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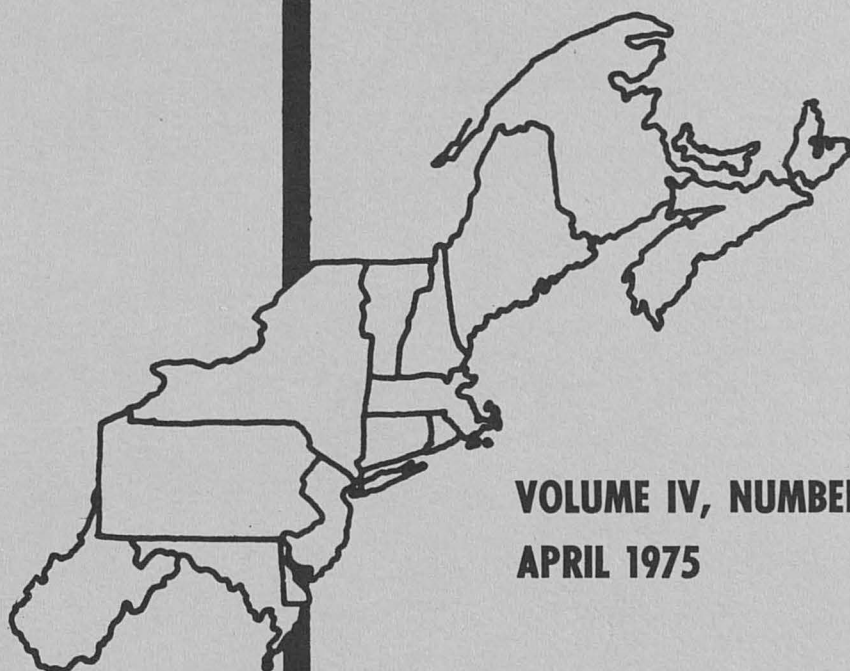
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DIFFERENCES IN COSTS AND RETURNS TO
PRODUCING MILK AMONG THE NORTHEASTERN STATES

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INTRODUCTION

The farm price of much of the milk produced in the Northeast has been under government regulation for a long time. Although they have not applied to all markets at all times; two principal economic criteria have generally been used as bases for setting minimum producer prices; (1) costs of production in the regulated area, and (2) the costs of obtaining milk from sources outside the area. Which of these criteria was paramount at any particular time and location was related to the effectiveness with which barriers to the inflow of milk could be maintained, and the political power of milk producer groups relative to other interests. Thus, as is well known, criteria other than the economic have also been important determinants of farm prices.

The degree to which local milk markets are protected from more distant milk supplies has been diminished in recent years by court action and by improvements in transportation technology. At the same time, milk producers have improved their bargaining position, collectively, through emergence and growth of the several large regional cooperatives now in existence. These developments magnify the concern that has always existed under the Federal Milk Marketing Order program, that of individual market and individual producer equity in the pricing and distribution of returns for the production of milk.

Producer equity may be judged on the basis of how any particular producer fares relative to his level of net return in some prior time, and how his level of net return compares to that of other producers at a given point in time. Inasmuch as net returns are a function of both milk prices and costs of production, it is important to know how costs of production vary both spatially and temporally in all markets of interest. The difficulty has been that there are no uniformly derived estimates of the cost of producing milk, in all markets of interest, for the same point in time, that can serve as the basis for assessing the differential effects of changing producer prices.

Wells [13] reported estimates and comparisons of the costs of producing milk for Wisconsin, New York, Virginia, North Carolina, and Florida. The data he used were from accounting farms, and the problems of representativeness and differences in accounting procedures were recognized. Cummins and Buxton [2] reported estimates of production costs for nine regions in the United States using Agriculture Census data for 1969 only. Their computational procedures were similar to the ones used in this study, but alternative methods were employed in the present study to resolve differences in reported data for the three census years so that all the estimates could be made on a common basis. Furthermore, not all the same expense and income items were included in both studies. Specifically, Cummins and Buxton included an estimate of the value of farm operator and other unpaid family labor in their computations while this study does not. This study does include both non-farm income and appreciation in real estate values as returns (negative costs) whereas Cummins and Buxton do not. The effect of these differences is to make the estimates of costs by Cummins and Buxton higher than those reported in this study. The effect of other differences in assumptions and procedures between the two studies is not certain. A point that needs emphasized, however, is that the net returns reported in the present study are returns only to the operator and his family for their labor and management, while the net farm income reported by Cummins and Buxton also includes an estimate of the return to the dairymen's equity capital.

