

Underlying Economic Forces in Changing  
Milk Marketing Systems<sup>1/</sup>

It has been observed that in any society, there is one group of people that makes things happen; there is a second group that watches things happen; and finally there is a third group that wonders, "What happened?" The program committee, in its wisdom, has placed me in this third group and asked me to develop the question, "What happened?" More specifically, these next few minutes will be geared to identifying basic forces that have changed the structure of the milk market and, at the same time, raising the question of whether or not price determination has kept pace with these changes.

I think it's reasonable to assume that all of us ultimately have a mutual interest in the level of consumer prices for milk and dairy products. While producer interests will push for high producer prices, they will back off this pursuit when there is a significant interference with commercial sales. While consumers may be pushing for low retail prices, they would be unwilling to see prices drop to a point that interfered with the availability of product. And while processing-distributing interests may be pushing for favorable returns on investment, they are not interested in price strategies that would interfere with their procurement on the one side or their market share on the other side.

Cost Allocations of Retail Price

As we spend a couple of days here searching for possible imperfections in the total milk pricing systems, I think it would be worthwhile to take a couple of products at the outset, fluid milk and cheese, and gain a perspective relative to the cost elements or value added in the total consumer prices of these products. It would be useful to do this because much of this

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program's emphasis is apparently directed at producer pricing. I would want us only to be reminded that the producer price for milk and dairy products is only one part of the final retail price.

Table 1. Estimated Cost Allocations of the Retail Price for Fluid Milk and Cheese, U. S., 1976<sup>2/</sup>

<u>Marketing Function</u>	<u>Whole Milk, ½ Gal. Sold in Stores</u>	<u>Processed American Cheese, ½ Lb.</u>
Farm Value	41 cents	35 cents
Procurement	3	4
Processing	13	14
Wholesaling (delivery, selling)	16	15
Retailing (in store markup)	<u>9</u>	<u>18</u>
Retail Price	82 cents	86 cents

2/ Approximations based on earlier margin studies.

The primary point of the information included in Table 1 is that about one-half of the consumer price for fluid milk is explained by the producer price, and only about 40 percent of the consumer price for cheese is explained by the producer price. As we consider the total value of product, the marketing margin with all of its costs components, and especially labor, deserves as much scrutiny as does the producer price (farmer's share).

#### Pricing Producer Milk

The milk industry has a pricing system because the market would not work without a pricing system. The milk industry's pricing system is unique--it is complicated. The system we have is there by design and not by accident. And the design has been rational and responsible. The system has not been put together by collusion or in smoke filled rooms. Furthermore, the system has passed the pragmatic test - it has worked. It has worked broadly in the sense of responding to objectives such as (1) generating adequate supplies of quality milk,

(2) compensating with reasonable returns the various economic units within the industry that have attained competitive performance standards, and  
(3) providing quality milk and dairy products to consumers at prices that have approximated and often trailed the prices of other goods and services in the economy.

We are reviewing this pricing system today because we are wondering if it might even perform better. To the extent that we have different objectives in mind that the pricing system should achieve, we will have different conclusions regarding its performance. Hopefully, this conference will bring us all closer together on what should be the objectives of milk pricing and what pricing procedures might best realize those objectives.

Why do we have the milk pricing system that we have? I don't want to get bogged down in the language of the 1920's and 1930's to rationalize a milk pricing system that we have in 1976. Yet, the system we have today is clearly a creature of evolution. But whether it's 1976, or 1937, or 1922, we start with a product to be priced. And that product, raw milk, is not essentially different today from what it was a half century ago. My point is that there are attributes of raw milk that were essential inducements to the kind of pricing system we have. And these attributes are as real today as they always have been. And so before we talk about economic forces, it is worth noting four attributes of producer milk.

1. It is highly perishable.
2. It is subject to substantial seasonal swings in production and consumption.
3. It is harvested-marketed-shipped on a daily basis from the dairy farm.
4. It is converted into numerous products that have different market values, different processing costs, and different transfer costs.

