

4-29-1992

## Impacts of BST Adoption with Alternative Government Policies; Cattle and Hog Outlook

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### Recommended Citation

Peterson, Donald and Murra, Gene, "Impacts of BST Adoption with Alternative Government Policies; Cattle and Hog Outlook" (1992). *Economics Commentator*. Paper 276.

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# ECONOMICS COMMENTATOR



SOUTH DAKOTA STATE UNIVERSITY

No. 307

April 29, 1992



## IMPACTS OF bST ADOPTION WITH ALTERNATIVE GOVERNMENT POLICIES

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The development of synthetically produced bovine Somatotropin (bST) as a technique to boost milk production has produced much controversy. Most of this has been in the scientific and political arenas, but not many economically sound statements have been published. In December 1991, Oklahoma State University published a summary of an economic study conducted by Derrell Peel.<sup>1</sup> This article is a summary of that publication.

Dr. Peel used a computer model to simulate the impact of milk price support programs on producers, consumers and the taxpayer. The model assumes (1) the use of bST would start in 1991, (2) cows treated with bST will increase their annual production by 1320 pounds, (3) the cost of treatment is \$0.30 per cow per day and cows are treated 150 days per lactation, (4) feed efficiency will improve 5%, (5) total feed costs will increase per cow but decrease 5% per hundred weight (cwt.) of milk and (6) other variable costs will increase proportionally with milk production.

Four government policies were examined: (1) Trigger Support System, (2) Fixed Price Support System with a Dairy Termination Program, (3) Quota System, and (4) Target Price-Deficiency Payment System.

### Trigger Support System

The trigger support program in the model is very similar to what exists for the dairy industry today. The support price begins at \$10.60 per cwt. of milk sold and is adjusted downward whenever government purchases exceed 5 billion pounds, milk equivalent (ME).

The fixed support price holds the price of milk at \$10.60 and the USDA buys  
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## CATTLE AND HOG OUTLOOK

by  
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Fed and feeder cattle prices have been relatively high in 1992, at least compared to expectations. Meanwhile, hog prices have been relatively low, at least compared to last year and compared to the expectations of the more optimistic forecasters. Where are prices of these important South Dakota commodities headed? While there are no guarantees, there are some factors which help answer that question.

### Cattle

Reduced supplies of fed cattle have helped keep prices above \$75 and close to \$80 for most of early 1992. Those reduced supplies are the result of lower placements of cattle on feed during late 1991. While the reduced supply situation won't change overnight, recent placements of cattle on feed point toward larger supplies by early Summer. And, there seems to be enough feeder cattle available for feeding to push supplies even higher late in 1992.

Given the above situation, fed cattle prices likely will slip a few dollars by Summer (meaning prices in the mid-\$70's early and below \$75 by late Summer). That slippage could continue into the Fall, when prices below \$70 are not out of the question.

If the fed cattle picture noted above does indeed become reality, feeder cattle prices also will move lower. It is highly possible that the year's high for both fed and feeder cattle is behind us.

One factor that could further affect feeder cattle prices is the corn market. Unfortunately for feeder cattle producers, that affect likely will be to the down side. If corn prices move higher for whatever reason, feeder cattle prices will move  
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all milk products which do not clear the market at that price.

### Quota System

The quota system gives the government power to fix the number of cows allowed to produce milk. If technology improves production per cow, the producer benefits, but there would be price disincentives to produce over the quota. If there is over-production in year 1, then the number of cows is reduced in year 2. Adjustments would be made by production region. Therefore, if the Pacific region increased production, the number of cows in the Pacific region must be reduced, but not necessarily in other regions.

### Dairy Termination Program

The dairy termination program assumes another "one time" buy-out if government purchases exceed 15 billion pounds in any one year. The milk price support system starts at \$10.60 and is adjusted by a trigger system if government purchases exceed 5 billion pounds in the previous year. Slaughtered dairy cows are added to the non-fed beef supplies.

### Target Price

The target price policy works similar to the current wheat and corn programs. Deficiency payments are made to producers so that the market price plus the deficiency payment adds to the target price. Thus, market price fluctuations allow the market to clear all production.

### RESULTS

With the exception of the deficiency payment program, as the use of bST increases, government policy results in cuts in the support price, dairy cow numbers, or both, to keep annual purchases under 5 billion pounds, ME. This means that by 1998 total milk production will be only slightly higher with bST than without bST, but the farm price will be lower.

The implications of bST adoption depends on the government policy in force at the time of adoption. Production would increase regardless of which program is in force. However, the quota system results in less milk produced relative to the other programs and its rate of increase is the

most uniform, assuming no change in political forces governing the quotas.

The fixed price support program results in the fastest increase in milk production although somewhat more erratic than the quota system. The largest increase in production occurs in 1995 (about the fifth year of production with bST).

The trigger policy, which is similar to what we have now, results in production increasing faster than with the quota system but slower than with the fixed price support system and has the most erratic fluctuations in production of the three. The impact of the target price policy was not reported but can be expected to be similar to the fixed price support.

### IMPACT ON THE GOVERNMENT TREASURY

The different government programs which were studied have varying impacts in the federal treasury. As would be expected, the target price with deficiency payments program is the most expensive. That is followed by the fixed price program. Both the trigger and the quota programs result in lower government costs, but the trigger program requires more time to stabilize supply than does the quota program.

