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Released electronically on June 18, 2009

The Economics of Animal Welfare Regulations Proposed for Ohio

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The Humane Society of the United States (HSUS) seeks to phase out battery cages for Ohio's laying hens, gestation crates for its pregnant pigs, and crates for veal calves in favor of group housing (FarmPolicy [farmpolicy@gmail.com], May 5, 2009). As the nation's second largest producer of eggs (27 million laying hens) and a major producer of swine and dairy cattle, Ohio agriculture has a major stake in the outcome of this HSUS effort.

HSUS is likely to put its proposal before Ohio voters next year if poultry and livestock producers don't cooperate with HSUS to write legislation changing the way producers operate. This is no idle threat. Last year California voters approved a similar measure (Proposition 2 or Prop 2) mandating as of January 1, 2015 that it shall be a misdemeanor for any person to confine a pregnant pig, calf raised for veal, or egg-laying hen in a manner not allowing the animal to turn around freely, stand up, lie down, and fully extend its limbs. At least four other states have passed laws similar to California's Proposition 2.

Is such legislation a good idea? The following discussion is especially focused on laying hens, the enterprise likely to be most affected in Ohio. The following analysis addresses animal welfare dimensions of Prop 2-type regulations before addressing the economic dimensions.

Animal Welfare

First, it is important to recognize that nearly everyone including persons associated with large confinement feeding operations supports humane treatment of animals. At issue is what constitutes humane treatment. On the one hand, large confinement cage or crate operations would seem to reduce animal welfare by inhibiting the freedom of animals for nesting, sex, and exercise (Shields and Duncan 2009, pp. 2-5). Proponents contend that Prop 2-type legislation will enhance animal welfare, provide healthier food because animals will contract fewer air-borne diseases, and will reduce soil, water, and air pollution.

On the other hand, confinement is associated with protection of animals from extreme temperatures, predators, and soil-borne diseases and parasites. Animals in confinement can be monitored closely for health. Confinement systems deliver fresh, clean eggs to consumers. Confinement operations use less land, labor, and other resources per animal unit. Opponents of Prop 2-type legislation contend that with sound management, large confinement operations have demonstrated they can produce food at low cost to consumers without harming the environment or animal welfare.

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The public looks to objective scientific findings to narrow differences of opinion between supporters and opponents of Prop 2-type measures. That strategy has met with only partial success as apparent from studies measuring how specific engineering-type provisions (such as space provided per animal) affect animal welfare. In Austria for example, Zaludik et al. (2007) evaluated the usefulness of the government's Animal Needs Index (ANI) auditing how hen welfare is affected by floor space, feeder space, and the like for organic laying hen production. No relationship was found between a good score on the ANI and hen welfare as assessed by mortality, injury, measures of abnormal behavior, and footpad and breast lesions. This and other empirical studies give conflicting results regarding the contribution of a "favorable" environment to animal welfare (Shields and Duncan 2009, pp. 12, 13). After an excellent review of existing scientific studies, Mench et al. (2009, p. 44) conclude that "...we still have little understanding of how all of the complex inputs on commercial farms (whether those are husbandry inputs or genetic inputs) interact to cause or minimize animal welfare problems."

Economic Implications

The economic implications of Prop 2-type regulations imposed on Ohio's agriculture are more clear than the foregoing animal welfare implications. Market forces help protect animals to the extent that abused and diseased animals reduce profits, forcing animal producers to use more humane practices. In part out of concern for animal product demand and profit, the livestock (including poultry) industry has voluntarily changed production practices. Experts on animal welfare and ethics, though noting the absence of federal regulation of animal production, cite the recent voluntary development and enforcement of animal care standards by producer groups and retailers. Animal welfare scientists (Mench et al., 2009, p.2) conclude that "These standards have resulted in some striking improvements in animal welfare..." along the entire supply chain of animals and their products.

Socially acceptable production practices for animal welfare ultimately rest on the public's values and attitudes and not just on science. Such values range from indifferent observers to animal rightists who object to animal confinement and would end use of animals as sources of food, clothing (leather), fiber, draft-power, or companionship (pets). Even among those who make animal products a part of their diet, the range of preferred animal production practices stretches from conventional to organic, to free range. Markets can serve discriminating consumers over this broad range of preferences. The key is to label animal products by production practices. Preferred animal welfare practices may be more costly to producers, but consumers can "vote" their preferences with dollars in the market.

Labeling, a means for producers to receive premium prices for humane and more costly animal welfare practices, seems an ideal solution because it allows each consumer to uniquely express demand for traditional or enhanced animal welfare practices in the market. Mench et al. (2009, p.3) note that such labeling has attracted few customers. That is, animal welfare enhanced products remain a small, niche market, suggesting either that consumers are not well informed or they place little value on these enhanced production practices.

