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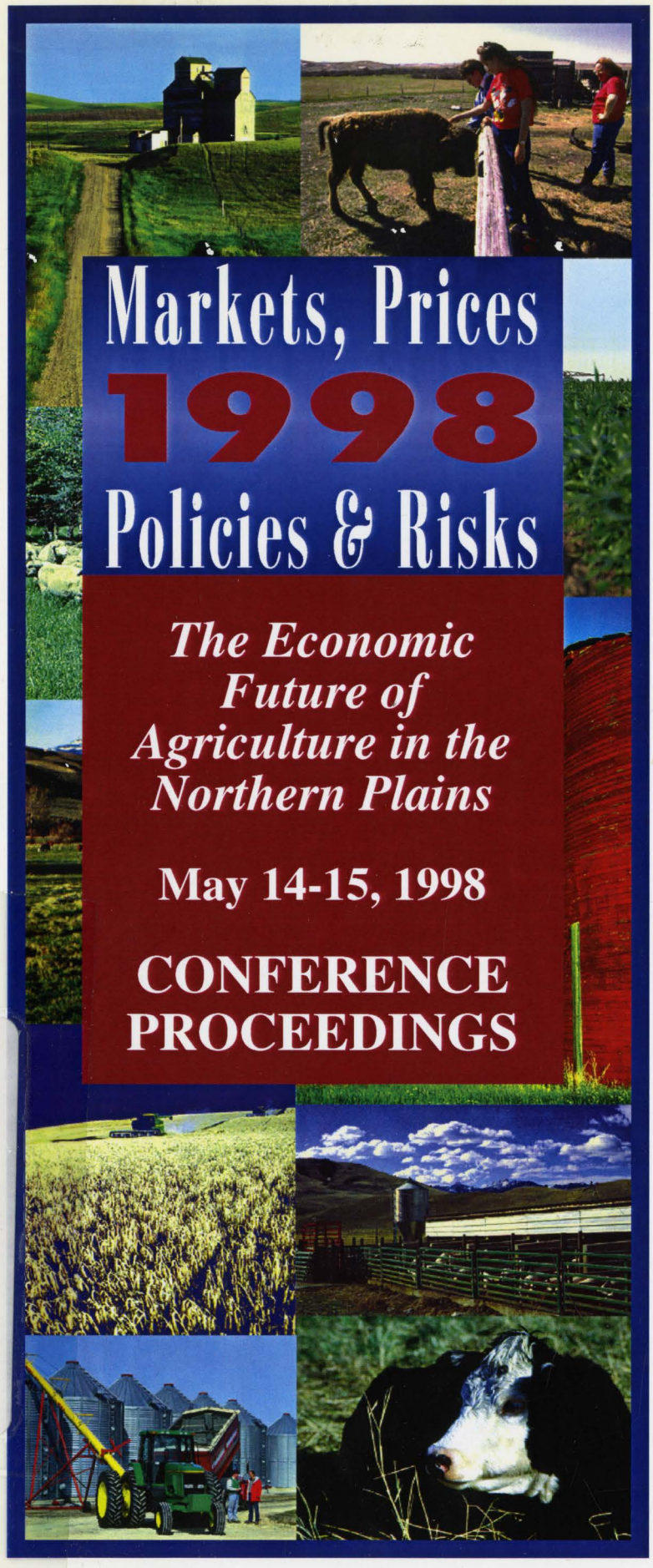

Markets, Prices 1998 Policies & Risks

The Economic Future of Agriculture in the Northern Plains

May 14-15, 1998

CONFERENCE PROCEEDINGS

Objective Analysis for Informed Decision Making

Food Safety Regulations and the Competitiveness of the Meat Industry

Gary W. Brester and John M. Antle

Introduction

The meat industry, and especially the beef sector, has been confronted by issues and concerns that threaten its long-term viability as a major component of consumers' food expenditures. For example, the environmental effects of large hog farming operations, the impacts of growth hormones in relation to international trade, health concerns related to meat consumption, and concerns regarding market concentration and its effect on small livestock producers have each received much attention in recent years. The beef industry may be even more vulnerable than the pork or poultry industries if it is unable to develop new convenient beef products, provide consistent quality, and improve price competitiveness (Brester et al. 1997).

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No single issue may be of more long-term importance to the meat industry (especially the beef sector) than food safety. Increased scrutiny of the safety of the U.S. food supply has followed in the wake of recent food-borne illness outbreaks (e.g., *E. coli 0157:H7* outbreaks in the Pacific Northwest in 1993 and Hudson Foods in 1997) and the recent, well-publicized agricultural products libel suit initiated by Texas cattle producers. The response of the meat industry to food safety issues will be crucial for maintaining market share of consumer food expenditures.

Food Safety Concerns Related to the Meat Industry

The importance of food safety as a public policy issue can be gauged in terms of public sentiment and scientific data. There is certainly a growing public awareness of food safety issues. Research shows that food safety is a significant factor in public health. Food safety is particularly important to vulnerable segments of the population such as the elderly, pregnant women, young children, and the immuno-compromised. A major food safety concern at the production level is the control of human pathogens such as *Salmonella* and *E. coli 0157:H7* which can cause serious health problems if these are carried on animal carcasses and introduced during the product processing or food preparation stages.