It scares me to throw these attributes at you because you've all seen them so many times that they no longer become real. They can't pass the "so what" test. But if you're a dairy farm family in 1976, with a \$300,000 investment in your hands, and creditors after you on a monthly basis, those attributes of the product you are marketing that make you more vulnerable are fundamental. In a seller-buyer relationship, you can only be a price-taker. The product is there, in the bulk tank, and it's going to have to move soon (a) because it will spoil and (b) because there's another milking in 8 hours that's going to have to flow into that same tank. Furthermore, your tank is going to have to be pretty full in the fall because fluid sales in the market are strong, and it will be even fuller in the spring flush, even as fluid sales are dropping substantially. So, as an individual milk producer, you are caught, and in the absence of marketing mechanisms that will provide some price assurance, you passively take prices until you are depreciated out. Furthermore, you are not going to absorb any more hauling costs on that milk than you have to--which means that you'll concentrate the milk out at country plants into butter, powder, and cheese unless you can get a higher price for the raw product that you ship into metropolitan areas for fluid purposes. And so the marketing mechanisms were born - cooperatives, Federal market orders, price supports. But the uniqueness of milk in terms of its attributes was fundamental to the creation of these institutions. And these product attributes are no different today for the producer shipping 3,000 pounds of milk than they were that day 50 years ago for the producer shipping 3 cans of milk. I'd simply say that as a foundation, the attributes of producer milk have pressed upon us the need for terms that were coined such as orderly marketing and price stability, and for programs that were created to achieve these purposes. I hope that such terms do not become sterile simply because we forget how vulnerable milk is as a product.

Changes in the Milk Industry

To talk about the underlying economic forces changing the milk marketing system assumes that we are all acquainted with the significant changes in the milk marketing system. It would be pointless for me to detail these changes that have occurred and continue to occur other than to mention some of the more important phenomena: (1) relatively stable total production, (2) decreasing dairy farm numbers, (3) increasing herd size, (4) decreasing cow numbers, (5) increasing production per cow, (6) regional production adjustments related to population change, (7) continued conversion toward an all Grade A industry, (8) increased size and effectiveness of dairy cooperatives, (9) further consolidation of Federal order markets, (10) decreased number and increased capacity of both fluid and manufactured dairy product plant operations, (11) further expansion of distribution areas, (12) further decreases in home delivery, (13) continued slippage in market share by national dairy companies, (14) further vertical integration by supermarket chains, (15) further retreat in some milk price regulations, especially at the State level, (16) increased EPA overview at the production and processing levels, (17) continued assault by various imitation dairy products, (18) per capita consumption levels that will show some stability, (19) increased public scrutiny of dairy institutions, and for number (20) continued reliance on cwt. - butterfat pricing in a classified pricing context.

So there's a list of 20 changes or factors, and that's just a start. Is there anything common among these changes in terms of economic forces that influence them? To nobody's surprise, I am sure, one can abstract to that point where we can see a fundamental relationship between economics and technology that is relatively all encompassing across the changes. We

can articulate that relationship in a number of ways - it is interdependent, it is symbiotic, it is endogenous. In the same way that we can wonder which came first, the chicken or the egg, we can wonder which has lead the way - technology or economics. Has technological innovation forced economic changes on the milk marketing system. Or has economics in terms of profit maximization, cost minimization, or, more fundamentally - survival - forced technological change? Fortunately, we can answer both questions with a yes and feel good about it because, after all, that is how an economic system such as ours is supposed to operate. At the same time, in the process of growth, progress, and adjustment, we see consequences that are both positive and negative. We see gains in efficiency at the same time that we see gains in economic power. And while we may want efficiency, we react negatively to economic power - at least when the other guy has it.

As we consider the general impact of economic forces (including technology) on our milk marketing system, let us direct ourselves more specifically, if briefly, to the forces that have changed the structure of various interest groups within the dairy industry.

1. Dairy Farm Production Unit - As a preface to any comment about the impact of economic forces on the dairy farm, we should recognize initially that, across our society, there is a strong sense of needing or wanting to preserve the family farm. We may keep re-defining various dimensions of the family farm as economic forces push size, but we continue to feel that agriculture should be characterized by units owned and operated on a family basis and dependent to a greater or lesser degree on family labor. While agriculture almost by definition promotes the family farm ideal, it is true also that the most severe critics of farm price-income policies simultaneously proclaim the exigency of the family farm.

Meanwhile, the impact of economic forces on the structure of dairy farming has been remarkable. If we had predicted such changes, we would have been labelled as eccentrics; and in hindsight, it is difficult to grasp the implications of the change. In the few short years from 1950 to 1969, the Census tells us that the number of commercial dairy farms decreased from 602,000 to 261,000, and today we are probably talking about 225,000 commercial dairy farms. Average herd size more than doubled during the period and averages about 50 cows today. Estimated production per cow of 10,840 pounds in 1976 is two times what it was as recently as 1952. And the economic forces were there - artificial insemination, improved animal nutrition, and major substitution of capital for labor, from bulk tanks through automatic take-off devices. The burden was on the dairy farmer to keep up or get ahead. The new emphasis was on management - and we are still finding out who can manage and who can't manage. Costs were up for some more than others, but prices were made on the average. And terms such as cost-price squeeze were born.