This paper includes estimates of the cost of producing milk in twelve northeastern states. These estimates are based on observations at three different times over a ten-year period, and should provide a more reliable basis for comparing costs than estimates based on observations at a single point in time. Although milk prices and input costs have changed substantially since 1969, the costs reported in this study may better reflect long-term differences in costs among states than would more recent data over a more limited time span.

DATA AND COMPUTATIONAL PROCEDURES

The primary sources of data on which this report is based are the 1959, 1964, and 1969 Censuses of Agriculture [6]. Important supplemental data sources are: Farm Real Estate Historical Series Data: 1850-1970 [1]; Agricultural Prices [8]; and Farm Labor [10]. The census data used are for commercial dairy farms, economic Classes I-V^{1/}. Key information describing these farms is given in Table 1.

^{1/} These farms were defined in the same way in all three censuses. In order to be classified as a dairy farm, it was necessary that the value of sales of dairy products be at least 50 percent of the total value of all farm products sold or, if less than 50 percent, then the value of sales of dairy products must account for more than 30 percent of the total value of all farm products sold, at least 50 percent of all cows must be milk cows, and the value of dairy products sold plus the value of cattle and calves sold must equal at least 50 percent of the total value of all farm products sold. Commercial dairy farms are all dairy farms in economic classes I through VI. Included in classes I through V are all farms with \$2,500 or more in total value of farm products sold.

Table 1
Numbers and Sizes of farms, and importance of milk sales, for
Classes I-V dairy farms in the Northeastern states, the North-
eastern Region, and the United States, 1959, 1964, and 1969.

State and Year	Number of Farms	Size of Farm			Specialization ^{a/} in Milk Sales
		Acres per Farm	Milk Cows per Farm	Milk Sold per Farm	
				pounds	percent
Connecticut					
1959	2,396	206	34.4	286,781	87.3
1964	1,602	233	42.1	400,151	89.7
1969	1,105	229	49.5	499,663	85.9
Average ^{b/}	1,701	219	40.1	368,469	87.6
Delaware					
1959	698	210	28.4	200,002	69.4
1964	442	239	31.7	264,730	72.5
1969	260	270	38.2	350,360	71.2
Average ^{b/}	467	230	31.3	248,361	71.0
Maine					
1959	3,157	280	24.1	179,708	81.3
1964	1,997	319	31.0	270,492	86.2
1969	1,376	326	38.0	363,837	86.3
Average ^{b/}	2,177	302	29.1	246,271	84.6
Maryland					
1959	4,945	214	34.7	266,540	77.8
1964	3,868	237	41.3	355,938	81.1
1969	2,698	243	48.8	467,782	82.9
Average ^{b/}	3,837	229	40.2	343,748	80.6
Massachusetts					
1959	2,777	199	30.9	248,011	87.2
1964	1,986	213	37.6	355,334	88.9
1969	1,251	223	44.5	442,783	86.3
Average ^{b/}	2,005	209	35.9	323,968	87.5
New Hampshire					
1959	1,762	300	26.0	197,545	84.1
1964	1,282	326	31.2	274,498	87.1
1969	849	329	39.5	378,623	86.8
Average ^{b/}	1,298	315	30.7	262,376	86.0
New Jersey					
1959	2,739	183	41.4	349,512	84.8
1964	1,903	209	48.1	462,947	86.1
1969	1,180	222	52.0	548,674	85.7
Average ^{b/}	1,941	199	45.7	426,956	85.5
New York					
1959	38,402	234	29.4	234,111	83.5
1964	30,841	260	35.2	321,434	86.3
1969	21,711	277	40.5	404,111	86.5
Average ^{b/}	30,318	253	34.0	304,300	85.4

Table 1
Continued.

