FACTORS AFFECTING PRODUCER BARGAINING POWER IN SOUTHERN FLUID MILK MARKETS

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Dairy farmers in the South have become increasingly interested in gaining a stronger bargaining position in the market arena for the purpose of obtaining a more favorable price for their milk. They have implemented this objective by organizing cooperative associations. Cooperative bargaining relationships have been of three types (1) bargaining between seller and buyer (bilateral competition), (2) bargaining between sellers or bargaining between buyers (interfirm competition), and (3) bargaining in or through the political economy [3].

Bargaining through the political economy has been the primary means of obtaining a protected price. With state and federal milk orders, dairy producers have bargained at open hearings over provisions of the orders rather than submit to price bargaining in the market [3]. Prices are then administered by public authority. Producer associations in the South have also enjoyed success by bargaining directly with buyers to obtain negotiated Class I prices above the minimum federal order Class I prices. Bargaining between producer associations has occurred under conditions where a market is short of milk. The cooperative in the market bargains with an association outside the market for a necessary supply of milk to satisfy the short run needs.

Recently, two developments affecting producer bargaining power have occurred. Nearly 12,000 dairy farmers in 11 southern states organized two large regional milk marketing cooperatives. On the product side of the market, there is a continuing pressure to introduce filled milk and nondairy products in semblance of milk in southern markets. These two developments appear only remotely related, but cannot be divorced from one another. Economic theory and available data provide evidence to support the dependency of these two developments.

CONSEQUENCES OF PRODUCER BARGAINING POWER

Bargaining power depends on the degree of control exercised over the variables that affect prices and quantities. If price enhancement, with possible increased gross income to farmer members, is the objective then a cooperative association must ask itself what variables affect the price and revenue and what control does it have over the identified variables.

Several illustrations are used to show the probable longer run consequences resulting from bargaining action by a producer's association. Each of the actions taken is one of several variables in which an association may be able to exercise varying degrees of control. Certain assumptions are made with regard to supply response and demand response to price changes. The supply response, due to price changes, may be different for each individual producer but for the aggregate of all producers it is assumed to be inelastic. The price elasticity of demand for fluid milk products is also assumed to be inelastic.

Price as a Variable

Under these conditions, a given quantity of milk OQ_0 will clear the market as fluid products at some price OP_0 (Figure 1A). The classified pricing program, established under Federal and State orders, has given producers the opportunity to obtain from the market a higher price for milk utilized in fluid products than for milk utilized in other products [5]. Also, the government price support has established a price floor for surplus milk. Thus, producers sell milk in two markets; one market for fluid products shown as an

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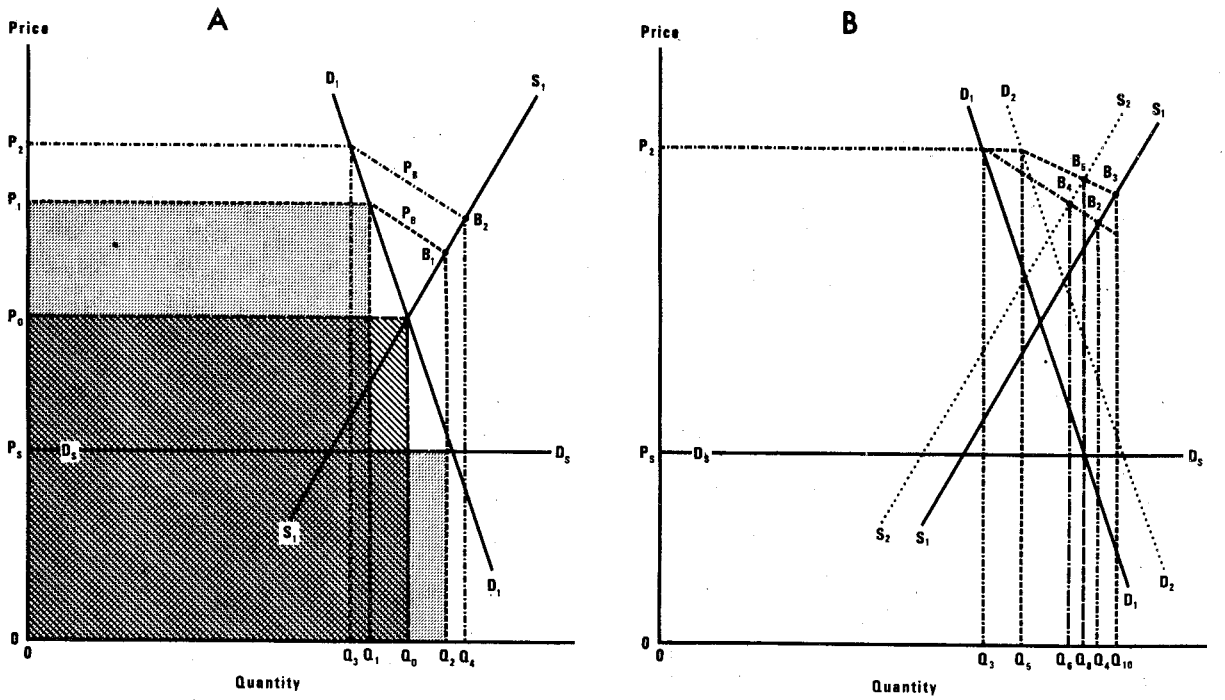

