Potential Income Effects of the Harkin-Gephardt Proposal on New York Dairy Farms

Harry M. Kaiser, Edward H. Heslop, and Robert A. Milligan

This article reports the results of research regarding the farm-level implications for New York dairy producers of national mandatory supply control programs for feed grains and milk. The analysis is based on the proposed Harkin-Gephardt Bill which would authorize a mandatory supply control program for milk and the major supported crops. Representative farm budgets were constructed for a sample of dairy farms to assess the possible effects on costs and returns. Some farmers would gain, while others would not. The results suggest that dairy farmers who purchase all of their feed would be worse off, while farmers who grow grain would be better off under the proposed supply control program.

Introduction

Mandatory supply controls have been used in the past for some U.S. agricultural commodities but have never been implemented for the dairy industry. However, over the last two years there has been a renewed interest in this type of program for dairy policy. Advocates (e.g., the Family Farm Alliance) claim that mandatory production controls would reduce the large surpluses of milk acquired by the government in recent years at support prices mandated by Congress. It is also argued that such a policy would eliminate the problems of declining milk prices and income and equity erosion experienced by many farm businesses. A bill authorizing a mandatory supply control program for milk and other agricultural commodities has been introduced by Senator Harkin (D, Iowa) and Representative Gephardt (D, Missouri). The Harkin-Gephardt proposal, if enacted and implemented following producer approval in a referendum, would have significant ramifications for dairy farmers.

Several recent studies have considered the implications such a policy would have on the dairy industry. Research by Nott and Hamm, Mason, Kaiser, and Jesse and Cropp has focused on more qualitative dimensions of mandatory supply control programs, providing valuable information on alternative types of policies, experiences from other countries (e.g., Canada and the European Community), and analyses of the ramifications mandatory programs would have at the farm level. There have also been several economic analyses of the Harkin-Gephardt proposal (see, for example, studies by the Food and Agricultural Policy Research Institute and the Agricultural and Food Policy Center). Each examined differences between the Harkin-Gephardt Bill and existing programs with respect to their impacts on aggregate net farm income, prices, production, consumer demand, government purchases and costs for the major agricultural commodities produced in the U.S. These studies have predicted that this bill would result in significant changes in dairy markets if implemented. The general changes include an increase in aggregate net farm income and prices and decreases in production, consumption, and government purchases of commodities. While insight has been gained on the general effects of mandatory production controls, with the exception of these two macroeconomic studies, specific estimates of farm prices, costs, and incomes are not available. Moreover, previous research provides little information on the micro-level ramifications of the Harkin-Gephardt Bill.

In this article, the farm-level implications of mandatory supply control on dairy farm prices, costs, and incomes are explored. There are two specific objectives of this paper. The first objective is to ascertain whether New York dairy producers

Assistant Professor, Graduate Student, and Associate Professor, respectively. Department of Agricultural Economics, Cornell University. The authors wish to thank Kenneth Robinson and two anonymous reviewers for useful suggestions and comments on earlier drafts of this paper.

would be better or worse off under the Harkin-Gephardt Bill relative to current dairy programs in terms of net income. The second objective is to determine to what extent the distribution of net benefits of the Harkin-Gephardt Bill relative to existing programs differs by farm resource characteristics . To address these two objectives, representative farms are constructed from dairy farm business summary data in order to estimate net incomes for two scenarios. Under the base scenario, net incomes are calculated using actual 1986 data from the Summary. In the second scenario, net incomes are estimated assuming that the supply control and price provisions of the Harkin-Gephardt Bill were operational in 1986.

