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of a mistaken perspective regarding the scope of government inspection programs. Partially as a result of this 1974 survey, USDA has stepped up its emphasis on the development and dissemination of educational material on food safety information to consumers.

A more recent survey indicates that these informational efforts may have had some positive impact. In 1977, USDA conducted a nationwide survey that obtained consumers' attitudes about and reactions to a variety of food-related topics (e.g., food shopping, home gardening, meat nomenclature, volume beef buying). The survey included a question concerning meat and poultry inspection. Approximately 70 percent of the respondents agreed with the statement that the government-inspected raw meat and poultry products they bought in the store could still have bacteria that could cause food poisoning. There was less agreement with this statement among the very young (respondents under 25 years) and the elderly (65 years and over). The less educated were also less inclined to agree with this statement.

It should be noted that this rather dramatic change in attitude regarding the presence of harmful bacteria might be attributed, in part, to a difference in question wording in the two different surveys—even though the main focus of both questions was the same. Whether the apparent increased awareness concerning government-inspected meat means more homemakers are using proper handling and preparation procedures is not known.

ECONOMIC IMPACTS OF A BAN ON SELECTED ANIMAL DRUGS★

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The complex food safety subject has become a highly publicized, controversial, and emotional. An increased awareness of and concern for food safety should result in reductions in some diseases and ultimately in medical costs. But these benefits probably can't be attained without some added costs. In the food safety area, these costs usually are the result of restrictions on the use of potentially hazardous additives or food handling practices. The issue is, therefore, one of weighing the consequences of the alternatives.

In recent years, restrictions on the use of certain antibacterial drugs in animal feeds have been proposed by the Food and Drug Administration (FDA). Other proposals may be in the offing. These drugs are currently approved for use in beef, swine, poultry, dairy, sheep, and other animal feeds to promote growth, improve feed efficiency, and prevent subclinical infections. But use of these drugs potentially poses a threat to human and, in some cases, animal health.

This threat to human health could come from the widespread and possibly indiscriminate use of penicillin and tetracycline antibiotics.

Such use could contribute to organisms developing antibiotic resistance. As a result, the effectiveness of these and other antibiotics in the treatment of human and animal infectious diseases is lessened. Nitrofurans—primarily fed to poultry—are believed to be cancer-causing, and their use for growth promotion and the treatment of diseases may, at some point, be prohibited. Sulfanethazine mixed with several other drugs is fed to hogs, and frequently dangerous residue levels of the drug are found in pork meat.

Economic Analysis

Livestock producers have expressed concern about the economic consequences likely to result from such restrictions on drug use. As a result, the U.S. Senate Committee on Agriculture, Nutrition and Forestry requested the USDA to examine the economic impacts of any bans on the low-level use of selected animal drugs.

Animal science data are essential to such a study. Without good data on the effects of drug use on feed efficiency,

★An ESCS publication providing more detail is available from the author. Ask for AER 414.

growth rates, mortality, and product condemnation rates, it is impossible to develop precise estimates of the economic effects resulting from a ban. The data used in this study were obtained from USDA and land grant university scientists, veterinarians, others in private business, and professional journals. Most estimates were extrapolated from small-scale test results since other data were not available. Most of the data were from tests conducted when the additives were first introduced in the 1950's and 1960's. In many instances there were wide variations in test results making estimates of the potential changes in production subject to error. Despite such difficulties, however, the best available scientific data were used for this study.

Because the available scientific evidence on the animal production effects of drug use are not conclusive, two levels of drug efficacy were assumed—moderate and high. Such a procedure, therefore, provides a range of potential outcomes that likely bracket what could reasonably be expected to occur.

At a moderate effectiveness level, a simultaneous ban on the use of the antibiotics, nitrofurans, and sulfanethazine in hog feed would initially result in reduced animal output. Output would be reduced about 8 percent for broilers, 6 percent for turkeys, and 5 percent for hogs. Beef production would increase a small amount—less than 1 percent. Feed utilization would decrease by a small amount. The production of

PROJECTED CHANGES IN FARM PRODUCTION AND FARM PRICES¹

Animal species	Farm output	Farm prices	
	1 year after the ban	1 year after the ban	5 years after the ban
Fed beef cattle	-0.4%	+3.0%	+0.4%
Hogs	-4.9%	+0.2%	+0.2%
Broilers	-8.3%	+8.4%	+2.9%
Turkeys	-6.1%	+2.1%	+0.5%
Livestock		+2.9%	+0.5%

¹Moderate efficacy assumption.

PROJECTED CHANGES IN CONSUMER PRICE INDEXES AND PER CAPITA CONSUMPTIONS¹

Animal species	First year		Five years later	
	Price	Quantity	Price	Quantity
	<i>percent from baseline</i>			
Beef and veal	+2.7	-0.2	+0.0	+0.4
Pork	+4.5	-4.5	+1.0	-0.9
Poultry				
Broilers		-7.3		-1.6
Turkeys		-5.9		-2.5
Total	+10.3		+2.2	
Total meat, poultry and fish	+3.4	-3.0	+0.5	-0.6

¹Moderate efficacy assumption.

milk, eggs, and lamb would not be measurably affected.