An analysis was conducted to compare the trigger program with the deficiency payment program. The target price was set at \$10.60, the same as the price support. Both programs achieve the same results. However, the target price program is significantly more costly to the taxpayer and only slightly cheaper to the consumer.

With the target price program, deficiency payments will range between \$0.15 & \$1.52 per cwt., averaging \$.75/cwt. from 1991 to 1998 or \$1.44 billion annually. This is 230% greater than maintaining a fixed support price at \$10.60.

The high cost results from the fact that when there is over production of milk, large reductions in price are necessary to clear the market, resulting in large deficiency payments. With the trigger system, the consumers pay full price for whatever is purchased, whereas with the deficiency program, consumers pay only the market clearing price. Also, with the trigger system, prices are lowered to the producer until production is cut back.

## CHANGES IN DEMAND

Although there is no scientific evidence to the contrary, the hype in the popular press about health safety with bST treated cows could result in a decreased demand for dairy products. In the model, a 10% decline in the demand for milk causes milk prices to fall as low as \$8.60 by 1997 before starting to rise. By contrast, a 10% increase in demand causes milk prices to increase to over \$14.00/cwt. for several years before the industry expands enough to meet the increased demand at \$10.60/cwt.

With current government policy, the industry responds about 3 times faster to an increase in demand than a decrease. A decrease in demand also results in annual government expenditures of more than \$1 billion through 1996.

A quota system brings supply in line with demand at \$10.60/cwt. more quickly than other policies since quota allotments would be adjusted by government decree. The trigger policy eventually causes a reduction in supply. However, this is accomplished only with an extended delay while the fixed support price system maintains the highest level of milk production.

Both the fixed support system and quota system keep the farm price at \$10.60/cwt. The trigger and dairy termination programs allow prices to migrate downward under the weight of excessive production. The trigger program allows prices to fall to \$8.60 by 1992, allowing a buy-out that year. Thus, there is no need to reduce the price support before 1993.

## IMPACTS ON OTHER AG. SECTORS

With the adoption of bST there would be a marginal increase in feed needed. However, the mix of feeds would change to meet revised nutritional requirements. The biggest impact is on premium quality hay prices, boosting average hay prices \$1.25 to \$2.50 per ton, depending on policy adopted.

Beef cattle are the most affected of all livestock enterprises. While there should be only small annual price impacts on average, there can be substantial impacts at the extremes. A dairy buy-out program has the biggest impact on beef, pushing 1992 yearling cattle about \$2.50/cwt. lower when compared to a trigger

policy. Cow prices are nearly \$4.00/cwt. lower compared to a trigger policy. A quota system impacts the beef industry about the same as a dairy buy-out program, but has a less negative impact in 1992 while lasting several years longer.

## CONCLUSIONS

Except when a dairy buy-out program is used as a means to control excess production, the adoption of bST by dairy producers is not likely to have any significant impact on other sectors of ag economy.

Government policies, designed to maintain high prices for producers, also maintain high prices for consumers. The least beneficial to the consumer are the quota and fixed price systems. The trigger system allows some decline in milk prices which should translate to lower prices for dairy products. The most beneficial to consumers is the target price with deficiency payments because it results in the lowest dairy product prices. However, it is the most costly to the taxpayer.

The least costly to the taxpayer is the quota system, especially if there is a severe decline in demand. The trigger and fixed price systems lie somewhere between the quota system and deficiency program as far as the taxpayer is concerned.

Which producers survive as the number of cows and dairy operations decrease is a function of the policy in force during the down sizing period. With a quota system in place, some producers will survive by virtue of the institutional arrangement whereas the survival under the trigger system will be determined primarily by economic efficiency.

The choice of dairy program is likely to be significantly influenced by the geographical distribution of milk production. The 1985 and 1990 farm bills have pushed the dairy industry toward supply and demand being controlled by market forces. However, there are still many unresolved issues and new issues are coming from environmental and food safety forces which need to be addressed.

<sup>1</sup> Peel, Derrell, "Impacts of bST Adoption Under Alternative National Dairy Policies, Current Economics, Oklahoma Agricultural Experiment Station, December 1991.

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lower. Even at stable corn prices, feeder cattle prices could be \$10-\$15 below year earlier levels for most of 1992.

#### Hogs

Supply also has been a major player in the hog market. There, larger supplies than a year ago (up about 7% so far in 1992) have kept hog prices in the upper \$30's and low \$40's. Supplies should be lower by mid-Spring and prices could reach the mid-\$40's level, or even the upper \$40's for brief periods.

By late Summer, however, increased supplies once again should pressure prices. Late in 1991, prices slipped to the \$37-38 area. Given that supplies late in 1992 likely will be slightly larger than those in late 1991, prices once again could go well below \$40.

#### Final Comments

One might get the impression that supply has been a key player for both

cattle and hogs thus far in 1992. That is correct. Also, that same impression could be the situation for the rest of 1992. Again, that is correct.

Demand, while always important, probably won't be much different in 1992 compared to 1991. Therefore, changes in quantities supplied play the major role. For both cattle and hogs, increases in supply by this Fall are expected. If that occurs, prices for fed cattle could be below \$70, feeder cattle prices could be \$10 to \$15 or even more below 1991 levels, and hog prices in the \$30s are possible for this Fall and even early in 1993.

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