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AN ANALYSIS OF ALTERNATIVE LEVELS

OF MILK SUPPORT PRICES THROUGH 1990

by

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An Analysis of Alternative Levels of Milk Support Prices Through 1990

Various proposals have been and will be made with respect to dairy price support legislation in 1985. Some proposals will seek to refine procedures for determining a support price. Others will call for more sweeping changes, including the President's proposal to eliminate purchasing storable dairy products as a method for supporting farm milk prices.

For many of those who desire to maintain the support price/purchase program the question arises: What is the right price? Clearly a support price is "right" if it accomplishes a certain set of objectives. As specific objectives change, so does the "right" price level. It is also clear that proponents of different proposals have different objectives or attach more importance to one objective than another. Policies may be driven by the desire to maintain the profitability of the current structure of family farmers, or to maintain a close balance between supply and demand at the lowest reasonable price or to achieve any of a number of other goals.

The goals of dairy policy and the methods used to achieve those goals are important and weighty matters. In fact they should be addressed and defined before changes in programs are discussed. Nevertheless, this paper addresses a much simpler empirical question. Whatever goals may drive a price support program and whatever procedures might be used to determine a support price, at some point a specific support price is specified. The analysis reported here simply seeks answers to the question: what might happen over time at different support levels.

Support Price Scenarios

Three basic price scenarios are studied, as described in Table 1. The first assumes that the current $12.60 support price is lowered to $12.10 on April 1, 1985 and held at that level through 1990. In the second scenario, the support price is reduced another 50¢, to $[illegible], on July 1, 1985 and held at that level through 1990. The final scenario has the support price reduced to $11.10 on April 1, 1986 and held at that level thereafter. The timing of these incremental 50¢/cwt. price cuts is taken from the schedule called for by the Dairy Production Stabilization Act of 1983 (DPSA) and the President's proposed Agricultural Adjustment Act of 1985.

Methodology and Assumptions

The results presented in the next section are derived from a model of the U.S. dairy sector. The model is described in detail elsewhere by Novakovic;[1] hence it is only briefly described here.

The model describes national markets of milk in terms of farm supplies of the two primary grades of milk, retail demands for three classes of dairy products, and price transmission equations which link farm to wholesale and

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[1] Andrew Novakovic, A Description of a Comparative Statistics Model of the U.S. Dairy Sector, A.E. Research Bulletin, Dept. of Agr. Econ., Cornell University 1985 (forthcoming).

Table 1. Alternative Support Prices for Milk Through 1990.

Scenario	Support Price as of:					
	1/1/85	4/1/85	7/1/85	4/1/86	1/1/87	Thereafter
	($/cwt.)					
"12.10"	12.60	12.10	12.10	12.10	12.10	12.10
"11.60"	12.60	12.10	11.60	11.60	11.60	11.60
"11.10"	12.60	12.10	11.60	11.10	11.10	11.10

wholesale to retail prices. Dairy imports, commercial stocks, and farm use of milk are treated exogenously. Policy instruments including a support price for milk, USDA make allowance and purchase price for purchased products, milk marketing deductions (assessments), and deficiency payments are or can be incorporated into the model. Net removals under the support program are calculated as the difference between all supplies and uses of milk and milk products. Net expenditures are calculated as the cost of net removals plus any diversion or deficiency payment less any assessment revenue; they do not include administrative, storage, or other such costs or revenues.

The milk diversion program and other components of the DPSA have been analyzed using this methodology (the results and related studies are reported elsewhere by Novakovic et al.)[2]. To estimate the possible aggregate consequences of future price cuts, additional assumptions must be made. These assumptions are described below and listed in Table 2.

[2] State by state information on the sign up and expected impact of the milk diversion program is summarized in: Robert D. Boynton and Andrew M. Novakovic, The Impact of the Milk Diversion Program on U.S. Milk Production, A.E. Ext. 84-4, Dept. of Agr. Econ., Cornell University, 1984. The cumulative effects of the Dairy Production Stabilization Act of 1983 (DPSA) and other economic forces in 1984 are presented in: Andrew Novakovic, The Dairy Industry and Dairy Policy in 1985, A.E. Ext. 85-3, Dept. of Agr. Econ., Cornell University, 1985. The separate effects of the milk diversion, assessment, and price cut components of the DPSA are isolated and estimated in: Andrew Novakovic, "The Effects of Current Dairy Policy in 1984 and 1985 and Some Possible Consequences of Changing to Direct Payments", Dairy Marketing Notes, Dept. of Agr. Econ., Cornell University, Winter 1985.