As a result, policies were enunciated for the dairy industry that attempted to blunt the impact of the economic forces. The problem was economic and social. The market was brutal. The intent was to reduce some of the impact of the market - to move towards some kind of price stability - to give the family farm some kind of chance. The institutions that were created including cooperatives, market orders, and price supports were intended to affect the market, presumably for greater ends. The hypothesis is that dairy farming would be much more concentrated today in the absence of such institutions. But now we see some reaction to these institutions.

Economic forces changed the milk production and marketing system in a way that brought these institutions into being. The same forces continue to be upon us. We are left with two questions. One - are the objectives of commercial agricultural policy and its reference to the family farm

the same as they have been for these several decades? Two - are the means - the pricing institutions - effectuating these objectives in ways that continue to be in the general interest of our society. It's very easy to be critical of the price making process and of the institutions by looking at the minus factors - and there are some. It's another thing to look at the issue in a total perspective and weigh the benefits and costs relative to some over-riding objectives in our society. There is no basis for projecting any slackening in the changes that economic forces will continue to have upon the structure of dairy farming. Is our milk pricing system flexible enough - dynamic enough - to continue to accommodate these changes?

2. Milk Processing-Distributing Structure - Economic forces have affected the milk processing-distributing industry (ies) in a way comparable to the impact on dairy farming. We can see an industry that has leaped from the glass quart bottling machine that made its slow rotation just a few short years ago to the whirling gallon paper and plastic fillers of today on assembly line status. The industry has moved from vat pasteurization to HTST processes to new sterilization techniques. And all of the 'shuns' are there - clarification, standardization, pasteurization, vacreation, fortification, homogenization, etc. In manufacturing, the continuous churn and the big multi-vat cheese operations became common. Distribution of manufactured dairy products also changed, and the by-passing of the central-terminal butter and cheese markets raised new questions about the integrity and relevance of price determination for these products. Furthermore, fluid milk, whether bulk or packaged, became mobile. The single service container suddenly opened the door to expanded distribution areas. We didn't have to send that glass bottle back to the plant anymore to be washed and filled again. We didn't have to ice down cases of milk any more as large capacity



refrigerated trucks came into the picture. A new interstate highway system complemented the other changes. From isolated local markets, distribution systems for fluid milk began to reflect radiuses of 200, 300, and 400 miles. The automation, the substitution of capital for labor, represented huge investments that required large volumes to reduce unit production costs. Economies of size for fluid plants shifted from 10,000 quarts a day to 40,000 quarts a day to over 100,000 quarts a day. And today we see specialized fluid milk operations - the so-called 'white' milk plants - that will process and ship 300,000 gallons of milk in a single day. The impact of these economic forces on structure became obvious. The 1973 report of the Federal Trade Commission reported that the number of fluid milk processor-distributors in the U. S. declined from 8,392 in 1948 to 3,920 in 1965, and it is estimated that there are about 1,800 today.

While concentration was occurring in plant numbers and size, the overt concern has been with horizontal combination or the multi-plant operations of national dairy companies. The accumulation of substantial amounts of market power, as defined by market share, became an FTC no-no in the fluid milk industry, and merger moratoriums were implemented. In the same way that we have pushed to keep smaller units of production in operation at the farm level, we have pushed to keep large units of processing from dominance at the market level. The FTC policy, for better or worse, has been fairly effective. Share of the market of the 4 largest national dairy companies - Borden, Kraftco, Beatrice and Foremost - dropped from a peak of 22 percent in 1957 to 19 percent by 1970. Meanwhile, market shares of the so-called middle-tier have increased.

The milk marketing system at the processor-distributor level has changed and continues to change. Economics and technology are the basis of this change, and we honor most of the adjustments for the efficiencies that are generated. Neither returns on investment nor profits on the sales

dollar can lead us to conclude that there are any general abuses of the market process. We can assume the continued impact of economics and technology. Our public policy question for the future concerns the form that further application of the Clayton Act should take as a device to maintain competition in the fluid milk processing industry.

3. Food Retailing Structure - We cannot consider changes in the milk marketing system without considering changes in food retailing. This is because most fluid milk and dairy products today are sold out of food stores, and particularly supermarkets. Home delivery of fluid milk which accounted for 70 percent of milk sales in the 1930's, is almost a footnote in history. Close to 70 percent of all fluid milk products currently are sold through food stores, approximately 10 percent home delivery, and the remainder sold on a wholesale basis to restaurants, schools, hospitals and factories.

In the food stores, the supermarkets, which are stores with over \$1 million annual sales, dominate. In 1975, supermarkets accounted for only 16.5 percent of the 192,000 food stores in the U. S., but they made 72.4 percent of the sales. Furthermore, supermarket chains, which are defined as 11 or more supermarkets under a single control, accounted for 45 percent of all food store sales, and are the dominant institution in the food store industry.

