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Who Will Bear the Costs of Country-of-Origin Labeling?

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Several studies have attempted to quantify the expected costs of COOL (Davis, 2003; Hayes & Meyer, 2003). Annual cost estimates for the beef industry range from $200 million to $6.4 billion and from $20 million to $1 billion for the pork industry. Proponents of COOL argue that most of the larger cost estimates are overstated. They also emphasize results of experimental auctions and surveys that suggest some consumers may be willing to pay a premium for beef that has been labeled by country-of-origin. Conversely, others argue that although some consumers may be willing to pay for country-of-origin labeling, they may not have to pay for any of it, given that the majority of beef and pork products are of domestic origin (Plain & Grimes, 2003). Thus, imported meat products could sell at a discount rather than domestic products commanding a premium. In addition, the US Department of Agriculture (AMS, 2003) found "little evidence that consumers are willing to pay a price premium for country-of-origin labeling" (p. 50) and that "estimated benefits associated with this rule are likely to be negligible" (p. 49).

Meat suppliers, retailers, and restaurants can voluntarily choose to label meat products by country of origin. Because such activity currently occurs only on a small scale, one might argue that market evidence indicates the costs of country-of-origin labeling exceed the benefits. However, one also could argue that voluntary country-of-origin labeling does not occur because benefits and costs of labeling may accrue at different levels in the marketing channel. Furthermore, if consumers do not trust the accuracy of voluntary labels, then adverse selection occurs as a result of asymmetric information. Thus, country-of-origin labeling benefits may only accrue if labeling is mandatory. In the beef and pork industries, market forces cause increases in marketing and processing costs to be distributed across market levels. Thus, the incidence of COOL costs depends primarily on relative demand and supply elasticities at each level of the marketing chain. Furthermore, changes in the well-being of producers and consumers are best estimated by considering changes in producer and consumer surplus.

This article reports estimates of short- and long-run changes in market prices and quantities of meat and livestock in the beef, pork, and poultry sectors that would result from the implementation of COOL. We develop a type of economic model that incorporates estimated COOL costs, accounts for interrelationships along the marketing chain for each meat sector, and allows for substitutability among meat products at the consumer level. The model is used to simulate price and quantity adjustments to COOL cost shocks and the impact of potential demand increases that might be induced by COOL. In addition, we estimate cumulative changes in producer welfare at each level of the marketing chain and consumer welfare at the retail level to determine the effects of COOL on consumers and livestock and meat producers.

Evolution of Country-Of-Origin Labeling

Country-of-origin labeling is mandated for most products imported by the United States under section 304 of the 1930 Tariff Act. However, several agricultural products, including livestock (but not processed livestock products) and several "natural" products (e.g., some fruits, nuts, and vegetables) are included on a "J" list of commodities exempt from existing US country-of-origin labeling requirements. Country-of-origin exempt products are generally combined with similar domestic products during processing and marketing (e.g., domestic and imported beef carcasses). For nonexempt products, current country-of-origin labeling legislation requires listing the source (country) of imported products through the marketing system until purchased by a final consumer.

The 2002 Food Security and Rural Investment Act added a new subtitle (Subtitle D—Country of Origin Labeling) to the Agricultural Marketing Act of 1946. The subtitle mandated voluntary COOL on September 30, 2002 and mandatory COOL by September 30, 2004. Unprocessed fresh, frozen, and ground beef and pork will be required to be labeled by country of origin, but poultry products, delicatessen food items, processed foods, restaurants, food services, and small retailers (those with less than $230,000 of annual sales) will remain exempt. Recently, Congress approved a two-year delay for COOL implementation.

Background on US Meat and Livestock Imports

The United States imports feeder cattle from Mexico (which are subsequently finished in US feedlots), trimmings and ground beef from Australia and New Zealand, and a mix of high-value muscle cuts, manufacturing/trimming beef, fed and cull slaughter cattle, and cattle carcasses from Canada. Over 75% of slaughter cattle imports have been grain-fed. Imported beef is inspected and must meet food safety standards equivalent to that for domestically-produced beef products. Beef imported as live fed cattle or as carcasses is eligible for US Department of Agriculture quality grades. In 2002, beef imports from all sources represented 16.9% of total US beef supplies. In 2002, 51% of all beef imports were trimming and manufacturing grade beef which is subsequently ground into hamburger. Live cattle imports (on a carcass weight basis) from Canada represented approximately 28% of US beef imports in 2002.

In 2002, the United States imported approximately 1.1 billion pounds of pork, which represented about 5.2% of total US pork supplies. Over 80% of these imports originated in Canada. In addition, the United States imported 5.7 million head of hogs and feeder pigs, which represents about 5.7% of US hog slaughter. Almost all hog imports originated in Canada.

