ^c
Triple S. Inc.: subsidiary of National Food Processors Association	Product contamination insurance	Covers expenses to inspect, withdraw, and destroy product; value of product itself; and “extra expenses to rehabilitate and re-establish the product in the marketplace.” For members of NFPA ^d
Chubb group	Reputational damages liability insurance	Protects against claims for financial damages made by a customer or franchisee alleging that a foodborne illness harmed its reputation and resulted in a loss of income ^e
Zurich, U.S.	Brand protection insurance	Covers recall expenses, including those of third party. Also covers “loss of profit relating to recall incident and costs to rehabilitate or re-establish processor’s reputation and product’s market share” ^f
IBS (insurance brokers service)	Total recall plus	“Provides up to \$25 million in protection from the unexpected costs of recall management and gross profit loss” and brand protection ^g
CAN commercial insurance	FOOD program	Allows food companies to “take preventative action by getting products off the shelves quickly if there is any question of food safety” ^g
MRM MacDougall	Recall insurance	Offers up to \$50 million in protection for a recall and \$75 million for malicious tampering with food products. Insures recovery expenses as well as damage to sales and reputation

^a Source: Company website is <http://www.aigonline.com/aigonline2/articles/busins/recall.htm>.

^b Source: Company website is <http://firemansfund.com/spd.cfm?spi=liability> and Mancini (1997).

^c Source: Company website is <http://www.libertymutual.com/business/specialp.html> and Demetrakakes (1999).

^d Source: Company website is <http://www.nfpa-food.org/triplesbrochure.html> and Mancini (1997).

^e Source: by Goch “Chubb liability insurance designed for food industry,” Best’s review—property-casualty insurance edition, November 1998, p. 86 and Company Press Release, August 24, 1998 “Chubb protects food processors and suppliers from losses when customers and franchisees sue for ‘reputational damages’ stemming from foodborne illness.”

^f Source: Demetrakakes (1999).

^g Source: Dwyer (1999).

management plans and/or technology in place that provide safer food (e.g., ISO 9000 designation, irradiation, and steam cleaning of carcasses).

6. Insurance product incentives and limitations

It would be incredibly expensive if even possible for processing firms to achieve completely safe food production with no risk of contamination. They would be required to implement new (and most likely expensive) technology and increase monitoring. Obviously the cost for such measures would be passed on to consumers. Although some consumers may choose and/or have the capability to pay higher prices for safer food, most probably will not. Consequently, a Gresham's law of product quality arises, with "bad" (low quality, low cost) products chasing 'good' (high-quality, high-cost) products out of the market" (Antle, 1995, p. 47). Thus, the market does not give processing firms the right incentives to implement costly, safer food production systems. Demand for higher-priced, safer food simply is not substantial enough currently to change the behavior of the majority of the food processing industry.

In other sectors, where firms believe that making a safer (and more expensive) product does not pay in terms of market prices, the expense of lawsuits often makes them reconsider. Clearly, both affect the bottom-line—firm profits. Food processing firms do have to consider the potential legal costs they would face if their products were to harm someone. These costs must be weighed against the costs of improving the safety of their food product, i.e., reducing the likelihood of litigation. In the case of the food processing industry, however, the threat of food safety lawsuits is currently not formidable. In a recent examination of U.S. product liability systems, Buzby and Frenzen found that "current legal incentives to produce safer food are weak, though slightly stronger in outbreak situations and in markets where foodborne illness can be more easily traced to individual firms" (p. 637). Information voids and high transaction costs reduce the likelihood of successful litigation (Buzby and Frenzen, 1999). Further, the risks from lawsuits are generally different than the risks from a product recall. Even if the probability of either event were the same, the outcomes would generally be of different economic magnitudes. The costs of litigation and the damages awarded in lawsuits are more likely to be lower than the costs associated with a product recall, especially when lost sales can be traced to long-term harm to brand strength.

Given the high risk of economic loss associated with a product recall and the relatively low risk currently presented by lawsuits, when processing firms are faced with a potential food safety problem, it is rational for them to avoid or at least delay a product recall. This path of action is particularly rational when the problem has not been verified, as in the Colorado Beef case. If a recall is made prematurely and falsely, the firm may experience unnecessary costs and damage to its reputation, which increases the value of a "wait and see" strategy. The choice of implementing a product recall will also depend, however, on the magnitude of the food contamination problem. If the situation only requires a relatively small, localized product recovery, recall costs may be limited while there may also be positive publicity to be garnered from "acting responsibly" and stepping forward to admit to

a problem. Conversely, large contamination problems are clearly expensive and carry greater risks than rewards to a firm's reputation.