Provisions of the Harkin-Gephardt Bill

The Harkin-Gephardt or "Family Farm" Bill was introduced into Congress in the fall of 1986 as an alternative to the Food Security Act of 1985. Advocates contend that this Bill is a better policy option than the 1985 Farm Act because it would result in price and income protection for "family farmers" while simultaneously reducing the burgeoning public costs of farm programs. The bill attempts to achieve its policy objectives through (1) authorizing a mandatory supply control (marketing quota) program, and (2) significantly raising support prices for selected crops and milk. If passed by Congress and signed by the President, producers would vote in a special referendum to approve or reject the program. According to the Bill, a simple majority of over 50 percent would be required for implementation.

The current milk surplus problem would be addressed by the Family Farm Bill through implementing a National Milk Marketing Base Program. This program is designed to limit total marketings to total commercial demand for milk and dairy products. Two types of adjustments in milk marketings would be required by this program. The first adjustment is specific to each farm. Each producer would be assigned a permanent base or Milk Marketing History, which is equal to the farmer's average annual milk marketings for 1981—85, after deleting the highest and lowest marketing years in this period.[1]

The second adjustment would be uniformly applied to all farms based on estimates of national milk use relative to production. For each year the program is in effect, the Secretary of Agriculture would estimate a Milk Marketing Allocation Factor, which is equal to projected national commercial disappearance plus exports, divided by estimated total production. The Secretary would use these two adjustments in calculating each producer's Milk Marketing Bases, which is the quantity of milk each farmer could sell without being penalized. Each producer's annual base would be determined by the following formula:

(1) $MMB = 99\% \times MMH \times MMAF$

where: MMB = Milk Marketing Base;
MMH = Milk Marketing History;
MMAF = Milk Marketing Allocation Factor.

In return for these reductions in milk marketings, the price of milk sold within one's base would be supported at levels significantly higher than the current dairy support price. Beginning in calendar year 1988, the support price for 3.67% (butterfat) milk would be set at 70 percent of parity and would be increased 1 percentage point each year until it reached a maximum of 80 percent of parity in 1998. All crops covered by this Bill would also be supported at these parity percentages.

Any milk sold over one's base would be subject to a price penalty in order to discourage excess milk marketings. As currently written, the penalty on over-base milk would be equal to 75 percent of the price support.[2]

The Model and Data

If the provisions of the Family Farm Bill were implemented, there would be several benefits and costs to dairy farmers compared to the current dairy programs. The main benefit would be higher farm prices due to the increase in the support price for milk. Assuming that the support price for 3.67 percent (butterfat) milk were set at 70 percent of parity, producers would have received $15.00 per hundredweight in 1986 rather than Sll.60.[3] The

[1] Milk Marketing Histories for producers that did not sell milk in each of Milk Diversion Program would be equal to the base established under the program, i.e., 1981-82. Finally, for producers that sold milk in only one of these five years the Secretary of Agriculture is given the discretion to determine a "reasonable" MMH for them.

[2] For a more detailed description of all the provisions in the HG Bill, see Kaiser and Heslop.

[3] The $ 15.00 per hundredweight estimate of the price support for milk at 70 percent of parity for 1986 is based on 70% of the parity equivalent for manufacturing grade milk in 1986 reported in *Dairy Situation and Outlook Report,* April 1987. This is very close to the estimate used for 1987 in the study by the Agricultural and Food Policy Center ($15.02) but much lower than the estimate used in the Food and Agricultural Policy Research Institute study for 1987 ($16.95). While the latter study

Table 1. Profiles of the Three Representative Farms.

	Resource Classification			
Item	**Average Farm**	**Forage Only**	**Some Grain**	**All Grain**
Number of Farms	179	94	70	15
Average Cow Numbers	90	75	98	93
Average Heifer Numbers	73	57	82	79
Total	163	132	180	172
Milk Marketings (10,000 Ibs)	140.6	114.8	156.6	147.5
Marketings/Cow (1 ,000 Ibs)	15.6	15.3	16.0	15.9
Crop Acreage				
Corn Silage	68	60	73	53
Hay	142	120	156	153
Com Grain	32	0	72	124
Other Grain	37	0	18	37
Total	279	180	319	367

main costs to producers are foregone income due to cutbacks in milk marketings and increased feed costs since the Bill would also support crop prices at 70 percent of parity. This second cost would have differential impacts on producers depending upon the quantity and quality of their soil resources.

