Milk Prices

How Far Will They Fall?

by Milton C. Hallberg

➢ A reasonable expectation is that the market clearing level of the farm price of milk will continue to decline over the next several years. But if dairy policy is not flexible enough to anticipate such price declines, high government costs for the dairy program will continue. Effective supply control for dairy is one solution, but a solution with several drawbacks. Authority to adjust price supports more rapidly than at present is a more attractive solution.

Neither farmers nor agricultural policymakers will like to contemplate it. But milk prices *will* likely continue to fall at least through the mid-1990s—*whether or not bovine somatotropin (BST) is released and adopted!* Why? There are two reasons. High milk prices relative to feed prices have encouraged a herd buildup that is not quickly liquidated. And, per cow milk yields will likely continue to increase as in the recent past.

Consequently, milk production, at projected support prices under the current Farm Bill, will likely continue to exceed commercial demand over the long term. Ratcheting the milk support price downward continuously, as is permitted under the Food Security Act of 1985, will eventually resolve the problem. However,if done too slowly, this will only delay the inevitable and cause excessive and long term federal budget exposure.

Uncertainties

Given the host of uncertainties that cannot be predicted ahead of time, we don't really know how far prices will fall. As we have learned in the past, the price of feed is most important in the dairy business. If feed prices fall, while the support price for milk remains unchanged, dairy farmers can be expected to respond with more milk. This has happened before and it will happen again if the support price is not adjusted accordingly. Conversely, if feed prices rise in the face of unchanged support prices for milk, total milk production will fall, if not in the short run then certainly in the long run, as dairy farmers assess and take advantage of alternative opportunities.

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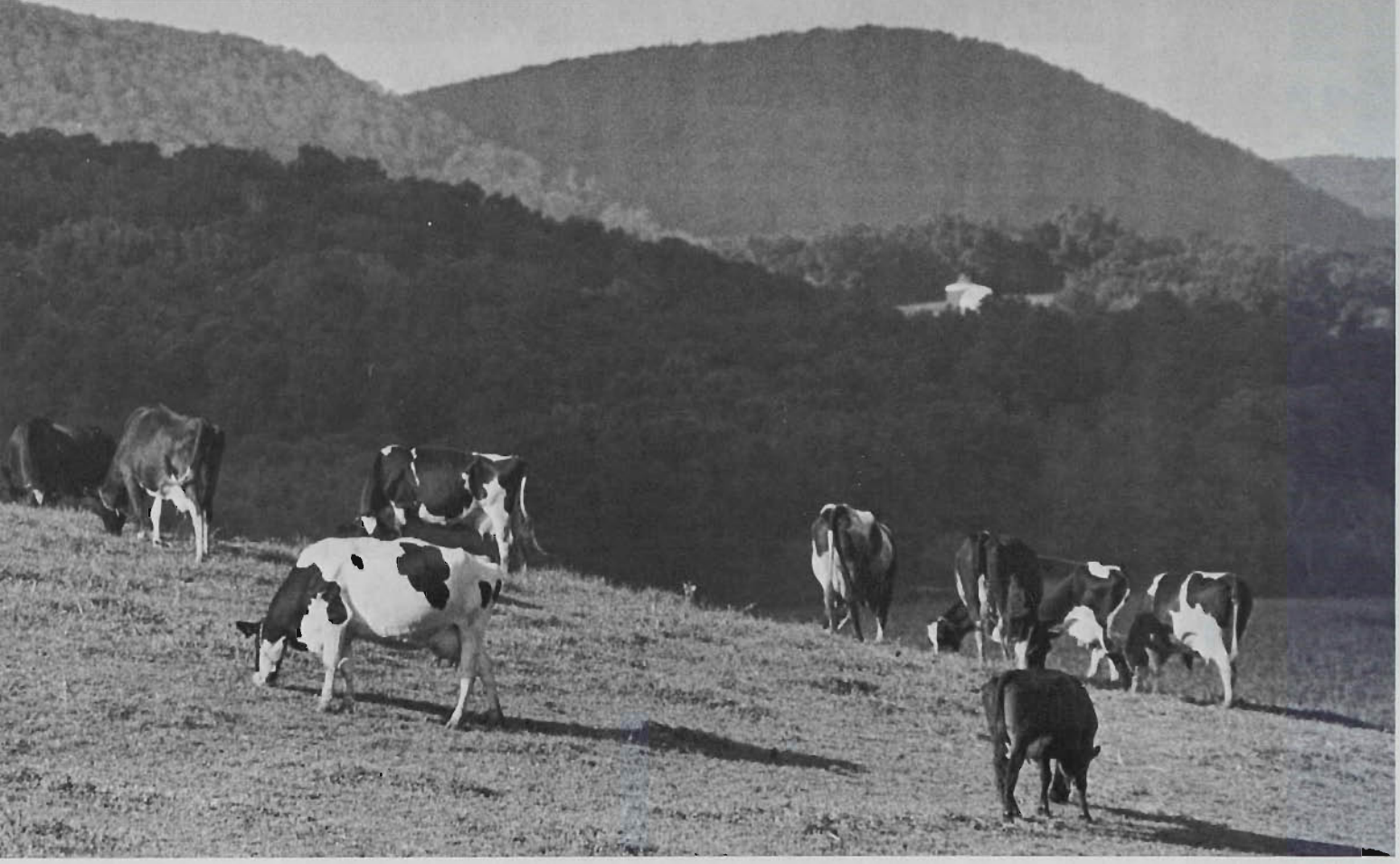
Models are available for predicting the price of feed, but feed prices also depend on many factors that remain unknown—including weather in the United States and abroad, and agricultural policies in the United States and abroad. The future price of vealers is also an important variable in the dairy business, although much less so than is the price of feed. Some researchers consider the price of utility beef to be an important factor in the dairy business. Again, regardless of the precision of our forecasting methods, we cannot expect to predict these prices with great accuracy.