FIGURE 1. LONG-RUN CONSEQUENCES OF PRODUCER ACTIONS TO INCREASE PRICE, CONTROL SUPPLIES, OR SHIFT DEMAND

inelastic demand D_1D_1 and one market for surplus shown as a perfectly elastic demand D_sD_s.

The price of milk utilized in fluid products, through the bargaining procedure at public hearings, is increased from the single price OP_0 to OP_1, commonly referred to as the Class I price. The quantity of milk sold for fluid use will decrease to OQ_1, less than the quantity OQ_0 at the single price, but the percentage decrease in quantity is not as great as the percentage increase in price. Surplus milk is sold at the price OP_s. From the price OP_1, we construct a curve P_b, which represents the blend price under a market-wide pool. An equilibrium position is reached where the curve P_b crosses the supply curve S_1S_1. The stabilized blend price would be B_1. An increase in production would be expected, the difference being from OQ_0 to OQ_2, due to the higher blend price OB_1 versus OP_0. Through classified pricing, a higher producer price can be obtained and a higher total revenue to producers. The area $OP_1D_1Q_1$ plus the area $Q_1P_sD_sQ_2$ is larger than the area $OP_0D_1Q_0$.

A producer association can exploit the fluid market further by obtaining a negotiated price OP_2 which is above the minimum price OP_1. The quantity of fluid demanded will decrease slightly to OQ_3. A slightly higher blend price, B_2, will bring about a slight increase in the total supply to OQ_4 and again total revenue will be higher. At some point though, the gains from selling a reduced portion of the supply at the higher price may not exceed the losses from selling the remainder of the supply at the lower surplus price [5].

Supply and Supply Control as Variables

At this point it has been assumed that the only variable manipulated has been the price for milk utilized in fluid products. Of equal importance are the positions of the supply and demand curves in the longer run. The curves may shift in either direction with or without action by producer associations.

Technology, without increasing input costs, would shift the supply curve to the right, while increasing costs of inputs accompanied by producer exit would shift the supply curve to the left. A cooperative association may bring about price increases, but it has little direct control over the supply response of individual producers. The supply curve may shift to the left, S_2S_2, through either producer exit due to cost of production exceeding the producer price, B_1 or B_2, or by some method of supply control by the association (Figure 1B). The shift in supply, with demand remaining constant, will reduce the quantity of milk to OQ_6, resulting in an increase in producer blend price B_4. Total revenue will decrease in the aggregate but may increase to the individual producers.

Supply control has been successful through the use of various types of base-excess plans. Many of the plans were used as a means of bringing seasonal production more in line with seasonal needs in the market. In a few markets in the Southeast, the adoption of Class I base plans has been successful as a means of controlling supplies in relation with fluid product needs. These were adopted under state milk orders (Virginia and Georgia) or within a cooperative such as in the Memphis market and more recently by Milk Producers, Inc. The Class I base plan was successful in Georgia with producers adjusting their deliveries well in line with the sales changes of individual handlers [2]. Essentially, such a plan leaves the decision up to the individual producer in regard to his producing primarily for the fluid market or for both the fluid and manufacturing milk market.

In a study by Gaumnitz and Reed, recognition was given of the relationship of price policies of the producer association and the degree of control of total producer sales [4]. They stated, "*.....the greater the degree to which the cooperative controls the total supply of milk available in the market, the closer the demand curve for the milk sold by the cooperative will approach that of the market as a whole... under complete control the extent to which commodity price discrimination is practiced will probably be found to be greater than when a smaller degree of control is exercised.*"

Supporting evidence shows a picture of mixed responses. In the 5 years, 1963-67, producer associations in the southeastern states can be credited indirectly with bringing about producer price increases through Federal and State milk orders and directly by obtaining negotiated prices above Federal order minimums. With the exception of southeast Florida, in every southeastern market with a Federal order, Class I prices were in excess of Federal order minimums in 1967. Average prices paid for milk used for fluid products increased 14 percent in the South Atlantic States and 18 percent in the East South Central States from 1963 to 1967. Blend prices to producers were $0.40 to $1.00 per hundredweight higher in 1967 than in 1963 (Table 1).