Table 2. Assumed Levels of Other Policy Instruments and Exogenous Factors

Variable	Assumed Level
Milk Marketing Deduction:	50¢/cwt. from 1/1/85 to 3/31/85, none thereafter
Milk Diversion Program:	During 1985 production is reduced 900 million pounds and farm use of milk equals 3000 million pounds. After 1985 there is no further production reduction and farm use returns to a more normal level of 2500 million pounds.
Promotion Assessment:	15¢/cwt. from 1/1/85 to 12/31/90
Make-Allowance:	Held at current level from 1/1/85 to 12/31/90; e.g. $1.37 for cheese with a 25¢ allowance for the value of whey.
Imports:	Held at 1984 level of 2.8 billion pounds (milk equivalent) through 1990.
Commercial Stocks:	Held at 4.9 billion pounds, the level at the end of 1984, through 1990.
Exogenous Shifts: Fluid milk products	.5% per year beginning in 1985
Manufactured products not purchased under the support program (e.g., ice cream, cottage cheese, etc.)	2% per year beginning in 1985
Manufactured products purchased under the support program (e.g., cheese and butter)	3.1% per year beginning in 1985
Exogenous Shifts: Fluid grade (Grade A) milk	1% per year beginning in 1986
Manufacturing grade (Grade B) milk	.7% per year beginning in 1986

The 50¢/cwt. milk marketing deduction (assessment) is in effect from January 1, 1985 through March 31, 1985; no such assessment is collected thereafter. Also, during the first quarter of 1985, the milk diversion program is in effect; this results in lower production and higher farm use of milk during that period. The make allowances used by USDA to determine purchase prices for cheese, butter and nonfat dry milk are assumed to be held at their 1984 levels. However it is also assumed that USDA's make allowance is 20¢/cwt. below the actual margin taken by manufacturers. This implies that the market price for manufacturing grade milk will be less than the support price by 20¢/cwt. A difference of at least this magnitude has generally occurred under recent policy (if one excludes the market price effects of the diversion program in 1984). Throughout the entire period it is assumed that an assessment of 15¢/cwt. is collected for dairy promotion activities (this includes assessments for state and regional programs as well as the national program). Imports and commercial stocks are held at their 1984 levels.

While these policy instruments and exogenous factors are allowed to run their course and expire or are held constant, supply of milk at the farm and retail demands for dairy products are assumed to increase (shift to the right in the standard diagrammatic exposition) as a net result of exogenous factors, such as input prices and technological gains on farms or population, incomes and prices of substitutes at the consumer level.

Grade A or fluid grade milk supply is assumed to shift (increase) one percent per year beginning in 1986. Grade B or manufacturing grade milk supply is assumed to shift (increase) .7 percent per year, reflecting less growth than grade A supply due to somewhat lower profitability on these farms and factors leading to grade B conversion. These shifts are the net effects of changes in some factors which may imply leftward shifts in supply (e.g. higher costs) and other factors which results in rightward shifts (e.g. greater efficiency). Obviously it is assumed that the net effect of changes in exogenous factors is an increase in supply. Precise assumptions were not made about specific exogenous factors; however, the end effects that were assumed are believed to be reasonable and consistent with a continuation of the traditional gains in farm productivity and moderately increasing or stable prices for feed and other inputs.

Given recent growth trends, population increases of about one percent per year, modest inflation in food prices, a fairly strong economy exhibiting modest but steady growth, and reasonably effective (generic) promotion program, the following net effects on product demands are assumed. Fluid product demand increases (shifts right) .5% per year beginning in 1985. Demand for manufactured products not directly affected by government purchases (e.g. cottage cheese, ice cream, yogurt, etc.) increases 2% per year. Demand for supported products, i.e., cheese, butter, and nonfat dry milk, shifts 3.1% per year, primarily caused by growth in cheese sales.