In addition, we don't yet know what will happen on the technology front. This is extremely important for future milk output per cow. But even without BST, a good bet is that per cow milk yields will continue to increase at past rates. Genetics, nutrition, and management ability will continue to improve.

Finally, there is considerable uncertainty in the world market for milk and dairy products. If the current supply-demand imbalance in nonfat dry milk persists, for example, producer prices for milk in the United States could be somewhat higher than those forecast here.

Even though we can't be precise in forecasting the price of milk under different policy scenarios, it is useful to try to do so. Such forecasts facilitate the policy debate and help milk producers make wiser decisions. With this objective in mind, I constructed a rather simple quantitative model for the aggregate U.S. dairy sector. It forecasts (1) the number of dairy herd replacement animals, (2) the national dairy herd culling rate, (3) average milk output per cow, (4) per capita demand for fluid milk, (5) per capita demand for manufacturing milk, and (6) commercial stocks of manufactured dairy products. This model then can be used to determine market clearing prices and quantities into the future.



The price of feed is most important in the dairy business.

Forecasts

To generate an initial set of forecasts for the variables listed above, I postulated the scenario:

- Feed and veal prices will remain at 1988 levels indefinitely;
- Milk output per cow will be partially determined by the price of feed relative to the price of milk, but more importantly, will continue on an upward path consistent with the path observed in the recent past (i.e., grow at a sustained rate of about 1.3 to 1.5 percent per year);
- Exports and imports will be maintained indefinitely at 1988 levels;
- Two billion pounds of milk equivalent per year is the *minimum* level of government removals of dairy products needed to satisfy domestic and foreign food aid programs; and
- Current pricing policies (i.e., those specified by the Food Security Act of 1985) are maintained indefinitely.

Even without BST, a good bet is that per cow milk yields will continue to increase at past rates.

The maintenance of current pricing policies implies that (1) the differential between fluid and manufacturing milk is maintained at 1988 levels, (2) the average support price for milk in 1989 will be $10.73 per hundredweight, and (3) in subsequent years the support price will fall by 50 cents per hundredweight whenever annual government removals reach or exceed five billion pounds of milk equivalent per year and will rise by 50 cents per hundredweight whenever government removals fall below 2.5 billion pounds of milk equivalent per year.

My model indicates that under the above scenario, the all milk wholesale price will fall to $9.25 per hundredweight by 1994 and then gradually increase to $9.75 by 1997. Furthermore, under this scenario, the CCC is projected to remove 45.9 billion pounds of milk equivalent between 1989 and 1995 at a total cost of $4.6 billion. Since I assumed the minimum level of CCC removals to be two billion pounds of milk equivalent per year, the minimum CCC removals through 1995 will be 14 billion pounds. The cost of this minimum amount of removals will be $1.3 billion.

Remember that the fall of prices to $9.25 is expected even without BST being released. But now let us assume BST is released in 1990 and fairly rapidly adopted by the majority of dairy farmers, and that BST ultimately results in an average increase in output per cow for the national dairy herd of 5.5 percent (a somewhat conservative estimate of the response to BST in comparison to the expectations of some researchers and private companies). Under this assumption and also assuming continuation of current policy, my model suggests the all milk wholesale price will bottom out at $7.77 by 1997. This is over $2 below the $9.95 expected in 1997 without effects of BST. The all milk wholesale price will not again increase to $9 per hundredweight until well into the 21st century. In this case, the CCC will be required to remove 93.2 billion pounds of milk equivalent between 1989 and 1995 at a total cost of $8.8 billion.

Are There Alternatives?

Removal of Fluid/Manufacturing Price Differential—One alternative to existing policy is to eliminate the differential between the price of milk used to produce different dairy products (i.e., between milk used for fluid and for manufactured products). This is what we would expect to see in a perfectly competitive market. Some people advocate this approach because prices would then more nearly represent the value of milk produced beyond that

needed for commercial purposes, and would not be set at the higher "blend" price established by Federal Orders. In assessing this option I retained the remaining features of current law and assumed that BST is not released.