State and Year	Number of Farms	Size of Farm			Specialization in Milk Sales ^{a/}
		Acres per Farm	Milk Cows per Farm	Milk Sold per Farm	
				pounds	percent
Pennsylvania					
1959	31,000	180	23.7	182,519	76.0
1964	26,025	194	27.6	248,273	80.4
1969	19,162	203	32.6	302,679	80.6
Average ^{b/}	25,396	191	27.3	235,202	79.0
Rhode Island					
1959	410	163	32.3	267,712	89.5
1964	242	155	39.7	382,334	89.1
1969	147	156	41.5	412,800	86.6
Average ^{b/}	266	159	36.2	329,122	88.4
Vermont					
1959	7,568	305	32.3	229,059	86.1
1964	5,802	336	38.6	310,505	86.5
1969	4,017	345	46.1	433,791	88.8
Average ^{b/}	5,796	325	37.6	303,538	87.1
West Virginia					
1959	2,205	236	23.1	149,109	76.4
1964	1,654	269	26.8	203,172	81.5
1969	1,190	284	30.8	259,275	82.3
Average ^{b/}	1,683	258	26.1	192,785	80.1
12 Northeast States					
1959	98,059	221	28.2	219,528	81.5
1964	77,644	242	33.4	299,036	84.4
1969	54,946	253	38.8	375,170	84.6
Average ^{b/}	76,883	236	32.5	283,371	83.5
U.S. (43 States) ^{c/}					
1959	395,551	213	26.9	204,350	72.6
1964	347,464	232	31.4	271,053	76.3
1969	259,754	248	36.3	337,284	76.9
Average ^{b/}	334,256	229	30.9	261,898	75.3

^{a/} The value of sales of all dairy products as a percent of the value of all farm sales.

^{b/} The averages for Number of Farms and Specialization in Milk Sales are simple averages of the three years. The three Size of Farm measures are weighted by the Number of Farms in each year to obtain three year averages.

^{c/} Alaska, Arizona, Hawaii, Montana, Nevada, New Mexico, and Wyoming not included.

The following items were included in the computation of costs of production:

1. Feed purchases
2. Purchases of livestock and poultry
3. Seed, bulbs, plants, and trees
4. Gasoline, fuel, and oil
5. Machine hire, custom work, and contract labor
6. Hired labor
7. Fertilizing and lime materials
8. Repairs and maintenance of buildings, machinery, and equipment
9. Real estate taxes
10. All other cash expenses (25% of items 1-9, above)
11. Depreciation on buildings, machinery, and equipment
12. (-) Farm-related income (customwork, recreational fees, and government payments)
13. (-) Income earned by operator off the farm
14. (-) Appreciation in value of real estate
15. Interest on total capital investment

Items 1 through 7 are reported in approximately comparable form in each census. Farm-related income (item 12) is reported only in the 1969 census, but is estimated for the other censuses by assuming it was the same percentage of the value of all products sold in 1959 and 1964 as it was in 1969. The remaining items were computed in the manner shown below.

Income earned by the operator off the farm is treated as a negative cost because if the farmer had spent full time on the farm, the costs of hired labor (presumably) could have been reduced by an amount equal to farmer off-farm earnings. Appreciation in land values is also shown as a negative cost because it is a form of return to the farm business that has as much substance and reality as opportunity costs on equity capital (included in item 15), and should be explicit in computations of costs for the same reasons.

Since census data lack the detail necessary for separately determining costs and returns to other enterprises that may exist on commercial dairy farms, a modified "whole farm" approach for estimating costs of producing milk was used ^{2/}. The principal assumption is that the costs of producing the milk that is sold bear the same relationship to all farm costs as receipts from the sale of milk bear to all farm receipts. For example, if the value of milk sales were 80 percent of the value of all farm sales, then the costs chargeable to the production of that milk are 80 percent of all the costs incurred by the entire farm business. Thus, all profits and losses are shared proportionately between the milk and non-milk producing activities.

^{2/} The same method was used by Cummins and Buxton [2]. Wells [13] assumed that the costs of producing products other than milk were equal to their value.

The percentage that the value of milk sales is of total farm sales for each of the 12 northeastern states is shown in Table 1. These are the percentages that were applied to the 15 items listed above to arrive at the share of costs that were charged to the production of milk sold each year.

Estimating Values, Depreciation, and Costs of Repairs of Capital Items

Land and Buildings: Only the combined values of land and buildings are reported in the Census. In order to estimate building depreciation and costs of repairs, the value of buildings separate from the value of land was estimated. This was done by applying the average of the value of buildings as a percent of the value of land and buildings^{3/} for the 12 northeastern states to the total value of land and buildings in each state.

Depreciation on buildings was computed as the present value of buildings divided by 20. This computation is based on the assumption that the aggregate of all buildings has an initial life of 40 years and that they were of average age at the time of each census.

