Using production costs to figure price supports

THE U.S. DEPARTMENT OF AGRICULTURE ESTIMATES OF THE COST OF PRODUCING MILK

Description of studies and procedures

The most comprehensive recent estimates of the cost of producing milk have been published annually by the U.S. Department of Agriculture since 1974 (1, 2, 3, 4, and 5). The first report, pertaining to the year 1974, was based on a national survey of dairy farms. The succeeding final reports for 1975, 1976, 1977, and 1978, the preliminary 1979, and the projected 1980 estimates used the 1974 study as the base structural situation. Costs and returns were updated using a set of estimating procedures referred to as the firm enterprise data system (FEDS) (7). In 1980 a national survey was conducted pertaining to the year 1979 to establish a new base for estimates that are to be made in succeeding years.

Recognition of the several different procedures that might be followed in estimating the cost of producing milk, and of the different assumptions that might be made with respect to several key components of costs and returns, are presented in the U.S. Department of Agriculture cost of production (USDA-COP) series. Several changes were made in those procedures during the 1974 through 1979 period. In the report for 1974, four basic estimates of the cost of producing milk were developed:

(1) Feed at cost of production; land at acquisition cost

(2) Feed at cost of production; land at current value for agricultural purposes

(3) Feed at prices received by farmers; land at acquisition cost

(4) Feed at prices received by farmers; land at current value for agricultural purposes.

The estimates of the cost of producing 100 pounds of milk that resulted from each of the four sets of assumptions above are shown in the following table. The range of these estimates is $1.34, and clearly illustrates the effect that a simple choice of assumptions can have on the computed cost of producing milk.

Estimates of the cost of producing milk, 1974 USDA survey (1)

Land	Feed: At cost of production	Feed: At prices received by farmers
	(dollars per hundredweight)	
At acquisition cost	$8 58	$9 45
At current agricultural value	$9 05	$9 92

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Included in all the 1974 estimates was the "milk equivalent" of dairy cattle and calves that were sold during the year. To arrive at such a figure, receipts from the sale of dairy cattle and calves were divided by the price received by the farmer for milk sold off the farm. Then total hundredweights of milk, for purposes of computing the various costs per hundredweight, was the sum of milk sold, milk consumed on the farm, and the milk equivalent of dairy cattle and calves that were sold. It was deemed too difficult to separate the costs associated with creating the meat of those dairy cattle and calves from other dairy enterprise costs. The implication of the proceduce used was that the production of such meat was no more nor less profitable than the production of milk.

In the reports following the one for 1974, the results of only one of the four alternative combinations of assumptions shown in the table were provided. These are the ones that incorporate feed costs at prices received by farmers and land at its current value for agricultural purposes. As shown in the table, this combination in 1974 yeilded the highest estimate of the cost of producing milk. Feed prices have fluctuated quite widely in recent years, and there have been times when cost of production (COP) based on prices received by farmers might have been lower than COP based on cost of producing feed. Nevertheless, the normal expectation is to the contrary, or else dairy farmers would be expected to buy all their feed. The rationale for dropping the alternative of including homegrown feeds at their cost of production is that ". . . the dairy enterprise must pay its own way, that it should not be supplemented by other enterprises to make it profitable" (3, page 3). The reports do not seem to reveal the reason for dropping the alternative of including land at its acquisition cost, however.

Another change

One other important change has been made in the USDA-COP series since 1974. This showed up for the first time in the 1979 report, and concerns the way the value of sales of cull cows and veal calves is incorporated into cost estimates. How it was handled earlier was mentined above. In the 1979 and succeeding reports, the value of such sales was not subtracted out of the dairy enterprise costs until after the per hundredweight costs of the different items were computed. This had the effect of increasing the 1979 and succeeding estimates of per hundredweight costs above what they would have been had the method of handling the value of sales of cull cows and veal calves prior to 1979 continues to be used.

Critique of the USDA-COP studies

The general approach of the USDA-COP studies is enterprise, rather than whole farm. That is, only the costs and returns that are specifically assignable or attributable to the dairy herd are included in the computations. It is doubtful this can be done with a high degree of accuracy with the resources that are committed to the effort on a national basis. Furthermore, the notion that ". . . the dairy enterprise must pay its own way, that it should not be supplemented by other enterprises to make it profitable" might create a potential for bias and loss of realism that must be recognized. The general reasons for possible upward bias in estimates of costs were noted earlier in this report. The tendency under the USDA enterprise approach may be to "load" the dairy enterprise with such a heavy share of farm costs that the apparent profits to any other enterprises present are overstated. These "profits" might be so high, in fact, that one could wonder why any milk is produced at all.