Recall insurance products may be the best method for giving incentives to processing firms to achieve greater food safety standards. Unlike with a government regulator, where the incentive is to file the minimum standards for HACCP, the processor will be more inclined to file higher HACCP standards with the insurer. This is true because it should influence the insurance rates. Filing higher standards may also increase the likelihood that these practices will be followed. But again, this is no guarantee. The processor can still fall short of the higher standards if monitoring is largely absent. Beyond, the incentives to strengthen HACCP, given recall insurance, firms should be more willing to initiate a recall in a timely fashion when there is circumstantial evidence that suggests a risk to public health. Further, the insurance companies are more sophisticated at working with the press when there is a problem, reducing the likelihood that the information will be wrong and unduly damaging such as in the Alar-tainted apple case of February 1989. If a firm has confidence that damaging press reports can be somewhat minimized, it may be more likely to initiate an early recall. Most of the recall insurance products also pay some of the publicity expenses incurred with disseminating recall information. Changing the incentives such that firms are no longer tempted to hide a potential contamination problem could be a major contribution of the new recall insurance products.

Recall insurance products still must cope, however, with problems due to asymmetric information. Asymmetric information arises when the insurance provider has less information about how well the plant is managing food safety risks than the plant does (i.e., the firm is not completely forthcoming with information). Asymmetric information is potentially a serious problem in the current insurance environment since underwriting inspections seem to be lacking in both quality and quantity. Without more effort to learn about firm practices, adverse selection or even moral hazard may plague the recall insurance products. Since recall insurance would be voluntary, it is possible that only those plants with the highest food contamination risk will decide to purchase insurance. This type of adverse selection will result in stifling actuarial problems over time. Even more troublesome, if effective information systems are not in place, it is possible that firm practices could become riskier after the insurance is purchased. This type of moral hazard could lead to precisely the wrong result—greater risk in the food system rather than less. Recall insurance should insure only random and uncontrollable events, not bad management. Diligent underwriting/monitoring is needed to balance information and reduce the likelihood of adverse selection and moral hazard.

Obtaining additional information increases the transaction costs of providing insurance, thereby increasing premium rates. A major opportunity to reduce monitoring costs for insurance recall products will be to access the HACCP information from USDA inspectors. Since the government is already involved in gathering much of the information needed by the insurance providers, the transaction costs for more effective underwriting should diminish as HACCP is increasingly implemented. If processing firms understand that their premiums will ultimately be discounted when they provide such information and when they follow more stringent HACCP processes, they should be more willing to cooperate with either USDA inspectors or insurance underwriters. Once firms realize there is an economic

gain associated with sharing information (lower insurance premiums) by cooperating with government regulators, the relationship between processors and government inspectors should become less adversarial.

Furthermore, a number of societies (American Society of Quality; American Meat Institute; American Institute of Baking; The National Pork Producers Council) perform detailed audits on the quality and management of plants to improve their efficiency (Mikel, 2000). These audits could be enhanced in scope to obtain additional information about food safety practices. The additional costs may be lower than the cost associated with independent inspections by insurance underwriters.

7. Conclusions

Recalls due to product contamination are becoming both more common and more economically significant for the meat and poultry industry. Insurance companies have responded to this situation by offering various new recall insurance products. As insurers are placed at risk, they will have incentives to assure that systems are in place to mitigate food safety risk in processing meat and poultry. There are numerous opportunities for insurers to improve the information flows in the industry. As the recall insurance products mature, there will be greater attempts to classify risk and to obtain as much low cost information about how plants are managed as possible. Since rate discounts will be possible, plant managers should be more cooperative with insurance underwriters and with USDA inspectors as insurance underwriters use more HACCP information from USDA inspectors. Beyond these important tensions, which may prevent food contamination, recall insurance may also increase the likelihood that plant managers will initiate a recall more quickly than in the past, thus perhaps reducing the number of illnesses and deaths associated with the contaminated food product.

While we have focused on the meat and poultry industry, the same conceptual thinking applies to many other cases. For example, recall insurance for contaminated feed, fruits, and other processed food, may change the safety incentives in those food systems as well. The future success of recall insurance products in both reducing the risk of the processor and in reducing food safety risk will largely depend on the ability to garner more information at low cost.

Notes

1. The information in Table 2 is meant to give the reader a perspective on available recall insurance products and should not be viewed as representing a comprehensive survey of recall insurance products.
2. All information pertaining to the MRM product was obtained from Eric MacDougall who supplied a sample copy of the insurance policy.
3. To make a profit, insurance firms must have a loss ratio (indemnities plus administration costs/premiums) less than one.

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