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Improved food safety is certainly beneficial to society in terms of illness and mortality reductions, but such improvements are not without costs. The safety of a given food product is a quality attribute. However, the market for food safety is generally characterized by imperfect information about product quality because important safety attributes such as the presence of microbial pathogens cannot be readily detected. Consumers, producers, and

regulators generally have imperfect information about the safety of food products. Nonetheless, consumers can learn about the quality and safety of food products through experience. Firms can establish reputations for product quality and safety. Recent experiences with ground beef contaminated with *E. coli 0157:H7* demonstrate that producers face substantial legal liability and economic losses from producing and selling unsafe foods. Given the limited effectiveness of U.S. Department of Agriculture (USDA) inspections to detect food pathogens, it can be concluded that the safety of fresh meats and poultry is regulated largely through market mechanisms.

Economists have long recognized that the key question in regulatory design is not whether there are market failures, but rather whether regulations can be designed that generate benefits in excess of costs.

The presence of imperfect information in food markets is used frequently by economists as a justification for food safety regulation. Whether a regulatory regime can be designed that yields benefits greater than costs is an unanswered empirical question. Economists have long recognized that the key question in regulatory design is not whether there are market failures, but rather whether regulations can be designed that generate benefits in excess of costs. Consistent with this view of regulation, the United States government began to subject new regulations to closer scrutiny in the 1980s. President Reagan issued an executive order requiring federal agencies to conduct regulatory impact assessments of major new regulations. This order has remained largely intact under Presidents Bush and Clinton.

Effective new food safety regulations would enhance the safety of the nation's food supply by reducing the presence of microbial pathogens in fresh and processed foods. New regulations would be expected to raise the industry's cost of production. These higher costs could have significant economic consequences for both producers and consumers. The costs of complying with food safety regulations in a competitive industry are ultimately passed on to consumers through higher meat prices and to producers through lower livestock prices. Consumer concerns regarding the safety of meat products are manifest as reductions in meat demand and lower livestock prices.

Regulatory and Inspection Issues Related to the Meat Industry

The federal government regulated food quality and safety long before most other consumer safety regulations were enacted. The Pure Food and Drugs Act and the Meat Inspection Act were both passed in 1906. These acts promulgated the first food safety regulations. Under the Federal Food, Drug and Cosmetic Act (FFDCA) of 1938, the Food and Drug Administration (FDA) has responsibility for many aspects of food safety regulation, including fish and seafood safety and the safety of most processed foods.

The USDA is responsible for meat, poultry, and egg inspection and inspection of imported foods. The original 1906 Meat Inspection Act and its amendments require that all carcasses and meat products be inspected. The 1967 Wholesome Meat Act and the 1968 Wholesome Poultry Act require standardized meat and poultry inspection across states and required

states to match federal inspection standards. The USDA's Food Safety and Inspection Service (FSIS) employs some 7,400 inspectors in more than 6,000 slaughter and processing plants to conduct inspections of every carcass slaughtered in federally inspected plants.

Until recently, the U.S. meat inspection system had changed very little since its inception. From 1906 to 1996, the methods of inspection used by FSIS were based strictly on organoleptic approaches for detecting unsafe meat. These methods relied on sight, smell, and feel and have been criticized as inadequate to identify and control food-borne pathogens, chemical contaminants, and other potential hazards on individual carcasses.

On July 6, 1996, FSIS released the final ruling on the Pathogen Reduction, Hazard Analysis, Critical Control Point (HACCP) Systems regulation. The regulation represents the most significant change in the meat inspection system since its inception. HACCP involves the identification of hazards and critical control points in the production process so that hazards can be reliably monitored and controlled. In addition, outcome-based verification systems are implemented to ensure that controls are effective. Beginning in 1998, HACCP regulations and procedures will be gradually implemented by the meat processing industry. However, HACCP regulations add to, rather than replace, existing food safety regulations.

Costs of Food Safety Regulations and the Competitiveness of the Meat Industry

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The competitiveness of the meat slaughter and processing industry has long been a subject of debate in the livestock industry and among economists and government agencies. The most recent round of debate culminated in a review of concentration in the beef packing industry (Packers and Stockyards Programs 1996). The cattle slaughter and beef processing industry has become increasingly concentrated. Most of its output is produced by large plants owned by four large firms. Academic research is mixed regarding the effect of concentration on slaughter cattle prices. Some studies conclude that large packing companies are able to use market power to slightly reduce slaughter cattle prices, whereas others indicate that the industry is competitive. However, there is little evidence that these companies are able to use market power to increase the prices of boxed beef in product markets.

Some argue that food safety regulations place small firms and plants at an economic disadvantage, further hastening meat slaughter and processing concentration. The beef industry has faced growing competition from pork and poultry, and some argue that differences in meat safety inspection requirements creates cost disadvantages for the beef industry. Differential costs of complying with food safety regulations would in turn raise the cost of beef to consumers relative to other meats.