Construction of Representative Farms

Four representative farms were constructed from the 1986 Cornell Dairy Farm Business Summary records. The first farm was based on average values from all farms in the summary. This farm, which is referred to as the "Average" farm, was used to determine whether New York producers, as a whole, would be better or worse off under the Harkin-Gephardt Bill relative to existing programs. The remaining three representative farms were denned in terms of feed supply characteristics, based on the following definitions used by Kalter, et al. For all three situations it was assumed that the farms grew all forage necessary to meet animal needs. In the first case, the resource situation consisted of farms that purchased all their corn grain (Forage Only case). The second resource situation, the Some Grain case, included farms which grew some, but not all, of the corn grain for their own usage. The last recourse situation, the AH Grain case, consisted of farms that had excess corn grain for sale. The representative farm budgets were based on average values from the farm business summaries for all farms belonging to each resource category. Profiles of these farms are presented in Table 1. Although based on New York data, these farms are thought to represent most of the dairy farm situations prevailing in the Northeast (Kalter, et al.).

The Base and Harkin-Gephardt Scenarios

For each representative farm, net income was estimated under two scenarios for 1986.[4] In the first situation, the base scenario, net income was calculated based on support prices mandated in the Food Security Act. In the second scenario, the Harkin-Gephardt (HG) scenario, net income was estimated assuming the supply control and pricing provisions of this Bill were implemented. Net income for the HG scenario was first calculated for four levels of reductions from 1986 marketings. This was done because the level of reductions would depend, in large part, on each producer's current milk marketings relative to her or his base marketings and hence difficult to generalize. The four

did not explain how this figure was calculated, it probably reflects the higher grain costs under the Harkin-Gephardt Bill. However, if the provisions of this bill were enacted today, the 70% of parity estimate used in this study would be more appropriate than the $16.95 estimate because the formula for determining parity uses the previous 10 years of prices paid and received. Another possible explanation for the latter study's $16.95 estimate is it may be based on the All Milk Price parity equivalent, which is not appropriate since the dairy support price applies to manu-facturine erade mttk. not all milk.

[4] Net income, in this study, is defined as total farm receipts less operating expenses, interest, and depreciation.

Table 2. Net Income Estimation Procedures Under the SFFB With Reductions in Cow Numbers (Case 1)

			Harkin-Gephardt Scenario - - - RFAM - - - -					
	Base Scenario		0%	5%	10%	15%	20%	25% 3%
Receipts								
Milk Sales	MP86*MM86		MPHG*MM86* (1 - RFAM)					
Dairy Cattle Sales	Ave From Records		BS* (1 - RFAM / .85)					
Calve Sales	Ave From Records		BS* (1 - RFAM / .85}					
Other Livestock Sales	Ave From Records		BS* (1 - RFAM / .85)					
Crop Sales	Ave From Records		Same as BS*					
Misc Income	Ave From Records	or	BS*65%* 2.29** Same as BS					
Operating Expenses								
Labor	Ave From Records		BS* (1 - RFAM / .85)					
Feed Grain	Ave From Records		BS* (1 - RFAM / .85) *2.29					
		or	BS - (ACG* (1 - (RFAM/ .85)) *YLD*Pc***					
Other	Ave From Records		BS* (1 - RFAM / .85)					
Machinery	Ave From Records		BS* [1 - %RAP]					
Livestock	Ave From Records		BS* (1 - RFAM / .85)					
Milk Marketing	Ave From Records		BS* (1 - %RMM)					
Crop	Ave From Records		BS* (1 - %RAP)					
Real Estate	Ave From Records		Same As BS					
Other	Ave From Records		BS* (I - RFAM / .85)					
Interest	Ave From Records		IR* (DB - CCS)					
Depreciation	Ave From Records		Same as BS					