My model suggests that under this option CCC expenditures used to remove surpluses over the 1989-95 period would still be close to $4 billion. Therefore, this alternative is only marginally successful in discouraging overproduction.

Supply Control—Supply control can be implemented in a variety of ways. Suppose a law is passed which implements marketing quotas, and prevents the CCC from removing any more than the assumed requisite two billion pounds of milk equivalent annually. Suppose further this law requires that beginning in 1990 the price of milk will never again fall! (More realistically, one might expect the farm price to be indexed by law to feed prices or to parity prices for milk as the Harkin-Gephardt Bill of 1987 would have required.) Finally, suppose BST is not released.

Under this scenario, my model indicates that the all milk wholesale price would be $11.68 per hundredweight in 1990 (and as far into the future thereafter as one can reasonably see). Total 1990 milk production would be 139 billion pounds. With continued increases in cow efficiency resulting in average production of 15,265 pounds per cow in 1995, this means that only 9,111 thousand cows would be needed in the national herd in 1995. In contrast, under current law (that is, no supply control) and still assuming BST is not released, there would be 9,968 thousand cows in the national herd in 1995. Thus, with milk prices between $11 and $12, U.S. dairy farmers collectively would need to reduce the number of cows milked by 9 percent. With supply controls there is no way to avoid issues related to which farmers would reduce their herds and which would exit the dairy business.

Price Banding—Still another alternative would be to permit support prices to drop much faster than they will under the 1985 Farm Bill. In particular, let us assume the support price, beginning in 1990, is set so that the market clears. Two additional assumptions are made: (1) the government still requires two billion pounds of milk annually to satisfy its food aid programs, and (2) the price of all milk wholesale does not fall by more than 10 percent from one year to the next. This policy would permit prices to fall much more rapidly than under current policy even though in some years the 10 percent limit would be called into play.

Under this scenario, the all milk wholesale price would fall to $10.24 per hundredweight in 1990, to $9.36 in 1991 and then slowly climb back up to $9.74 in the year 2000. In this case, the CCC removes 31.4 billion pounds of milk equivalent between 1989 and 1995 at a cost of $3.0 billion. Thus, with this policy, prices fall much more rapidly than under current law, farmers are encouraged to adjust their cow numbers downward, and there is a smaller federal price tag attached to the program.

Again, we looked at the effects of BST and supposed it was released in 1990. In this case all milk wholesale price falls to $10.13 per hundredweight by 1990, to $9.13 per hundredweight by 1991, and to $7.59 per hundredweight by 1993, before climbing back up to around $9.00 per hundredweight by the year 2000. Here the CCC will be required to remove 54.6 billion pounds of milk equivalent between 1989 and 1995 at a cost of $5.0 billion. Pretty expensive, but much less than would be the case under current law!

Consequences of Policy Alternatives on the U.S. Dairy Industry

	Policy Options*			
	Current law	No Price differential	Supply control	Price banding
Number of cows in 1995 (thou)	9,968	9,920	9,111	9,922
Output per cow in 1995 (lbs)	14,981	14,982	15,265	14,982
Milk prices ($cwt):				
Support prices, 1995	$8.73	$9.25	—	—
All milk wholesale, 1995	$9.25	$9.25	$11.68	$9.30
All milk wholesale, minimum	$9.25	$9.23	$10.68	$9.21
Year of minimum	1994	1993	1989	1992
Government removals:				
Billion lbs., 1989-95	45.9	39.1	14.0	31.4
$ billion, 1989-95	$4.6	$3.9	$1.5	$3.0

*Assuming BST is *not* released.

A detailed description of the model from which these results were generated is available from the author on request. Please write to: Milton C. Hallberg, Professor of Agricultural Economics, The Pennsylvania State University, University Park, PA 16802.

So What?

When one explicitly includes elements of uncertainty in the model, it becomes clear that making precise statements about what will happen to milk prices is hazardous business. Model results reveal some slight probability, for example, that under current law and without BST the all milk wholesale price in the mid 1990s could be as low as $8.25 per hundredweight or as high as $12.00 per hundredweight. The most likely range, though, is between $8.50 per hundredweight and $10.50 per hundredweight.

The important point of this story is that, under either free market conditions *or* under current policy, the expected path of equilibrium milk prices for the next few years is downward. If feed prices fall below 1988 levels, milk prices could fall even further than indicated by these estimates, and 1989-95 CCC removals of dairy products can be expected to increase as dairy farmers respond with increased output. Of course, if feed prices rise above the levels assumed here, we can expect the opposite result. It would take unprecedented feed price increases, however, to cause milk prices to rise above 1989 price levels.

Consequently, if the new farm bill maintains current dairy policy the costs of the dairy program over the next seven years could be substantial.

On the other hand, if high budget costs are politically unacceptable, more rapidly falling price supports may be needed to lower budget costs. Budgetary costs can also be reduced via a marketing quota program that maintains high farm prices on a restricted level of milk marketings. However, these restrictions could induce traumatic structural changes in the dairy industry. While the federal costs might be lower, consumer milk costs would be higher by roughly the same amount.