Results

The results are summarized in Table 3 and illustrated in Figures 1 through 3. By 1990, the combined effect of the exogenous shifts in demand and the price

Table 3. Aggregate Impacts Under Alternative Price Support Scenarios

Variable and Price Scenario	1984	1985	1986	1987	1988	1989	1990
Consumption (bil. lbs. ME)							
"12.10"	125.1	128.4	131.0	133.5	136.0	138.7	141.4
"11.60"	125.1	128.7	131.8	134.3	136.9	139.5	142.2
"11.10"	125.1	128.7	132.4	135.1	137.7	140.4	143.1
Production (bil. lbs.)							
"12.10"	136.1	138.3	140.5	141.8	143.2	144.5	145.9
"11.60"	136.1	137.8	139.4	140.7	142.0	143.3	144.8
"11.10"	136.1	137.8	138.6	139.6	140.9	142.2	143.6
All Milk Price ($/cwt.)							
"12.10"	13.38	13.00	12.85	12.85	12.84	12.84	12.83
"11.60"	13.38	12.75	12.36	12.36	12.35	12.35	12.34
"11.10"	13.38	12.75	12.00	11.87	11.86	11.86	11.85
Net Removals (bil. lbs. ME)							
"12.10"	8.5	9.7	9.8	8.6	7.4	6.1	4.8
"11.60"	8.5	8.8	7.9	6.7	5.5	4.2	2.8
"11.10"	8.5	8.8	6.5	4.7	3.5	2.1	.7
Net Expenditures (mil. $)*							
"12.10"	1290	1310	1297	1143	982	813	637
"11.60"	1290	1167	1010	857	698	532	358
"11.10"	1290	1167	803	581	424	260	89

*Includes costs of purchases plus any cost from diversion payments or revenues from assessment, does not include other extraneous costs associated with administration, storage, etc., which may amount to $200 million but can vary considerably.

cuts result in differences in consumption (commercial disappearance) of about one billion pounds for each 50¢/cwt. cut in the support price. However, the major effect must be attributed to the assumed exogenous increases in demand which push consumption from 125 billion pounds (milk equivalent, fat basis) in 1984 to over 140 billion pounds in 1990.

Milk production is affected similarly. The differences between 1990 production projections across scenarios is marginally greater than for consumption, but the primary cause of production increases is the assumed exogenous growth.

Net removals are shown in Table 3 and illustrated in Figures 1 to 3. The figures show the relationship of net removals to price over time. If five billion pounds can be used as a measure of an acceptable level of net removals, then net removals do not reach or go below this level until 1990 under the "12.10" scenario, until 1989 under the "11.60" scenario (although they are close in 1988), and until 1987 under the "11.10" scenario.

Net removals are projected to fall below three billion pounds in 1990 under the "11.60" scenario and in 1989 under the "11.10" scenario. This would suggest that the support price could be raised in those years. Based on the "11.10" scenario, Figure 3 illustrates that the support price could be raised to $11.30 in 1989 and $11.60 in 1990 without net removals exceeding three billion pounds in those years.

Conclusions

In order to bring supply and demand into reasonable alignment and to get expenditures under the support program down to acceptable levels, it is likely to be necessary to reduce the support price to $11.10. However, it does not appear to be necessary to reduce the support price further, unless a larger cut in expenditures and net removals in 1986 are required. More rapid cuts may not be advisable insofar as they would make for a much more disruptive and painful adjustment process. Nonetheless it should also be recognized that expenditures and net removals are not likely to reach acceptable levels before 1987.

These results also indicate that, whereas price is important, other factors may play an even more important role in determining consumption and production levels. If consumption does not increase annually at a moderate but steady rate, net removals would be significantly higher and prices would have to drop lower if net removals are to be reduced. On the other hand, if promotion programs begun in 1984 prove to be very successful, then cutting the support price to $11.10 would likely not be required to get net removals and expenditures to acceptable levels in 1987.

The supply shifts assumed for this analysis assume moderate but steady increases due to technological change and continued favorable feed prices. If feed prices increase substantially, production on the farm du to technological change could become even more rapid and necessitate further price cuts. For example, if bovine growth hormone becomes available for commercial use in 1988, support prices may have to be reduced well below $10 in order to keep expenditures at a reasonable level.[3]

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[3] For further details on the effects and implications of bovine growth hormone see: Robert J. Kalter, et al., Biotechnology and the Dairy Industry: Production Costs and Commercial Potential of the bovine Growth Hormone, A.E. Res. 84-22, Dept. of Agr. Econ., Cornell University, 1984.