Where:
MP86 = State average milk (blend) price received in 1986;
MM86 = Total milk marketings in 1986;
MPHG = Projected milk price in 1986 (70% parity);
RFAM = Reduction from actual 1986 marketings, 0% . . . 30%;
BS = Base Scenario Value;
ACG = Acres of com grain;
YLD = Corn grain yield per acre;
PC = Corn meal price/ton ($164.00)
%RAP = Percentage reduction in acres planted;
%RMM = Percentage reduction in milk marketed;
IR = Interest rate;
DB = Base scenario debt level;
CCS, = Proceeds from livestock sales applied to debt.

*This formula applies to Forage Only and Some Grain farms.
**This formula applies to All Grain farms.
***This formula applies to Some Grain farms only.

reductions from actual 1986 milk marketings (hereafter referred to as RFAM) included 0%, 10%, 20%, and 30%. An estimated reduction level, based on national data for 1986, was also used to compare incomes under the two scenarios. It was assumed that there would be no excess milk marketings by the three farms above their bases and therefore no penalty payments.

Net Income Estimation

Net income in the base scenario was calculated as follows. Milk sales were determined by the product of the 1986 state average blend price[5] ($12.09) times average milk marketings for each representative farm. Other farm receipts and all costs were based on average values from individual records

[5] The blend price is the minimum price that handlers of Grade A milk (eligible for fluid products) must pay to farmers within a milk marketing order. This price is an average of Class I (fluid products) and Class II (manufactured products) minimum prices, weighted by marketwide fluid and non-fluid utilization rates, respectively. The milk price support is indirectly related to the blend price because the support price attempts to establish a floor on Grade B milk (only eligible for manufactured products) prices. Since Class I and II prices are based on manufacturing prices in Minnesota and Wisconsin, the blend price is strongly influenced by the milk price support.

Table 3. Net Income Estimation Procedures Under the SFFB With Reductions in Milk ivlarketings Per Cow (Case 2)

			Harkin-Gephardt Scenario						
			RFAM						
	Base Scenario		0%	5%	10%	15%	20%	25%	30%
Receipts									
Milk Sales	MP86*MM86		MPHG*MM86* (1 - RFAM)						
Dairy Cattle									
Sales	Ave From Records		Same as BS*						
Calve Sales	Ave From Records		Same as BS*						
Other Livestock Sales	Ave From Records		Same as BS*						
Crop Sales	Ave From Records		Same as BS*						
Misc Income	Ave From Records	or	BS*65%*2.29** Same as BS						
Operating Expenses									
Labor	Ave From Records		Same as BS						
Feed									
Grain	Ave From Records		BS*RGCLP*2.29						
Other	Ave From Records		Same as BS						
Machinery	Ave From Records		Same as BS						
Livestock	Ave From Records		Same as BS						
Milk Marketing	Ave From Records		BS* (1 - %RMM)						
Crop	Ave From Records		Same as BS						
Real Estate	Ave From Records		Same as BS						
Other	Ave From Records		Same as BS						
Interest	Ave From Records		Same as BS						
Depreciation	Ave From Records		Same as BS						

Where:
MP86 = State average milk (blend) price received in 1986;
MM86 = Total milk marketings in 1986;
MPHG = Projected milk price in 1986 (70% parity);
RFAM = Reduction from actual 1986 marketings, 0% . . . 30%;
BS = Base Scenario Value;
RGCLP = Percentage reduction between BS and linear programming feed costs (see text);
%RMM = Percentage reduction in milk marketed;

*This formula applies to Forage Only and Some Grain farms.
**This formula applies to All Grain farms.

for each group. In addition to milk sales, other farm receipts included dairy cattle and calf sales, other livestock sales, crop sales, and miscellaneous income. Operating expenses included labor, feed, machinery, livestock, crop, real estate, and other expenses. Fixed costs consisted of interest pay