The loss of realism that arises out of the assumption that the dairy enterprise must "pay its own way" is that although most milk is produced on multiple-enterprise farms, those other enterprises are usually meant to complement, not compete with, the dairy enterprise. The benefits of such complementarity should be shared among enterprises, not ascribed to all of them except milk production. If one is interested in explaining why there is as much milk produced as there is, one must look at milk production in the setting in which it is actually carried out, not at an abstraction from that setting. In other words, the focus of cost of production estimates should be on what it costs to produce milk as it produced, not on what it would cost if it were all produced on single enterprise dairy farms.

What about those farms that produce some milk but on which the dairy enterprise is not the major one? A criterion for level of specialization can be established that will screen out such farms from inclusion in cost of production surveys. This would have little effect on the representativeness of the farm sample because so much of the milk in the United States is produced on very highly specialized dairy farms. For the farms that meet the test of specialized dairy farms. For the farms that meet the test of specialization, the whole farm approach to estimating cost of production which incorporates the porportioned treatment of sideline revenues is recommended. This is probably the least expensive and most accurate way of estimating the cost of producing milk. It does lack the detail that the enterprise approach demands. But when the resources necessary to appropriately carry out the enterprise approach are inadequate, the accuracy of such detail must be questioned.

In the opinion of this writer, the USDA-COP studies have other shortcomings in addition to the one of their basic approach. The more critical or bothersome of these are discussed immediately below.

Home grown feeds

Home grown feeds, except pasture, that are fed to the dairy herd are charged in at the price they could have received had they been sold in the market. The costs of producing all feeds are meant to be separated from other farm costs and deducted from total costs. Thus, the revenues that are obtained from any feeds that are sold are not further accounted for.

An alternative to the approach taken by the USDA is to implicitly charge home grown feeds at the cost of producing those feeds. This is accomplished by taking the the "whole farm" approach in computing cost of production and handling sales of surplus home grown feeds as proportioned sideline revenue.

Again, for emphasis, the preference of this writer is to estimate the cost of producing milk as it is actually produced in any geographic area of interest. The use of synthetic or engineered milking enterprises using some assumed set of "benchmark" practices may not adequately portray the real world. Any change that takes place in the dairy industry must begin with the current base that has been established over many years. Change is an evolutionary process, and wholesale leaps from the actual to some assumed ideal rarely take place.

Incidentally, few workers have ever suggested that the cost of raising dairy herd replacements be separated out from the costs associated with the milking herd. Yet, to carry the notion that the milking herd should pay its own way to the ultimate, costs and returns to the herd replacement activity should be separated from those of the milk producing activity.

Land costs

land costs are included in the USDA studies based on the farmer respondent's estimate of the value of that land for agricultural purposes. The alternative of valuing land at cost when acquired was deleted from the estimates early in the COP series. Valuing land at its opportunity costs in its highest valued alternative use, presumably for urban or industrial development, has never been incorporated in the USDA-COP estimates.

Placing a proper value on land so that an appropriate cost can be assigned to the dairy enterprise has already been asserted to be both difficult and important. The only time one really knows what land is worth for any purpose is when it is sold — and there are very few whole dairy farms that change hands in any given area in any given year. More commonly, one existing dairy farmer will buy an adjoining farm or parcel of land, and integrate that land into his present operation without actually creating a new or additional dairy enterprise.

Unless a farm has been in the same family for several generations, valuing land at cost of acquisition is at least based on a known figure. Most other methods of valuing land are merely estimates or judgements of the value of the land if it were to be sold for agricultural or other purposes. An exception to these latter methods would be the use of net rental rates for establishing land costs. Whatever rent farmland brings in agricultural uses could be used as the cost of land. A fairly active rental market is required to establish good estimates, but the use of farmland rents to establish land costs has a great deal of merit, in light of the alternatives available.

Economists are advocates of the opportunity cost concept of valuing equity assets. That is, the cost of these assets to an enterprise is what those assets could earn in their best alternative employment. Supposedly, the owner of such assets will not keep them in any use that pays less than they could earn in another use — at least not for very long. Yet, if the opportunity cost concept did prevail, given the ways costs and returns to dairying have usually been figured, there would be little or no milk produced in the United States today at all. With the primary exception of the USDA-COP studies for the years 1977 and later, the computed average costs of producing milk have almost always been greater than the computed average prices received for milk, and often by rather large amounts. What this probably means, most realistically, is that opportunity costs haven't been figured correctly. Other factors enter in, but we have trouble

(Turn to Page D19)