Disappointed with outcomes, the Humane Society of the United States (not to be confused with and not affiliated with your less activist local Humane Society) seeks public intervention in Ohio with government regulation to reach its animal welfare objectives well beyond what market labeling and voluntary industry reforms have achieved.

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Animal welfare and environmental regulations are unlikely to eliminate the current cost advantage of large farms over small farms. Numerous studies indicate that the cost of producing a unit of animal products is lower on large farms than on small farms (see Tweeten 2003, p. 85). Most such studies can be faulted for including only costs to farms. That is, the economic studies ignore full incremental cost of production which includes environmental or animal welfare costs accruing to society but not to farms (externalities in economist's jargon). However, experts such as Martin and Zering (1997, p.20) and Boehlje et al. (1996) conclude that unit production costs would be lower on large farms than on small farms even if all externalities were internalized. Other things equal, risk increases with scale of operations. But economies of size provide the wherewithal for larger farms to afford the able management required to cope with risk.

Prop 2 for California is similar to HSUS' proposal for Ohio. In addition, livestock production conditions in Ohio are sufficiently similar to those in California so that economic analysis for California provided a strong basis to begin assessing the situation in Ohio. Scientists at the University of California-Davis (Sumner et al. 2008, p. 36) concluded that under Prop 2 "variable costs of production [for eggs in California] would rise by at least 20 percent and perhaps substantially more. Underlying these higher costs per dozen eggs are higher feed use per bird, higher cost per pullet, lower average productive life of a hen, higher mortality rates, fewer eggs of premium size or acceptable marketability, fewer birds per facility, and higher labor costs." Other studies have estimated that total cost per dozen eggs are 26 percent higher for barn production and 45 percent higher with free range production compared to conventional cage egg production (Agra CEAS 2004, p.45).

Ohio is surrounded by states with competitive laying hen enterprises. Indiana's 24 million average number of laying hens and Pennsylvania's 21 million hens were not far behind Ohio's average inventory of 27 million hens in 2007. Eggs produced under conventional cage systems in surrounding states would have a 20 percent or more cost advantage over Ohio's farms producing under Prop 2-type regulations. Ohio laying hen producers would not be competitive. To protect its producers, California has proposed trade barriers to egg imports from other states. Such barriers seem unachievable because they conflict with the interstate commerce clause of the U.S. constitution and likely would be ruled unconstitutional.

In short, according to Sumner et al. (2008, iv):

Our analysis [of Proposition 2 regulations applied to California agriculture] indicates that the expected impact would be the almost complete elimination of egg production in California within the six-year adjustment period. Non-cage production costs are simply too far above the costs of the cage systems used in other states to allow California producers to compete with imported eggs in the conventional egg market. The most likely outcome, therefore, is the elimination of almost all of the California egg industry over a few years.

The authors noted the exception of a very small residual of local specialty producers that would supply part of the California market for eggs produced in non-cage systems.

Sumner et al. (2008, pp. 46-47) go on to add that:

The elimination of most of the California egg industry would have broader economic implications. The loss of about 3,000 jobs in the industry would be multiplied by a factor of about 0.9 to imply a statewide loss of jobs of about 5,750 jobs. The loss in overall economic activity in the state is also larger than the gross [egg] sales of about \$370 million in 2007 because of the ripple effects that affect upstream and downstream industries.

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Conclusions

Who would be the economic gainers and losers from imposition of Prop 2-type regulations on Ohio's agriculture? Ohio would lose: laborers, livestock and crop producers, and the economy as a whole. Ohio's laying hen enterprise, second only in the nation to that of Iowa and 38 percent greater than that of California in 2007, would be decimated. Applying the latter percentage to the available estimate of job loss in California, Ohio's loss from Prop 2-type legislation would total 7,928 jobs and associated income.

Diminished animal agriculture means diminished crop agriculture in Ohio—less demand for livestock means less demand for corn and soybeans. The state's livestock agriculture directly consumed 22 percent of the state's corn crop and a sizable percentage of the soybean crop in 2008. Including distillers' grain byproducts (from corn feedstock for ethanol production) and corn silage, some 30 percent of the state's corn crop is fed to its livestock.

Ohio's consumers would lose as workers and income-earners, but Ohioans would face little if any higher food prices with imposition of Prop 2-type regulations as surrounding states supply low-cost animal products. Thus other states would gain jobs and income at Ohio's expense as animal products consumed in Ohio would be produced elsewhere. Those products would be produced using current practices, so overall animal welfare would be unaffected.

To avoid interstate trade that abrogates the intended animal welfare gains from Prop 2-type regulations, the HSUS can be expected to pursue national legislation to impose regulations on all U.S. livestock producers. Even if such measures were enacted they would be severely undermined over time by livestock product imports from Canada, Mexico, and other countries—often under animal welfare conditions below Ohio's standards.

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