Net income in the Harkin-Gephardt scenario was estimated using the following procedures and assumptions (see Tables 2 and 3). To calculate the New York blend price given a 70 percent of parity milk support price, the following equation was estimated using ordinary least squares:[6]

$$(2) \quad BPt = -1.555 + 0.949\ PSt + 0.067\ Ut$$
$$(-5.8) \quad (12.9) \quad (1.5)$$
$$R\text{-Square} = 0.989$$

where: BPt = Blend price, year t;
PSt = Price support, year t;
Ut = Class I utilization, New York-New Jersey Milk Marketing Order, year t;

The 1986 price support level under the HG Bill and Class I utilization rates for New York were substituted into equation (2) to estimate milk prices for the HG scenario (data obtained from Federal Order *#2).* The estimated blend price was $15.36 per hundredweight.[7] Milk sales were then determined by the product of the blend price times average milk marketings under each RFAM.

[6] Numbers in parentheses are t-statistics. All coefficients were significantly different from zero at the 10% significant level.

[7] An alternative way of estimating the Harkin-Gephardt blend price for New York is to take the difference between the actual support price in 1986 ($11.60) and the 70% parity equivalent for ($15.00) and add it to the 1986 average blend price ($12.09). This method results in a blend price equal to $15.49, which is quite close to the $15.36 estimate derived from equation (2).

Changes in the remaining receipts and in all costs under the Harkin-Gephardt Bill would depend upon the manner in which producers would satisfy their reductions in milk marketings. For example, costs and other farm receipts would be different if farmers made these reductions through culling dairy cattle rather than by using management strategies that reduce marketings per cow. Consequently, two alternative strategies were modeled for reducing milk marketings for each of the four RFAM levels. Under the first case (Case 1), it was assumed that the reductions in milk marketings were achieved through reducing cow numbers. In the second case (Case 2), reductions in milk marketings were assumed to be made through reducing marketings per cow.

Other Receipts and Costs (Case I). To accomplish the reduction in milk marketings in Case 1, it was assumed that producers reduced herd inventory by culling their lowest producing cow and proportional youngstock inventories. The percentage reduction in herd size was 1.176 greater than the required percentage reduction in milk marketings because lower than average producing animals would be culled (Oltenacu).

Revenue from dairy cattle, calves, and other livestock sales were equal to base scenario levels reduced by the percentage decrease in cow numbers required to satisfy reductions in milk marketings for each RFAM. Revenue from crop sales for the Average, Forage Only, and Some Grain farms was assumed to be identical to the base scenario, as these sales are generally excess roughage. However, crop sales for the All Grain farm were adjusted in the following fashion. It was assumed that this farm was in the Feed Grain Program and the maximum acreage reduction (35%) was in effect. The farmer then received 70 percent of the corn parity price ($3.44 per bushel) on all corn sales, given the 35 percent cutback. Finally, miscellaneous income for all three farms was assumed to be the same as in the base scenario for all levels of RFAM.

Operating expenses in this case were as follows. Hired labor costs were decreased by the reduction in dairy cattle. In calculating feed costs, first the amount of grain for feeding requirements was reduced proportionately to the reduction in dairy animals. For the Forage Only and All Grain farms, the amount of concentrate remaining to be purchased after the reduction was multiplied by the ratio of corn and soybean prices set at 70 percent of parity to their actual prices in 1986, which was equal to 2.29. For the Average, and Some Grain farms, the corn grain acreage was allowed to remain at the same level, adjusting grain purchases downward to reflect the increased per cow contribution of home grown grains. A second version of Case 1 for the Some Grain farm was also considered. In this version, it was assumed that the Some Grain farm could use idle forage acres to grow additional grain. Roughage and other feed costs were reduced by the same percentage used in cow number reductions for each RFAM. Machinery costi were reduced by the percentage reduction in acres planted. It was assumed that the unutilized roughage acres on the Average, Forage Only, and Some Grain farms were idled. For the All Grain farm roughage acreage was reduced according to the percentage decrease in cow numbers while grain acreage was decreased by the 35 percent requirement of the acreage reduction program. All livestock costs, except milk marketing, were reduced by the same percentage as cow numbers for each RFAM. Milk marketing costs were adjusted by the corresponding change in milk sales for each RFAM. All crop expenses were adjusted using identical procedures employed in adjusting machinery costs. Real estate costs were assumed to be the same for all scenarios. Finally, other operating costs were reduced by the same percentage applied to cow numbers.