Increased prices have not resulted in burdensome supplies in most southeastern markets. Cow numbers dropped drastically and producer exit was substantial [7]. In contrast, production per cow increased about 300 pounds per year and average receipts per producer increased, indicating adoption of known technology. The result has been almost no significant change in total milk production, 15.2 billion pounds in 1963 and 15.1 billion in 1967. It appears that the aggregate supply schedule shifted to the left relatively the same supply, but at a higher price.

Demand as a Variable

Dairy farmers prefer demand expansion rather than supply control. Producer cooperatives have attempted through various promotion schemes to bring about expansion of demand but with limited success. A shift in aggregate demand to the right, D_2D_2, in Figure 1B, through such factors as population increases, higher income levels or effective promotion, would increase consumption to OQ_5, and increase producer blend prices to B_3 on the supply curve S_1S_1 or to B_5 on the supply curve S_2S_2. The supplies would be expected to change in relation to changes in the blend prices with equilibrium supplies at OQ_8 or OQ_{10}.

Mixed patterns of demand have been evident in southeastern markets. Per capita consumption of whole milk items in many southeastern markets has decreased in the 5 years, 1963-67 (Table 2). The states bordering the Atlantic coast have shown increases. Skim milk items have shown increases in most of the markets. In the 1966-67 period, the 12 markets with Federal orders showed an increase of 20 percent in skim milk and a 2 percent decrease in whole milk. The increase in skim milk items has come primarily from the introduction of lower butterfat higher solids - nonfat fluid milk products in several markets.

Price increases to producers have generally been passed on to consumers. The change in dealer buying price of milk in the 1963-67 period was in the range of 2 to 6 cents per gallon of whole milk (Table 3). Prices in the store changed at least the same amount or more in the same period in southeastern markets. The response by consumers to these price changes showed mixed patterns. In nine markets, changes in per capita consumption were in the expected direction; a one percent increase in price was accompanied by a 0.2 to 0.4 percent change in consumption in the opposite direction. However, seven markets showed a positive relationship between price and consumption indicating an increase (shift to the right) in per capita demand.

EFFECT OF SUBSTITUTES ON BARGAINING POWER

Fluid milk products have been, traditionally, a stable and important part of the diet and generally exempt from competitive products. Thus, changes in the level of the price of milk relative to other food items have had only a minor impact on the level of consumption. However, the threat of substitutes, such as filled milk and nondairy products in the semblance of milk, makes such products important variables in the bargaining power process. Meeting power with power can become a never ending spiral. If farmers and dairy firms are successful in neutralizing one

TABLE 1. ANNUAL AVERAGE CLASS I AND BLEND PRICES, GRADE A MILK 3.5 PERCENT BUTTERFAT, 16 SOUTHERN MARKETS, 1963 AND 1967

Market	1963				1967			
	Federal order minimum		Negotiated or state milk commission		Federal order minimum		Negotiated or state milk commission	
	Class I	Blend	Class I	Blend	Class I	Blend	Class I	Blend
	Dollars Per Hundredweight							
Appalachian	5.03	4.85	-	-	6.15	5.83	6.59	-
Tri-State	4.81	4.54	-	-	5.83	5.49	6.11	5.80
Louisville-Lex.	4.59	4.20	-	-	5.64	5.18	5.97	-
Paducah	4.43	4.29	-	-	5.53	5.24	6.16	-
Nashville	4.51	4.20	5.00	4.56	5.52	5.10	6.22	5.55
Knoxville	4.53	4.29	5.13	4.67	5.33	4.83	6.59	5.81
Chattanooga	4.76	4.33	5.16	4.57	6.07	5.52	6.59	5.82
Memphis	4.98	4.81	-	-	6.15	5.94	6.66	6.24
Central Arkansas	4.94	4.82	-	-	6.15	6.03	6.66	6.56
Northern Louisiana	5.38	5.04	5.99[b]	5.51[b]	6.50	6.04	6.94[b]	6.29[b]
New Orleans	5.49	4.74	5.99[b]	5.17[b]	6.63	5.64	6.94[b]	5.88[b]
Mississippi	5.27[a]	4.60[a]	5.50[b]	4.85[b]	6.52	5.67	c	c
Southeast Florida	6.39	6.05	-	-	7.16	6.79	-	-
North Carolina	-	-	6.40[b]	5.62[b]	-	-	6.95[b]	6.40[b]
South Carolina	-	-	6.00[b]	5.63[b]	-	-	6.69[b]	6.43[b]
Georgia	-	-	6.60[b]	5.80[b]	-	-	6.85[b]	6.27[b]

[a] Central Mississippi in 1963.