Smaller output results in even greater relative changes in farm prices. Broiler prices would increase by 13 percent, turkeys by about 12 percent, hogs by 5 percent, and fed beef by 4 percent. These price and quantity changes would boost cash receipts for all livestock by 2.9 percent. Cash receipts for broilers would rise by 8 percent, cattle by 3 percent, and turkeys by 2 percent. Hog receipts would remain at about the same level.

Cash receipts for crops would decrease by a little over 1 percent with corn and

soybeans down by 2 percent and feed ingredients down by 3 percent. Overall, net farm income would rise by \$1.2 billion or almost 5 percent.

With higher receipts and lower total feed costs, the profitability of livestock production would improve. Producers would expand output. Five years after the drug prohibitions, output levels would be close to the projected base levels, with broilers and turkeys 2 to 3 percent below. The production adjustment would also move livestock prices close to projected base

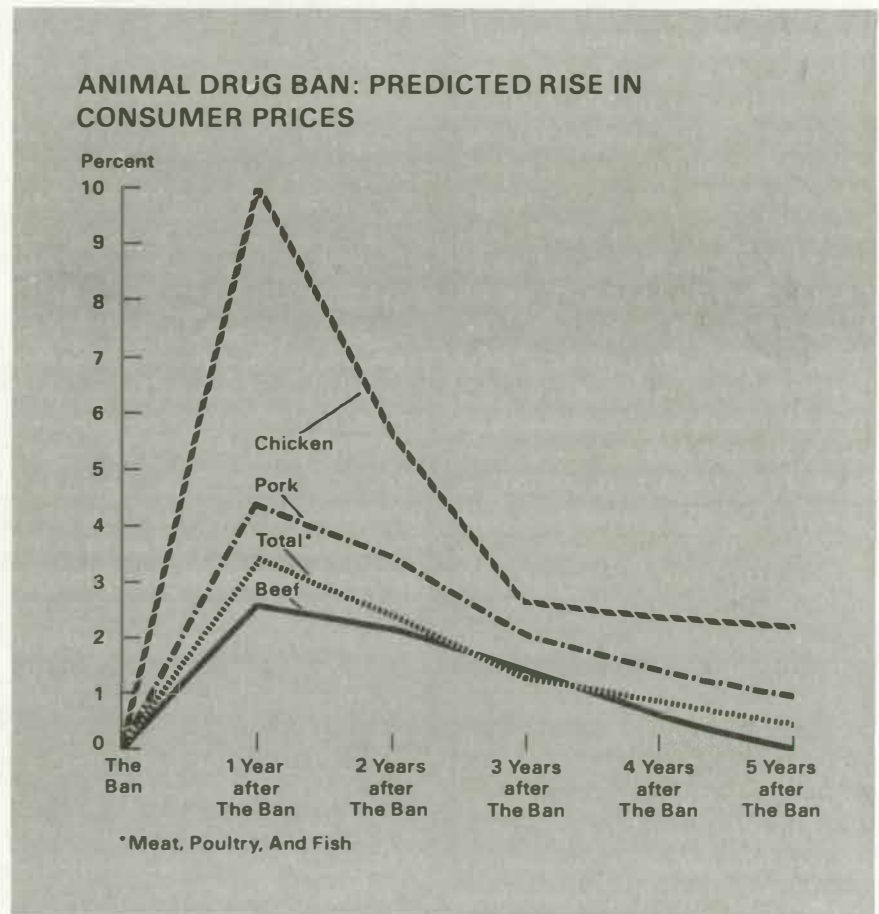
levels along with cash receipts and net farm income. Consequently, the profit incentive would bring both the livestock and crop sectors back close to the projected base values.

Prosperity for agriculture is usually accompanied by higher prices for consumers. Initially, the Consumer Price Index (CPI) for poultry products would increase by 10 percent, pork by 4.5 percent, and beef by almost 3 percent. The overall impact on the food-at-home component of the CPI is 1.2 percent and the effect on the total CPI is an increase of 0.2 percent. Per capita consumption of livestock products could be down by 7 pounds (3 percent). But the reduced supplies and higher prices would likely be of short duration.

After 5 years, per capita consumption of red meat and poultry would be only a little over a pound below the projected base value as a result of increased production. Price indexes would return to about their projected levels. Poultry and pork prices would, however, continue to be above projected levels by 2 and 1 percent, respectively.

Conclusions

While the results of this study must be considered as merely suggestive, they do indicate that the economic system would generally be quite resilient to a more restrictive policy on animal drug use. Costs of production, and therefore consumer prices, would increase initially but because the farm-level demand for most



livestock products is inelastic, farm prices would increase more than proportionally. As a result, total net revenue to farmers would be enhanced initially. The increased profitability would encourage farmers to expand output in subsequent years and by the fifth year following the restriction on animal drug use, production and prices of most affected species would recover to approximately their baseline levels.

These results do not take into account any changes in the structure of production agriculture that might accompany an animal drug ban. Increased risks associated with

feeding poultry and livestock in confinement without the low-level use of animal drugs could make such confinement production systems less viable and change the magnitude of these study results. On the other hand, the effect of changes in management practices that might occur in anticipation of or following the enactment of such rules were not estimated either. Improved sanitation and pasture rotation could reduce the magnitude of even the first-year effects as they are shown here.