Proceeds from the sale of the excess dairy cattle required to meet the marketing reductions were applied to reduce debt. Hence, interest costs for each RFAM greater than 0 percent fell according to the debt remaining after this sale. The value of the culled cows and heifers was based on the New York average slaughter price for 1986, $33.71 per hundredweight (New York Economic Handbook, 1987). Depreciation costs were assumed to be the same in all scenarios.

Other Receipts and Costs (Case 2). To accomplish the reduction in milk marketings in Case 2, it was assumed that producers reduced marketings per cow instead of cow numbers. In this case, the results should reflect an increase in the use of forage and a decrease in the use of grain so that feed costs are minimized. All receipts and costs, except milk sales receipts and grain costs, were assumed to be the same as those in the base scenario.

The grain costs in Case 2 were determined using a linear programming model that minimized the feed costs to meet the nutrient demand for the dairy herd. The program balanced crude protein, net energy-lactation, acid detergent fiber, and dry matter intake demands by allocating feeds to early lactation (91.5 days), mid lactation (122 days), late lactation (91.5 days), dry cows (60 days), and replacement heifers. The change in feed requirements was calculated by first determining feed needs, holding the ratio of hay to corn silage acres constant and assuming no additional acres could enter the solution. Feed needs were then determined for 10

Table 4. Abbreviated Income Statements for the Average Farm, Base and Harkin-Gephardt Scenarios, Cases 1 and 2.

		Harkin-Gephardt Scenario			
	Base	RFAM			
Income Statement/Case	Scenario	0%>	10%	20%	30%
Case t Reduction Scenario					
Total Receipts	199,261	247,107	223,350	199,593	175,836
Milk Sales	169,987	215,895	194,305	172,716	151,126
Operating Costs	146,587	197,297	176,793	156,290	135,787
Grain + Concentrate	40,573	93,047	82,101	71,154	60,207
Net Income*	12,139	9,275	6,379	3,482	585
% Change From Base Scenario		-24%	-47%	-71%	-95%
Net Income Per Cow	135	103	80	51	10
Case 2 Reduction Scenario					
Total Receipts	199,261		225,517	203,928	
Milk Sales	169,987		194,305	172,716	
Operating Costs	146,587		139,295	124,287	
Grain + Concentrate	40,573		34,428	21,401	
Net Income*	12,139		45,687	39,463	
% Change From Base Scenario			273%	222%	
Net Income Per Cow	135		575	573	

*Net Income is defined as total receipts minus operating costs minus interest and depreciation.

and 20 percent reductions in marketings and therefore herd averages. Again, it was assumed that no additional acreage could enter the solution. Finally, the resulting costs were multiplied by 2.29, i.e., the increase in grain prices under the Harkin-Gephardt Bill. The 10 and 20 percent RFAMs were selected for Case 2 analysis since the national average reduction was projected to fall within this range.

It is important to note that Cases 1 and 2 represent the extremes of how producers would respond to supply control. Actual changes would probably lie somewhere between the two estimates of net income. Most farmers would likely use a combination of reduction in cow numbers and marketings per cow.