[b] State Milk Commission prices.

[c] Range-Class I $6.40 - $6.85, Blend $5.63 - $5.95

Source: Fluid Milk and Cream Reports, Statistical Reporting Service, U.S.D.A.. monthly, 1963 and 1967.

TABLE 2. CHANGES IN PER CAPITA CONSUMPTION OF WHOLE MILK AND SKIM MILK ITEMS, AND PERCENTAGE CHANGE IN WHOLE MILK CONSUMPTION RELATIVE TO PRICE CHANGE, 16 SOUTHERN MARKETS, 1967 RELATIVE TO 1963

Market	Changes in 1967 Relative to 1963						Percentage change in per capita consumption of whole milk for 1 percent change in price[d]
	Whole milk items[a]	Skim milk items[b]	Fluid milk equivalent[c]	Whole milk items	Skim milk items	Fluid milk equivalent	
	Pounds			Percent			
Appalachian	6	0	5	3.2	0.0	2.6	0.43
Tri-State	20	9	22	10.0	60.0	10.8	0.45
Louisville-Lex.	- 5	11	-11	- 2.2	35.5	-4.4	-0.16
Paducah	- 7	3	- 7	- 3.4	10.7	-3.5	-0.26
Nashville	- 1	- 3	1	- 0.4	- 8.7	0.5	-0.04
Knoxville	- 2	3	1	- 0.7	5.7	0.3	-0.06
Chattanooga	-11	32	14	- 4.3	64.0	5.3	-0.39
Memphis	- 4	6	- 8	- 3.2	25.0	-4.0	-0.11
Central Arkansas	- 7	0	-10	- 3.8	0.0	-5.0	-0.51
Northern Louisiana	5	8	13	2.9	34.8	7.1	0.26
New Orleans	- 7	6	0	- 3.4	35.3	0.0	-0.25
Mississippi	- 2	5	8	- 1.3	26.3	5.1	-0.10
Southeast Florida	1	4	6	0.5	16.0	2.4	0.03
North Carolina	12	1	11	7.5	2.9	6.1	0.81
South Carolina	10	0	8	6.3	0.0	4.9	0.84
Georgia	19	2	26	13.2	7.1	17.7	1.42

[a] Plain and flavored whole milk items.

[b] Plain, solids added, flavored, buttermilk, and low-fat items.

[c] Data represent quantity of producers milk at average test required to provide milkfat in all fluid items.

[d] Price of one-half gallon whole milk sold in paper from stores.

Source: Fluid milk and Cream Reports, Statistical Reporting Service, U.S.D.A., May issues, 1964 and 1968.

TABLE 3. ANNUAL AVERAGE DEALER BUYING PRICE AND STORE PRICE, ONE-HALF GALLON HOMOGENIZED MILK, 16 SOUTHERN MARKETS, 1963 AND 1967

Market	1963			1967			1967 Relative to 1963		
	Dealer buying price	Store price	Margin	Dealer buying price	Store price	Margin	Change in dealer buying price	Change in store price	Change in margin
	Cents Per One-half Gallon								
Appalachian	21.6	54	32.4	28.3	58	29.7	6.7	4	- 2.7
Tri-State	20.7	49	28.3	26.3	60	33.7	5.6	11	5.4
Louisville-Lex.	19.7	44	24.3	24.9	50	25.1	5.2	6	0.8
Paducah	19.1	45	25.9	24.7	51	26.3	5.6	6	0.4
Nashville	21.5	44	22.5	26.8	49	22.2	5.3	5	- 0.3
Knoxville	22.1	50	27.9	28.3	55	26.7	6.2	5	- 1.2
Chattanooga	22.2	45	22.8	28.3	50	21.7	6.1	5	- 1.1
Memphis	21.4	40	18.6	27.2	52	24.8	5.8	12	6.2
Central Arkansas	21.5	53	31.5	27.2	57	29.8	5.7	4	- 1.7
Northern Louisiana	25.8	54	28.2	29.8	60	30.2	4.0	6	2.0
New Orleans	25.8	52	26.2	29.8	59	29.2	4.0	7	3.0
Mississippi	23.7	52	28.3	28.4	59	30.6	4.7	7	2.3
Southeast Florida	27.5	53	25.5	30.8	62	31.2	3.3	9	5.7
North Carolina	27.5	55	27.5	29.9	59	29.1	2.4	4	1.6
South Carolina	26.7	53	26.3	28.8	57	28.2	2.1	4	1.9
Georgia	28.4	55	26.6	29.5	59	29.5	1.1	4	2.9

Source: See Table 1.

another, where does the third party, the consumer, come out [1]? Consumers may choose other ways to satisfy their desires if an unreasonable price policy (high relative to production costs) is maintained.