At least in fluid milk, the shift in market power from the processor-distributor to the supermarket chain has been both obvious and remarkable. There are at least three dimensions to this shift. The food chains represent large volume accounts that can influence the terms of trade in procuring packaged milk by (1) determining which brands they want, including their own private label which dominates, (2) allocating shelf

space among brands as they choose, and (3) establishing price differentials among brands of fluid milk as they choose including price leader-loss leader strategies when appropriate. Furthermore, the food chain can go beyond these dimensions and vertically integrate back into fluid milk processing. Close to 20 percent of the Class I milk in the U. S. today is processed in plants operated by food chains. In our No. 1 population state, California, approximately 50 percent of the off premise wholesale sales of fluid milk are processed in vertically integrated processing plants.

The changes in the food store industry go to the same economic-technological advances characterizing milk production and processing-distribution. Consumers had cars and weren't locked into their neighborhood mom and pop store. Shopping centers emerged with complementary shopping in food stores, department stores, and everything else. Procurement of large volumes for multi-store operations meant reduced costs which could be passed on to consumers and induce more customers. Distribution center operations became automated from accounting to palleting to inventory controls. Food stores capitalized on the same transportation advances that milk processor-distributors adopted.

And so the consumer - the ultimate beneficiary (or victim) of all of the economic forces - shows up at the food store to purchase milk and dairy products that have undergone as much economic-technological change as the industry itself. Whether its fortified lowfat milk, or smoked cheese, or instantized nonfat dry milk, or frozen yogurt, the consumer has continuing access to quality product. Has the costing-pricing of that product been an exploitation of the consumer, or a benefit and if so, where and to what degree?

4. Fluid Milk Markets - As a function of the changes across the rest of the milk industry, the traditional ideas of what constituted a fluid milk market have also had to change. At least three institutions were

affected directly - health departments, Federal market orders, and dairy cooperatives. In particular, the new mobility of both bulk and packaged milk extended market areas. Health departments were challenged and had to forego much if not all of their historic trade barrier philosophy to milk inspection.

Federal market orders have consistently directed themselves to regulate a market area in which many of the same processors are competing for the sale of packaged milk. Expanded distribution areas brought historically separate fluid milk markets together and resulted in formal consolidations. From 83 Federal order markets in 1962, we have seen consolidations that give us 50 Federal order markets today, and further merger is a foregone conclusion. Economics and technology in distribution, and in procurement, are the central elements in the Federal order consolidations.

Similarly, dairy cooperatives have had to face the same adjustment. Historically, individual cooperatives were organized around isolated local fluid milk markets. But the changing industry put them in the position of the midget at the nudist camp. Every time he turned around he was sticking his nose into somebody else's business. And so it was with coops, with overlapping memberships, local handlers moving packaged milk into the markets of sister cooperatives, and local sales becoming subject to out-of-town bids. As matters of efficiency and effectiveness, the coops moved into merger and federation organizations largely as a function of the economic-technological changes occurring in the marketing of milk.

Dairy cooperatives address themselves to three central objectives: (1) guaranteeing their members a market, (2) bargaining for the best price terms possible, and (3) marketing milk as efficiently as possible. In pursuing these objectives in an industry subject to the total economic-technological change that we have only glimpsed, the cooperatives

have grown through merger, taken on substantial marketing function responsibilities in supply equalization and pricing, and have become a significant focal point of market power. Beyond this, an estimated 10 percent of the Class I milk in the U. S. is currently processed and marketed by cooperatives.

Fundamentally, the same economic forces that have changed dairy farms, processor-distributors, and food stores have also changed markets. We have moved from local markets to regional markets that have national vibrations. We are neither at the beginning of this change nor the end of this change. The continuing interaction of economics and technology will give us a milk marketing system that is as different 15 years from now as the industry today differs from what it was 30 years ago.

#### Conclusion

The bottom line says that we have a milk pricing system that has made changes and has not made changes. Price levels have moved responsively and in the long run have approximated a supply-demand equilibrium. Market-wide pools have replaced individual handler pools. Milkfat represents a substantially lower proportion of the value of product as compared to SNF-skim milk. Class III prices reflect a much higher fraction of Class I prices than they once did. Price barriers to inter-market shipments of milk largely have disappeared.

But some things are relatively constant. Milk is still very perishable. Milk is still produced daily and is subject to wide swings in production and sales. Milk is still made into a host of products, and the bulkiness of fluid milk in particular means high transport costs that must be covered by price. A substantial manufacturing grade milk industry continues to mean that excess supplies of Grade A milk must be priced at manufacturing levels to assure market outlets. And as matters of national policy, we continue to recognize the family dairy farm and direct programs to it intended to

offer some kind of market stability. Economics and technology have re-structured the milk industry. My own observation is that the pricing system has done a reasonable job of moving with this change, and its performance on balance merits good marks.