On March 2, 1993, in direct response to the outbreak of *E. coli 0157:H7* in the Pacific Northwest earlier that year, FSIS began enforcement of the zero

tolerance directive, which requires beef plants to trim all identifiable feces, ingesta, and milk found on the surface of carcasses before those carcasses are washed. In December of that year, Inspectors-in-Charge were instructed to slow slaughter lines if the "inspection procedure cannot be adequately performed" (Reed 1993). This policy has caused firms to incur losses not only due to the physical loss of meat trimmings but also due to slower line speeds. It has been estimated that the cost of the zero tolerance policy is approximately $3 billion per year (Klein and Brester 1997). The maximum potential benefits (those calculated assuming that the policy was 100 percent effective) from elimination of food-borne illness caused by *E. coli 0157:H7* and *Salmonella* in beef were estimated as $385 million per year. Thus, the costs of the zero tolerance directive exceed the maximum potential benefit by a factor of 10. However, these estimates ignore other possible benefits of the enforcement of the zero tolerance program such as boosts in consumer confidence which may have ameliorated negative effects on beef demand caused by the 1993 *E. coli 0157:H7* outbreak.

Antle's results are consistent with the NCBA's contention that beef processors incur relatively higher regulatory costs than pork and poultry processors.

To determine the costs of food safety regulations such as mandatory HACCP regulations, one must either determine or assume the degree of effectiveness (i.e., the percent increase in quality or safety) associated with the regulation (Antle 1998). Using a 1995 estimate that mandatory HACCP regulations would increase safety by 20 percent (Knutson et al. 1995), Antle found that the costs of additional food safety regulations could be as high as $7 billion. The USDA provides an upper bound estimate of the benefits of HACCP regulations of about $4 billion assuming that the regulations are 20 percent effective. Thus, the costs of these regulations could well exceed estimated benefits. In addition, Antle suggests that such regulations may result in different economic impacts on small versus large beef plants and that the costs of food safety regulation could be substantially higher for beef plants than for pork or poultry plants.

Meat processing costs are important determinants of the relationship between retail and live animal prices and the quantities consumed. Differences in regulatory costs across meat species impact both the farm-to-retail margin and relative market shares of meat commodities. The National Cattlemen's Beef Association (NCBA) contends that the beef industry faces higher costs due to differences in federal regulatory inspection procedures among beef, pork, and poultry processors. Antle's results are consistent with the NCBA's contention that beef processors incur relatively higher regulatory costs than pork and poultry processors. The NCBA estimates that beef processing costs are 7 percent higher than would be the case if the industry faced regulatory procedures comparable to the pork and poultry industries. Schroeder and Brester use the NCBA's estimates of higher beef processing costs to determine the effect on beef and cattle prices (Schroeder and Brester 1997). If regulations comparable to those of the pork and poultry slaughter and processing industries were enforced in the beef packing industry, retail beef price would decline by 5.72 percent, retail beef consumption would increase by 3.94 percent, live cattle price would increase by 2.37 percent, and live cattle production

would increase by 2.49 percent over a five-year time period. Thus, if regulatory inequities exist among species, retail beef products have a significant competitive price disadvantage relative to pork and poultry products at the retail meat counter.

Concluding Remarks

Consumer health risks can be classified into two categories—risk of illness (morbidity) and risk of death (mortality). Consumers derive value from safer foods because of reductions in associated health risks. However, the production of safer foods either through market processes or government regulation imposes costs on the beef processing industry. Economists need to assess whether food safety regulations are justified, i.e., do they pass a benefit-cost test. Even if some regulations yield positive net benefits, economists need to provide regulatory agencies with information about the relative efficiency of alternative types of regulation (e.g., economists need to assess whether process-based regulations are more or less efficient than performance standards).

Meat imports are subject to FSIS inspection rules. Although current Canadian meat inspection rules are similar to U.S. rules, the addition of new HACCP regulations to existing regulations increases U.S. meat processing costs. Such increases can place U.S. meat products at a competitive disadvantage both in terms of competing for export market share and in terms of Canadian beef imports. This is particularly relevant given that Canadian policies encourage but do not mandate implementation of HACCP plans. Nonetheless, safer meat products represent increased quality and may offer an opportunity for product differentiation with respect to both meat exports and imports.

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Beef, pork, and poultry products each have the potential for causing human health problems. Most of these health problems are obviated by thoroughly cooking meat products. However, of the three meat types, beef is the only product that consumers often prefer to be undercooked. Consequently, by virtue of consumer tastes and preferences, beef is at a competitive disadvantage as a potential source of food-borne illness. The beef industry must be a proactive advocate of sound research, education, and processing practices that reduce pathogens in their final product. Specifically, the effectiveness and costs of mandated regulations in achieving this goal must be evaluated with respect to the effectiveness and costs of market-based, process-oriented procedures developed and maintained by producers and processors.

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About the Authors

Gary W. Brester is an Associate Professor of Agricultural Economics and Economics at Montana State University–Bozeman. His research focuses on livestock and grain issues, international trade, agribusiness management, and food safety.

John M. Antle is a Professor of Agricultural Economics and Economics and the Director of the Trade Research Center at Montana State University–Bozeman. His research interests include trade and trade policy, food safety, and climate change.