Cost of annual repairs and maintenance on buildings were arbitrarily assumed to be one-half the annual depreciation.

Machinery and Equipment; Numbers of selected kinds of machinery (mostly the major items) were reported in all three censuses. A weight of 1, 2, or 3 was assigned to each major item reported which reflected its relative costs as reported in [8]. The products of the weights and numbers of each item were summed, and the sum multiplied by the average cost per item to get the approximate new value of major machinery on the dairy farms. This value was then doubled to include minor machinery and in-place equipment which were not reported. All machinery and equipment was assumed to be of average age at the time of each census, so its inventory value was set at half its total replacement cost.

The average life of the aggregate of all machinery and equipment was assumed to be 12 years. As a result, annual depreciation was one-sixth of the inventory value of machinery and equipment estimated for each year.

Costs of repairs and maintenance over the life of all machinery and equipment were assumed to average 50 percent of the original cost of the item. Allowances for repairs and maintenance were therefore 50 percent of annual depreciation.

Cattle: Inventory values for milk cows were estimated to be 1.5 times the prices reported received by farmers for milk cows^{4/}. The milk

^{3/}Value of buildings as a percent of the value of land and buildings taken from [1].

^{4/}Prices received by farmers for milk cows of all ages reported by states by years in [8].

cow prices reported in Agricultural Prices relate to dairy cows sold for cull beef as well as to those that are sold for dairy purposes. These prices therefore tend to understate the on farm inventory values of milk cows since it can be assumed that most of the cows that are retained in dairy herds are considered to be more valuable for the milk they are expected to produce than they are for what they would bring as cull beef. All other cattle on dairy farms were valued at the price received by farmers for milk cows. The supposition here is that most of these other cattle were young dairy livestock and their value would be reflected better in milk cow prices than in prices for beef animals.

Depreciation in the value of cattle is not included as a cost in this study. The rationale for excluding it is that dairy farmers generally provide their own herd replacements, and in doing so the increase in value of young stock each year approximately equals the decrease in value of mature cows that takes place.

Estimating Other Cash Costs

Taxes on farm real estate were estimated by multiplying the tax per \$100 value reported by years and states in [1] by the total value of land and buildings reported in the census (divided by 100). A distinction between tax rates for dairy farms and rates for other farms was not possible.

A number of other cash expenses are generally incurred by dairy farms but were not included in the seven categories that the census reports. Examples of such expenses are: veterinary and medicine; breeding fees; insurance; supplies; rent; milk hauling; office expenses; utilities; and farm organization dues. As a basis for estimating these other costs, an analysis of cost of production reports for certain states in the Northeast was made [3 and 5]. It was found that cash costs other than those enumerated in the census or deduced from census data were about 25 percent of all such costs. This rate was therefore used as the estimate of those costs in this study.

Estimating the Value of Operator Off-Farm Labor

The number of days that the farm operator worked off the farm was reported for several intervals of differing lengths in each of the three censuses. The mid-point of each interval was multiplied by the number of operators reported for that interval, the products were summed over all intervals for a given year, and the sum was divided by the total number of dairy farms reported for each state for that year. This quotient became the estimate of the average number of days worked off the farm by all dairymen. It was divided by eight, the number of hours assumed to make up one day of off-farm work, to yield an estimate of total hours worked off the farm. The product of total hours worked off the farm and the annual average hourly farm wage rate without board or room reported in [10] then became the estimate of the value of the operator's off-farm labor.

Estimating Opportunity Costs and Returns for Capital

Opportunity costs of capital were figured at 4.9 percent for 1959, at 5.3 percent for 1964, and 5.7 percent for 1969. These are the average interest rates charged for farm mortgages by all lenders [7].

Most cost of production studies include land at its market value and consider it only as a cost item. It is well known, however, that land is regularly increasing in value, and this is a form of return to the farm business which to an extent offsets the costs of holding land. To estimate the amount of land appreciation, a simple average of the annual percentage change in the per acre value of farm land and buildings as reported by USDA [1 and 11] was computed for each state for each census year. The annual change was the average of the four year-to-year percentage changes in the five year intervals centered on the year of each census, and was applied to the total value of land and buildings to arrive at the dollar value of land appreciation.