Figure 1a. NET REMOVALS UNDER
THE $12.10 SCENARIO

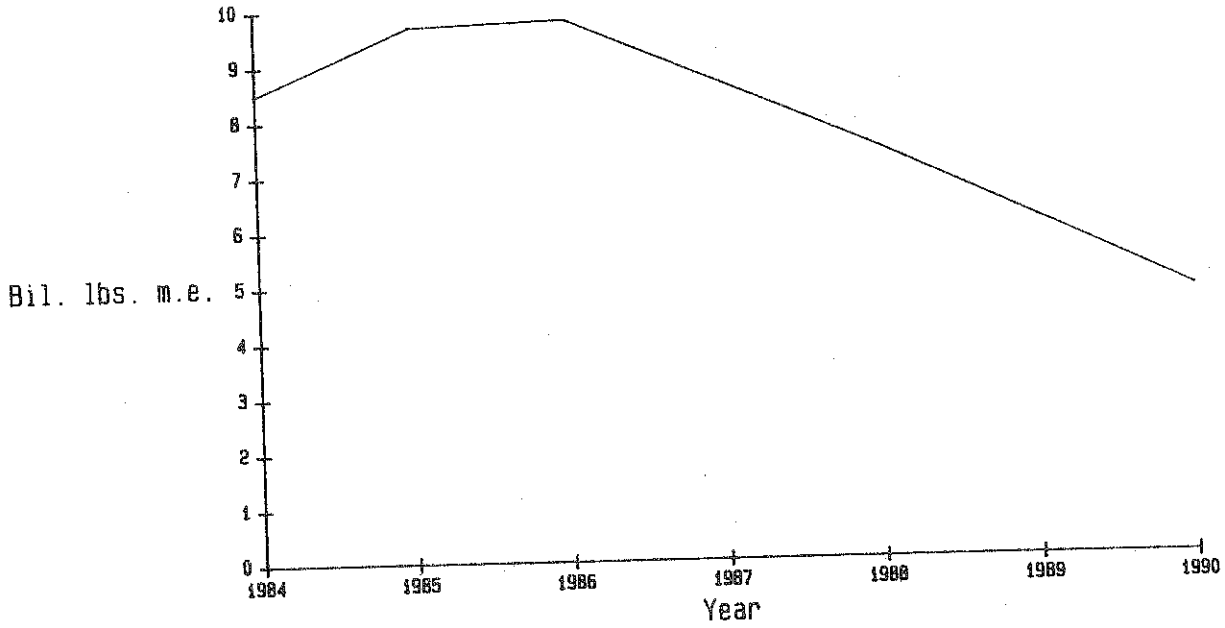

Figure 1b. ALL MILK PRICE UNDER
THE $12.10 SCENARIO

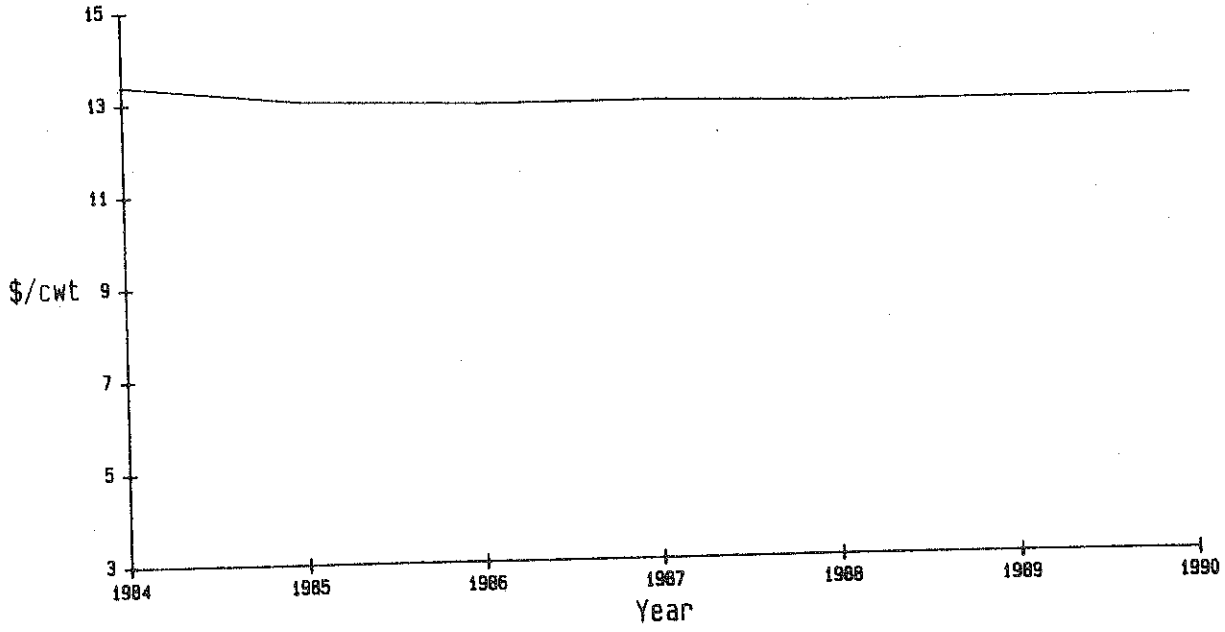