The price of Class I milk has reached $7 per hundredweight in many southern markets or a raw product cost for one-half gallon of whole milk of approximately $0.30. With skim milk priced at Class I, the raw product cost of filled milk would be about $0.25 per one-half gallon. With nonfat solids in filled milk priced at the manufacturing level, the estimated cost per one-half gallon is $0.15. The estimated ingredient cost for a nondairy fluid product is about $0.13 per one-half gallon [6]. With these price differences between whole milk and other products, some consumers will be expected to shift to the substitutes when available in the market.

The probable influence of substitute products is illustrated in Figure 2. In the short run, acceptance of substitutes for fluid milk will probably result in a shift of the demand curve to the left from D_1D_1 to D_2D_2 or in fact the upper section of the curve may become more elastic. This is illustrated as a kinked demand curve with the kink at the point where the price of whole milk and substitute products are equal, OP on the demand curve D_2D_2. The kinked demand curve is based on the assumption that as the price of fluid milk is increased above this level, the quantity of fluid milk will decrease more rapidly than before the introduction of the substitute.

The quantity of milk demanded would decrease from OQ_1 to OQ_3, blend prices will decrease from B_1 to B_2, and the supply will decrease from OQ_4 to to OQ_2. This is the probable outcome to producers if there is no change in the price of milk utilized in fluid products and surplus is purchased at the support price OP_s.

If, in the longer run, consumers accept substitute products, the demand for fluid milk may become more elastic as shown by the extension of the upper kinked part of the D_2 curve to D_3D_3. The quantity demanded would decrease to OQ_7, blend price may decrease to B_3 and the supply would decrease to OQ_6. With the more elastic demand situation, a much greater shift in the supply S_1S_1 to S_2S_2 would be necessary to bring the blend price up to the B_2 level. Either the lower blend prices would force producer exit or more drastic supply control measures would be necessary or a combination of both. In any case, the total revenue to producers would decrease. Producer association actions to enhance price would be much more limited with the more elastic demand for milk.

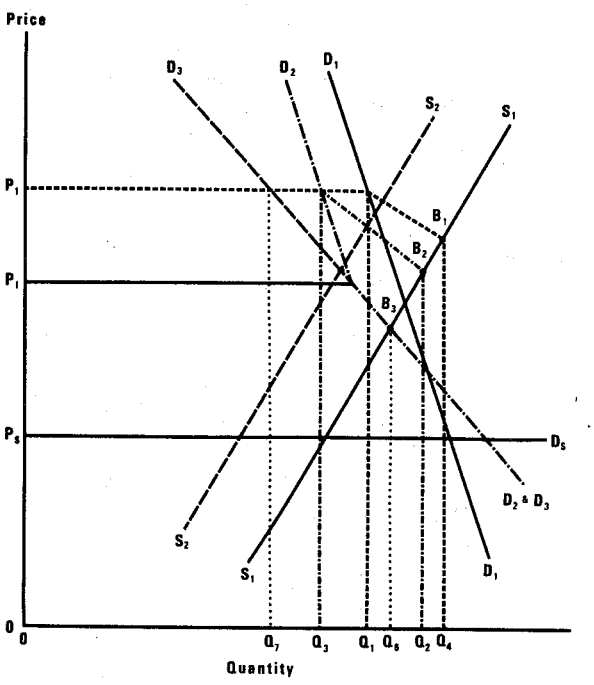

FIGURE 2. LONG RUN CONSEQUENCES OF PRODUCER ACTIONS WITH AN INCREASED ELASTICITY FOR FLUID MILK PRODUCTS

CONCLUSIONS

Prospective gains, through mergers of producer associations giving them control of larger supplies of milk, should be evaluated in terms of the impact on the utilization of milk. Countervailing power should not be exercised without a thorough analysis of consequences in the consumer market. Some of the variables are exogenous to the control of the bargaining group. The primary ones identified in this analysis are the demand for fluid milk products and substitutes that may enter the market place. Demand, in this sense, appears to be outside the direct control and manipulation of any bargaining group. Therefore, in the longer run bargaining power may not be as successful as desired by producer associations.

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