Estimating Farm Milk Prices and Quantities of Milk Sold

Although prices received for milk at the farm are not reported directly in any of the three censuses the total value of all dairy products sold is reported in every census. Quantities of whole milk and the whole milk equivalent of butterfat sold in cream are reported as a single figure in the 1959 census, whereas they are reported separately in the 1964 census. No estimates of quantities of milk or butterfat sold are reported in the 1969 census.

To obtain an estimate of the price received for milk in 1959, it was necessary only to divide the total value of all dairy products reported sold by the whole milk equivalent of whole milk and butterfat in cream reported sold.

For 1964, the whole milk equivalent of butterfat sold as cream was computed by multiplying pounds of butterfat sold in cream by 25. The result was added to pounds of milk sold as whole milk to get an estimate of total milk sales. This estimate was then divided into the value for all dairy products sales reported in the census to arrive at a price received comparable to the one computed for 1959.

As already noted, only the total value of all dairy products sold was reported with the 1969 census. A price was assumed for each state, and quantities of whole milk equivalent sold were estimated by dividing that price into the total dollar value of sales that was reported. The prices that were assumed for these computations are listed in Table 2. They are the average returns per 100 pounds of milk received for the combined marketing of milk and cream in 1969 as reported in [12, Table 26], multiplied by the proportion that the 1964 price was of the average returns per 100 pounds of milk received for the combined marketings of milk and cream in 1964 as reported in [9, Table 7].

It is clear that the estimates of both prices and costs per hundredweight are very much dependent on the estimates of quantities of milk sold. As the estimate of milk quantities increases both prices and costs decrease, and vice-versa, since total dollar receipts and total dollar costs remain the same once ascertained. The differences between prices and costs (net returns) will therefore be constant, though the absolute levels may be too high or too low. As will be emphasized later, however, the strength of this report is felt to be greater in the comparative levels of costs and prices than in the estimates of actual levels.

RESULTS

Estimates of the prices farmers received for milk, costs of producing milk, and the resultant net returns per hundredweight of milk sold for the 12 northeastern states are shown in Table 2. Each of these three items varied widely both among states and among years. Although costs exhibited the greatest variation among states in all years, they showed the least change across years. Net returns generally increased each year due, clearly, to the increase in price that took place.

For the most part, states with high three year average costs of production (Connecticut, Massachusetts, and Rhode Island, in particular) were also high in each of the three census years, while those with low average costs of production (Maryland and Vermont, in particular) were low each year. The relationship between average net returns and the net returns in individual years was not as pronounced, except at the very extremes of the data (Maryland and Vermont at the high end and Rhode Island at the low end of the range).

New Hampshire and West Virginia had significant and consistent improvement in relative ranking among states with respect to cost of producing milk, while Maine became notably more disadvantaged relative to the other states. The remaining nine states either maintained about the same relative position throughout the three census years or showed changes in standing that appeared to have no consistent pattern. The differences in costs between the highest and lowest states in each succeeding year, from \$2.77 in 1959, to \$2.67 in 1964, to \$2.20 in 1969, showed a small but consistent tendency for the range of costs to diminish.

Table 2 data generally show marked improvement in net returns in each succeeding census. In the Northeast as a whole, net returns increased by 42 cents from 1959 to 1964 and by \$1.18 from 1964 to 1969. Every state had negative net returns in 1959 and all but two in 1964. By 1969, however, all states except one had positive net returns. Connecticut and Maine generally had the least relative improvement in net returns over the ten year period, while Pennsylvania and West Virginia had the greatest relative improvement. The relative position of the remaining states, with respect to net returns, remained about the same or were so erratic as to mask any trends that may have taken place.

Table 2

Estimated prices received, costs of producing milk, and net returns per hundredweight of milk sold, and total net returns to the farm family, for Classes I-V dairy farms in the Northeastern states, the Northeastern Region, and the United States, 1959, 1964, and 1969.