Figure 2a. NET REMOVALS UNDER
THE $11.60 SCENARIO

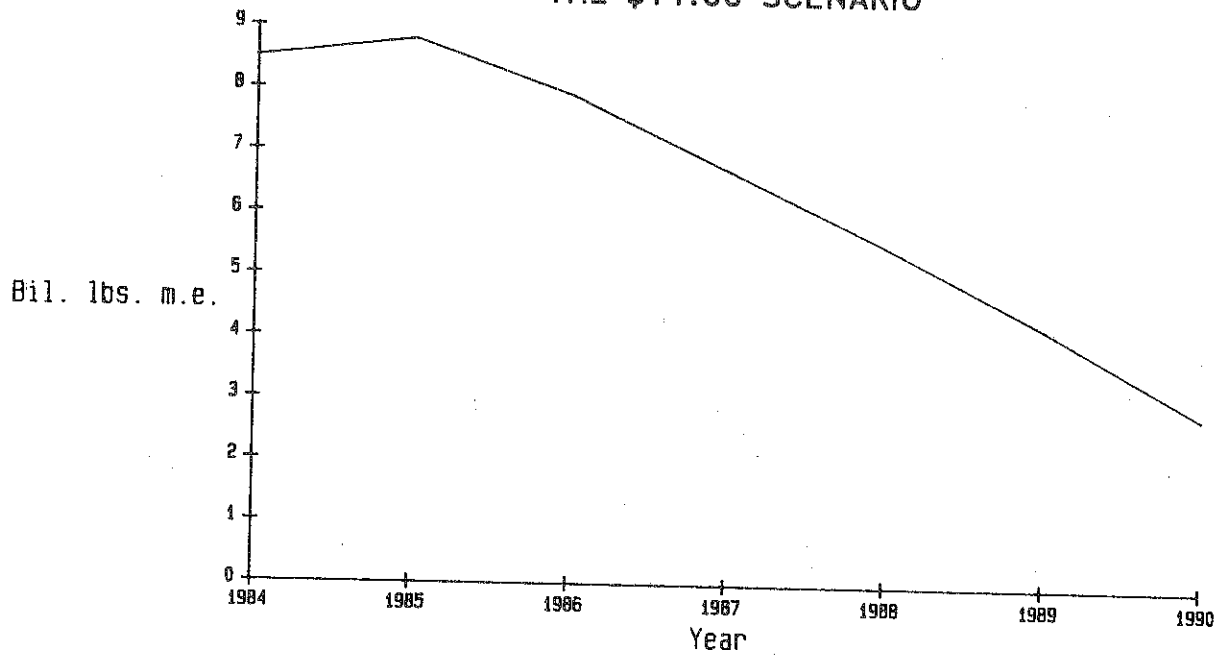

Figure 2b. ALL MILK PRICE UNDER
THE $~~12.10~~ SCENARIO
11.60