Results

The abbreviated income statements for the four representative farms for all scenarios are presented in Tables 4, 5,6, and7.[8] The results for the average of all farms were inconclusive with respect to Case 1 and 2 reduction strategies. Using the Case 1 reduction strategy, the Average farm was worse off at all RFAMs in the HG scenario relative to the base scenario. HG net income ranged from 24 to 95% lower than actual 1986 income. On the other hand, HG income was significantly higher than base scenario income under Case 2 reduction strategies. At the 10 and 20% RFAM, net income more than doubled in the HG scenario. Consequently, it would appear that the method of reducing milk marketings is a critical factor in determining whether New York dairy farmers as a whole would gain or lose from the Harkin-Gephardt proposal.

The net income for the Forage Only farm was lower under the HG Bill than under existing policy. In Case 1, the percentage decline in net incomes in the HG scenario ranged from 58% for the 0 percent RFAM to 77% lower for the 30 percent RFAM (Table 4). In Case 2, HG net income was lower for some situations and higher for others. For example, net income was 9% lower for a 10% reduction, but 8% higher for a 20% reduction in milk marketings. The major reason for these results was the higher cost of grain and concentrate. Grain and concentrate costs more than doubled in the HG situation. Grain and concentrate costs, on average, represented about

[8] The complete income statements for the three representative farms for all scenarios may be obtained from the authors. Alternatively, the income

Table 5. Abbreviated Income Statements for the Forage Only Farm, Base and Harkin-Gephardt Scenarios, Cases 1 and 2.

Income Statement/Case	Base Scenario	Harkin-Gephardt Scenario RFAM 0%	10%	20%	30%
Case 1 Reduction Scenario					
Total Receipts	166,780	206,174	185,824	165,474	145,123
Milk Sales	145,870	185,264	166,738	148,212	129,685
Operating Costs	117,349	168,266	149,378	130,490	111,602
Grain + Concentrate	40,787	91,704	80,915	70,127	59,338
Net Income*	19,935	8,412	7,171	5,930	4,688
% Change From Base Scenario		-58%	- 64%	- 70%	- 76%
Net Income Per Cow	269	112	108	103	97
Case 2 Reduction Scenario					
Total Receipts	166,780		187,648	169,122	
Milk Sales	145,870		166,738	148,212	
Operating Costs	117,349		140,046	118,246	
Grain + Concentrate	40,787		65,110	44,935	
Net Income*	20,156		18,327	21,822	
% Change From Base Scenario			-9%	8%	
Net Income Per Cow	269		277	380	

*Net Income is defined as total receipts minus operating costs minus interest and depreciation.

Table 6. Abbreviated Income Statements for the Some Grain Farm, Base and Harkin-Gephardt Scenarios, Cases 1 and 2.

Income Statement/Case	Base Scenario	Harkin-Gephardt Scenario RFAM 0%	10%	20%	30%
Case 1 Reduction Scenario					
Total Receipts	**223,790**	**277,488**	**251,062**	**224,636**	**198,210**
Milk Sales	**189,323**	**240,452**	**216,407**	**192,362**	**168,317**
Operating Costs	**164,783**	**214.718**	**185,317**	**157,867**	**132,369**
Grain + Concentrate	**40,349**	**92,605**	**74,392**	**58,131**	**43,821**
Net Income*	**11,691**	**14,771**	**18,193**	**19,663**	**19,182**
% Change From Base Scenario		**26%**	**56%**	**68%**	**64%**
Net Income Per Cow	**119**	**151**	**210**	**262**	**302**
Case 2 Reduction Scenario					
Total Receipts	**223,790**		**253,443**	**229,398**	
Milk Sales	**189,323**		**216,407**	**216,407**	
Operating Costs	**164,783**		**171,453**	**142,596**	
Grain + Concentrate	**40,349**		**49,152**	**23,185**	
Net Income*	**11,455**		**34,438**	**39,696**	
% Change From Base Scenario			**201%**	**247%**	
Net Income Per Cow	**119**		**398**	**530**	

*Net Income is defined as total receipts minus operating costs minus interest and depreciation.