State and Year	Price Received	Cost of Production	Net Returns ^{a/}	Total Net Returns to the Farm Family ^{b/}
	----dollars per hundredweight-----			dollars
Connecticut				
1959	5.66	6.43	-0.77	-2,208
1964	5.99	6.56	-0.57	-2,281
1969	6.97	6.40	0.57	2,848
Average ^{c/}	6.16	6.47	-0.31	-1,142
Delaware				
1959	4.77	5.18	-0.41	- 820
1964	4.98	5.42	-0.44	-1,165
1969	6.40	5.34	1.06	3,714
Average ^{c/}	5.27	5.30	-0.03	- 74
Maine				
1959	5.01	5.56	-0.55	- 988
1964	5.36	5.88	-0.52	-1,407
1969	6.67	6.06	0.61	2,219
Average ^{c/}	5.64	5.82	-0.18	- 443
Maryland				
1959	4.51	4.54	-0.03	- 80
1964	4.93	4.77	0.16	570
1969	6.32	5.21	1.11	5,192
Average ^{c/}	5.23	4.83	0.40	1,375
Massachusetts				
1959	5.65	6.66	-1.01	-2,505
1964	6.21	6.53	-0.32	-1,137
1969	6.95	6.77	0.18	797
Average ^{c/}	6.22	6.64	-0.42	-1,361
New Hampshire				
1959	5.26	6.24	-0.98	-1,936
1964	5.58	5.83	-0.25	- 686
1969	6.55	5.51	1.04	3,938
Average ^{c/}	5.78	5.87	-0.09	- 236
New Jersey				
1959	5.30	6.22	-0.92	-3,216
1964	5.29	5.83	-0.54	-2,500
1969	6.42	5.55	0.87	4,773
Average ^{c/}	5.59	5.91	-0.32	-1,366
New York				
1959	4.38	5.17	-0.79	-1,849
1964	4.40	4.87	-0.47	-1,511
1969	5.98	5.41	0.57	2,303
Average ^{c/}	4.89	5.14	-0.25	- 761

Table 2
Continued.

State and Year	Price Received	Cost of Production	Net Returns ^{a/}	Total Net Returns to the Farm Family ^{b/}
	----dollars per hundredweight----			dollars
Pennsylvania				
1959	4.53	5.66	-1.13	-2,062
1964	4.82	5.35	-0.53	-1,316
1969	6.47	5.53	0.94	2,845
Average ^{c/}	5.26	5.51	-0.25	- 588
Rhode Island				
1959	5.96	7.31	-1.35	-3,614
1964	5.88	7.10	-1.22	-4,664
1969	6.49	7.00	-0.51	-2,105
Average ^{c/}	6.05	7.16	-1.11	-3,653
Vermont				
1959	4.68	5.07	-0.39	- 893
1964	4.75	4.43	0.32	994
1969	6.22	4.80	1.42	6,160
Average ^{c/}	5.21	4.76	0.45	1,366
West Virginia				
1959	4.56	5.69	-1.13	-1,685
1964	4.82	5.37	-0.55	-1,117
1969	6.29	5.23	1.06	2,748
Average ^{c/}	5.20	5.43	-0.23	- 443
12 Northeast States				
1959	4.62	5.43	-0.81	-1,778
1964	4.76	5.15	-0.39	-1,166
1969	6.26	5.47	0.79	2,964
Average ^{c/}	5.19	5.34	-0.15	- 425
U. S. (43 States) ^d				
1959	4.05	4.56	-0.51	-1,042
1964	4.25	4.46	-0.21	- 569
1969	5.67	5.19	0.48	1,619
Average ^{c/}	4.66	4.73	-0.07	- 183

^{a/} Estimated price received minus estimated cost of production.

^{b/} Hundredweights of milk sold per farm multiplied by net returns per hundredweight.

^{c/} Prices (costs) each year weighted by total quantity of milk sold in each state (region) each year.

^{d/} Alaska, Arizona, Hawaii, Montana, Nevada, New Mexico and Wyoming not included.

The data of Table 2 suggest consistent and pronounced relationships between costs and net returns and between prices and costs. As estimated costs of production increase, estimated net returns decrease, and vice versa. On the other hand, prices and costs varied upward and downward together. This latter finding concurs with that of both Cummins and Buxton [2] and Smith [4].

DISCUSSION

The net returns per hundredweight of milk sold represent returns to the farm family for the time they spent working on the dairy farm. Returns per hundredweight multiplied by the volume of milk sold per farm yielded the estimates of farm family earnings reported in the last column of Table 2. For the Northeast as a whole, these earnings were \$-1,778, \$-1,166 and \$2,964 in 1959, 1964, and 1969, respectively. Highest farm family returns among all states in all years were in Vermont in 1969 at \$6,160 per farm, and the lowest were in Rhode Island in 1959, at \$-3,614 per farm. These two states also ranked next highest and lowest, respectively, with respect to average farm family returns for the three years studied. Although by 1969 net returns to the farm family had reached \$2,964 in the Northeast and \$1,619 in the United States, the average for the three years was only \$-425 and \$-183, respectively. In view of how low net returns were in so many cases, how is it that dairymen survive at all?