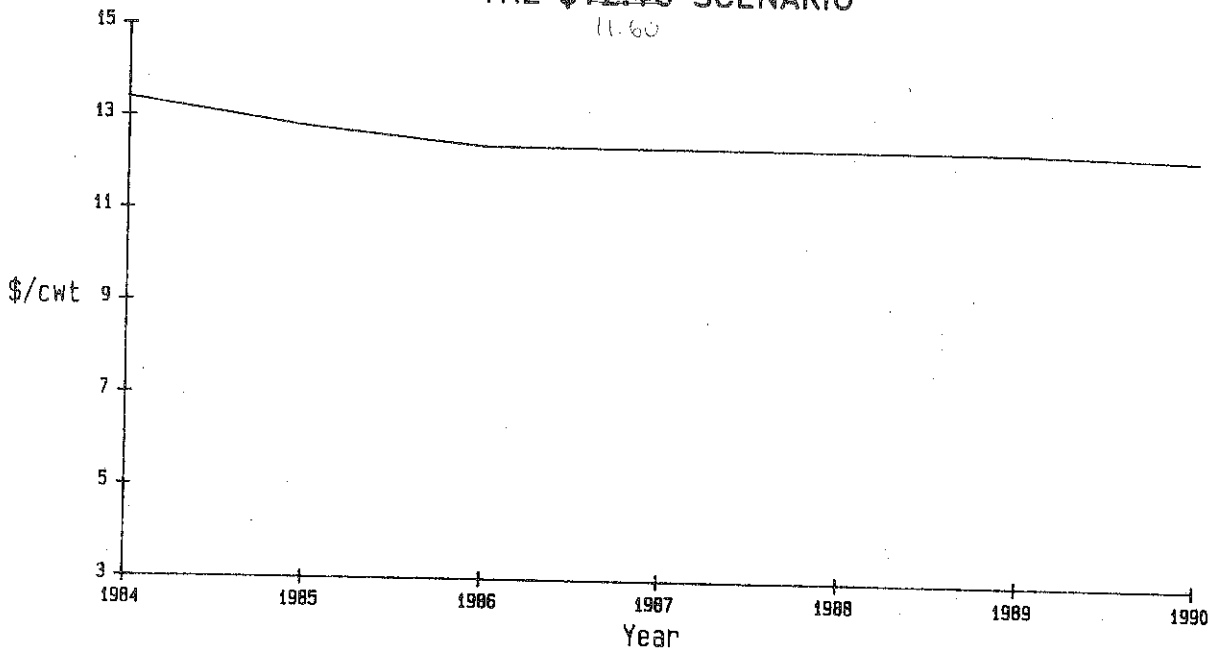

Figure 3a. NET REMOVALS UNDER
THE $11.10 SCENARIO

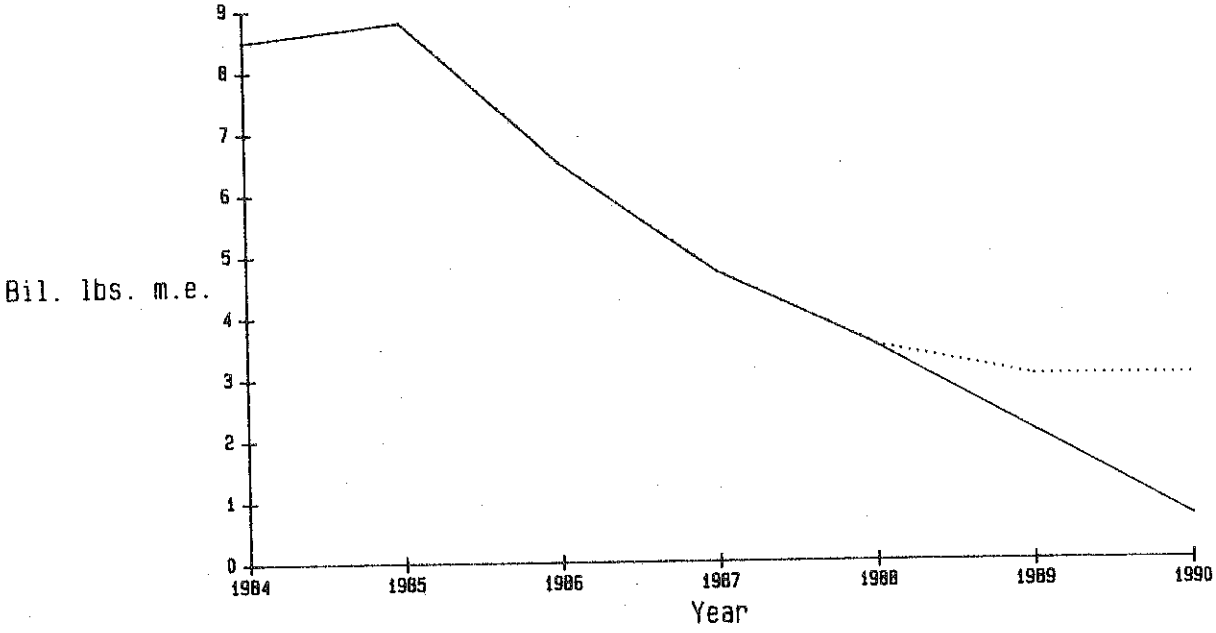

Figure 3b. ALL MILK PRICE UNDER
THE $11.10 SCENARIO