The US poultry industry is the world's largest producer and exporter of poultry meat. In 2002, US poultry meat (broilers, other chicken, and turkey) exports were about 14.5% of domestic poultry supplies. In 2002, imports amounted to 16 million pounds, or less than 0.5% of domestic production. US consumption of poultry meat (broilers, other chicken, and turkey) is considerably higher than either beef or pork consumption, but less than total red meat consumption. However, the United States imports only small amounts of poultry products.

Modeling Strategy

An economic displacement model was developed assuming that COOL imposes additional marketing costs on suppliers at each market level (for a complete discussion of the model, see Brester, Marsh, & Atwood, 2004). The model is based on supply and demand relationships in the beef, pork, and poultry industries using actual quantities produced and supply and demand elasticities. These costs are generated by increased commodity segregation, record keeping, verification, labeling, and certification. The beef marketing chain consists of four distinct sectors: retail (consumer), wholesale (processor), slaughter (cattle feeding), and farm (feeder cattle). The pork marketing chain is more integrated than the

beef sector; therefore, we consider demand and supply relations for only three sectors: retail, wholesale, and slaughter (hog feeding). The poultry sector is highly integrated so only the retail and wholesale sectors are considered.

Estimates of COOL Costs

The costs of COOL costs at each level of the beef and pork industries were obtained from Sparks Companies (2003). Although these estimates are smaller than those suggested by Davis (2003) and larger than those suggested by Vansickle et al. (2003), they are similar to recent USDA estimates. Sparks Companies estimate that COOL will result in a $1.653 billion annual increase in operating costs to the beef industry. Furthermore, they estimate that these cost increases would be distributed as $805 million to the retail sector, $500 million to the packer (wholesale) sector, $150 million to the feedlot (fed cattle) sector, and $198 million to the cow/calf (feeder cattle) sector. Using 2002 average prices and quantities for each market level, these costs estimates represent the following percentage increases in costs relative to total value: 1.24% at the retail level, 1.71% at the wholesale level, 0.50% at the fed cattle level, and 0.96% at the feeder cattle level.

Sparks Companies estimate that COOL will generate $713 million of additional costs for the pork industry, with $263 million occurring at the retail level, $350 million at the wholesale level, and $100 million at the hog finishing level. Based on 2002 average prices and quantities, these cost increases represent the following percentage increases relative to total value at each level: 0.66% at the retail level, 3.41% at the wholesale level, and 1.08% at the hog fin-

ishing level. These percentage increases generate vertical shifts of their respective supply functions. Currently, poultry is exempt from COOL legislation. Therefore, we assume that no additional costs are incurred by the poultry industry as a result of COOL.

Simulation Results

Price and Quantity Effects of COOL Assuming No Change in Consumer Demand

We initially simulate short- and long-run impacts of the above percentage cost changes assuming that COOL has no effects on consumer demand for beef and pork. Beef, pork, and poultry prices increase at the retail and wholesale levels, and feeder cattle prices increase at the farm level, but all beef and pork quantities decline. These results are theoretically consistent, because additional marketing costs increase farm-retail price spreads. Poultry prices and quantities increase because poultry demand increases as consumers substitute away from relatively more expensive beef and pork products.

Economic studies often include impacts stated in terms of economic welfare or producer and consumer surplus. Consumer surplus simply means the benefits consumers get from a product over what they paid for it. Similarly, producer surplus is the revenue producers receive over their production costs.

In the absence of demand increases, producer surplus declines at all levels of the beef and pork industries; beef and pork producers are clearly worse off, economically, without a demand increase to pay for the costs of compliance. Increased poultry demand generates increases in producer surplus at every level of the poultry industry. Across all meat sectors, retail level consumer surplus declines.

It is appropriate to consider *cumulative* changes in producer surplus as an industry adjusts from a short-run to a long-run equilibrium. To simulate these cumulative effects, we assume that it takes 10 years (the average length of a cattle cycle) to adjust from the short run to the long run in the meat industry. We report the present value of these changes in producer and consumer surplus assuming a 5% discount rate. Over the 10-year adjustment period, producer surplus declines at every market level of the beef and pork industries. In addition, retail level consumer surplus declines in both the beef and pork industries. Although the poultry industry gains producer surplus and retail-level consumer surplus, the entire meat industry loses producer surplus and retail-level consumer surplus if COOL does not increase consumer demand for beef and pork.