The answer is two fold. First, many dairymen haven't survived. In the Northeast there was a loss of over 43,000 dairymen between 1959 and 1969 (Table 1). In spite of this reduction in numbers of Classes I-V dairy farms, however, there was little change in the total quantity of milk sold from northeastern dairy farms during the same period. This was due to increases both in number of dairy cows and in yield per dairy cow on the farms that remained. It is generally known that costs of production on a hundredweight basis are lower in larger herds with higher levels of production. Thus, northeastern dairymen did adjust to the situation of low net returns over the 1959 to 1969 period.

The second explanation as to how dairymen survive in the face of seemingly low or negative returns lies in the fact that such returns may not present a true picture. There are shortcomings in all survey data with respect both to completeness in detail and accuracy of estimates. Most of the items added to those reported in the census are expense items, as only land appreciation, farm-related income, and value of operator off-farm income are in the nature of returns to the farm business and family. Few additional omitted items of expense can be listed. One of some probable consequence is interest costs of non-capital short-term operating loans. On the other hand, there are several likely additional returns to the farm business including: (1) consumption in the farm home of milk, eggs, chicken, beef, garden vegetables, fruits, etc., (2) construction or renovation, repair, and maintenance of the farm home and grounds, and/or the rental value of the farm dwelling, (3) an incomplete separation of the costs of utilities and the operation and maintenance of an automobile which probably tends to charge too much of the costs to business and too little

to personal use, and (4) increases in the value of the livestock inventory due to increases in herd size.

Information on the total values of omitted items is so limited that estimates of the magnitude of these items were not attempted. It seems highly likely, however, that the value of omitted receipts is much greater than the value of omitted expenses, and so the estimates of the costs of producing milk presented in Table 2 are too high. If such is the case, then net returns have been understated, and Northeastern dairy farmers fared a little better during the 1959-1969 period than the total net returns to the farm family shown in Table 2 suggest.

REFERENCES

1. Clifton, Ivery D. and William D. Crowley, Jr., Farm Real Estate Historical Series Data; 1850-1970, U. S. Department of Agriculture, Economic Research Service ERS 520, June, 1973.
2. Cummins, David E. and Boyd M. Buxton, Dairy Farm Income and Milk Production Costs in the United States, 1969, Dairy Situation (DS-347), Economic Research Service, U. S. Department of Agriculture, September, 1973.
3. Dum, Samuel A., 1969 Business Analysis Pennsylvania Dairy Farms, Farm Management 45, Ag. Ext. Ser., The Pennsylvania State University.
4. Smith, Blair J., Estimating Comparative Costs of Producing Milk Among the Southern States, Southern Journal of Agricultural Economics, Vol. 6, No. 1 (July, 1974) pp. 221-228.
5. Tremblay, R. H. and I. F. Fellows, 1969 ELFAC Dairy Farm Business Analysis, Northeastern States Cooperative Extension Services NEC-66, June, 1970.
6. U. S. Bureau of the Census, Census of Agriculture (1959, 1964, and 1969), Volume 1, Statistics for States and Counties, U. S. Government Printing Office, Washington, DC.
7. U. S. Department of Agriculture, Agricultural Finance Statistics, Economic Research Service AFS-1, May 1973.
8. U. S. Department of Agriculture, Agricultural Prices, Statistical Reporting Service, Crop Reporting Board, Various Annual Summaries.
9. U. S. Department of Agriculture, Dairy Statistics 1960-67, Economic Research Service, Statistical Bulletin No. 430, July, 1968.
10. U. S. Department of Agriculture, Farm Labor, Statistical Reporting Service, Crop Reporting Board, Various Monthly Reports.

11. U. S. Department of Agriculture, Farm Real Estate Market Developments, Economic Research Service CD-78, July, 1973.
12. U. S. Department of Agriculture, Milk -- Revised Estimates, 1965-69, Statistical Reporting Service, Crop Reporting Board, Statistical Bulletin No. 509, January, 1973.
13. Wells, R. C., Dairy Farm Costs and Returns in the Southeast, Fourth Southeastern Dairy Conference, Jacksonville, Florida, March 23-24, 1971.