Price and Quantity Effects of COOL Resulting From Changes in Consumer Demand

A second simulation was conducted to determine the COOL-induced beef and pork demand increases required so that farm-level cattle and hog producers do not lose cumulative (present value) producer surplus over the 10-year adjustment period. The model predicts that one-time permanent increases of 4.05% in beef demand and 4.45% in pork demand would be necessary for the present value of gains and losses in the feeder cattle and hog production sectors to be zero. Most livestock prices increase in the short run, and all prices and quantities increase in the long run.

A Discussion of the Simulation Results

The above simulation results are contingent upon our selection of COOL costs for each market level of the beef and pork industries. Overall, the price, quantity, and producer surplus changes in the livestock industries are relatively small; however, COOL-induced marketing costs also are small relative to revenues generated at each market level. Furthermore, if actual COOL costs are smaller or larger than those used in this simulation, the estimates of price, quantity, and producer and consumer surplus changes will be proportionally smaller or larger. The critical point of our research is that livestock producers lose producer surplus if the implementation of COOL fails to increase consumer demand for domestically-produced beef and pork products. If one-time permanent demand increases do occur, they need to exceed 4.05% for beef and 4.45% for pork if the lowest levels of the beef and pork production sectors (feeder cattle and hog producers) are to be no worse off in the long run.

It should be noted that COOL applies only to beef and pork muscle cuts and ground products sold through grocery stores. Approximately 52% of beef volume is sold through retail outlets. Therefore, an industry-wide 4.05% increase in beef demand would have to be generated by approximately one half of the beef market.

Concluding Comments

If COOL-induced demand increases do not occur, then all sectors of the beef and pork industries lose producer surplus. In addition, retail beef and pork consumers lose consumer surplus. To determine the ultimate effects of COOL on producer and

retail level consumer surplus, the discounted present value of cumulative effects of producer and consumer surplus gains and losses should be calculated over a sufficiently long period to allow for gradual change in livestock and meat supplies. Retail beef and pork demand would have to experience one-time permanent increases of 4.05% and 4.45%, respectively, if feeder cattle and hog producers were to be no worse off than before COOL. Because COOL applies only to beef and pork muscle cuts and ground products sold through retail outlets, this sector of the beef and pork industries must generate the entire demand increase. These results are, of course, specific to our assumptions regarding the size and distribution of marketing costs resulting from the implementation of COOL.

The poultry industry is the only unequivocal winner of the implementation of COOL. We assumed that the poultry industry's cost structure was unaffected by COOL because poultry is currently excluded from COOL legislation. Consequently, increased COOL marketing costs in the beef and pork sectors that increase retail beef and pork prices encourage consumers to substitute towards poultry products. This demand increase causes subsequent increases in poultry prices, quantities, and producer and consumer surplus in the poultry industry.

COOL is receiving a chilly reception by some market participants primarily because of the uncertainty regarding potential increases in demand and costs resulting from the legislation. It is interesting to note that the most vocal proponents of COOL have been groups primarily representing feeder cattle producers. The strong support of COOL provided by some feeder cattle producers indicates that those producers expect COOL-induced beef demand increases to more than offset additional marketing costs. They may be unaware that the incidence of both COOL costs and benefits will largely be determined by relative supply and demand elasticities among meat industries and market levels.

For More Information

Brester, G.W., Marsh, J.M., & Atwood, J.A. (2004). Distributional impact of country-of-origin labeling in the U.S. meat industry. *Journal of Agricultural and Resource Economics*, *29*(2), 206-227.

Brester, G.W., & Smith, V.H. (2000). Beef at the border: Here's the beef. *Choices*, *2000*(2), 28-32.

Davis, E.E. (2003). *Country of origin labeling.* Available on the World Wide Web: http://livestock-marketing.tamu.edu/COOL.html.

Hayes, D.J., & Meyer, S.R. (2003). *Impact of mandatory country of origin labeling on U.S. pork exports* (white paper). Ames, IA: Iowa State University.

Plain, R., & Grimes, G. (2003). *Benefits of COOL to the cattle industry* (AEWP 2003-2). Columbia, MO: University of Missouri Department of Agricultural Economics.

Sparks Companies, Inc. (2003). *COOL cost assessment: Prepared by the Sparks/CBW Consortium.* Memphis, TN.

United States Department of Agriculture Agricultural Marketing Service. (2003). *Mandatory country of origin labeling of beef, lamb, pork, fish, perishable agricultural commodities, and peanuts* (proposed rule no. LS-03-04). Available on the World Wide Web: http://www.ams.usda.gov/cool.

VanSickle, J., McEowen, R., Taylor, C.R., Harl, N., & Connor, J. (2003). *Country of origin labeling: a legal and economic analysis.* International Agricultural Trade and Policy Center Paper PBTC 03-5. Gainesville, FL: University of Florida.

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