Table 7. Abbreviated Income Statements for the Grain Farm, Base and Harkin-Gephardt Scenarios, Cases 1 and 2.

Income Statement/Case	Base Scenario	Harkin-Gephardt Scenario RFAM 0%	10%	20%	30%
Case 1 Reduction Scenario					
Total Receipts	234,189	294,948	270,039	245,130	220,221
Milk Sales	178,347	226,512	203,861	181,210	158,558
Operating Costs	162,820	195,050	176,506	157,962	139,418
Grain + Concentrate	29,324	67,250	59,338	51,426	43,515
Net Income*	23,239	51,768	45,777	39,786	33,795
% Change From Base Scenario		123%	97%	71%	45%
Net Income Per Cow	339	557	558	559	562
Case 2 Reduction Scenario					
Total Receipts	234,189		272,296	249,645	
Milk Sales	178,347		203,861	181,210	
Operating Costs	162,820		169,977	145,222	
Grain + Concentrate	29,324		41,695	19,502	
Net Income*	23,613		54,563	57,041	
% Change From Base Scenario			131%	142%	
Net Income Per Cow	339		665	802	

*Net Income is defined as total receipts minus operating costs minus interest and depreciation.

penses in the base situation. If the Harkin-Gephardt Bill were adopted, grain and concentrate costs for Forage Only farms would rise to approximately 54% of total operating expenses.

The results of the Forage Only farms reflect the precarious position of many of these producers. These farms are often located on poor soil which makes production of high quality forage difficult and grain production nearly impossible. The negative effect of the increased cost of the purchased feed is much greater than the positive impact of increased milk price. It is important to recognize that a high proportion of the small dairy farms in New York and the Northeast are in this situation. For instance, the 1982 Agricultural Census reports that 57 percent of New York dairy farms did not grow any corn grain in 1982. The proportion of farms from the 1986 Cornell Dairy Farm Business Summary in each of these three resource categories supports the Census figures. About 53 percent of these farms were classified as Forage Only.

The Some Grain farm was projected to increase its income under the HG scenario. In Case 1, the farm was better off for all RFAMs with net income under the HG scenario ranging from $3,080 to $7,491 higher than actual 1986 income. Since some New York farms in this resource class do have the resources to expand grain production, Case 1 was re-estimated assuming that acreage not needed for forage could be converted to grain production. In this case, income increased marginally by $3,316 at the 0% reduction level. For reductions greater than 0%, the Some Grain farm convened to an All Grain farm, and hence the results are not reported. Under Case 2 reductions, the Some Grain farm had significantly higher income in the HG than the base scenario. In this case, net income increased by 195 and 240 percent for the 10 and 20 percent RFAMs, respectively. This result was entirely due to the ability to significantly reduce grain costs in Case 2 assumed management strategies.

The All Grain farm gained the most from the HG Bill because a much smaller quantity of feed was purchased. For reduction levels between 0 and 30 percent, HG net income ranged from 117 to 42 percent higher than base scenario net income in Case 1. In Case 2, HG net income averaged 135 percent higher than base income for the RFAMs considered. The farm was better off under HG because the increase in grain costs was more than offset by an increase in crop and milk receipts.

The actual RFAM that would be mandated if the supply control provisions of the HG proposal were implemented would be specific to each farm. Farms that have increased marketings relative to their base would have to cut back more than farms that have

not expanded or have actually decreased marketings relative to this base. One way to gauge the average RFAM is to assume that national data are representative of these farms and calculate a marketing base using national data. In 1986, national milk marketings totaled 142.8 billion pounds. The national Milk Marketing History (i.e., 1981 to 1985 average marketings with highest and lowest years excluded) is 134.3 billions pounds. Consequently, the reduction from actual 1986 marketings relative to the base would have been 8.5 billion pounds (a reduction of 6%) had the Harkin-Gephardt Bill been implemented in 1986. In addition, there would also be reductions due to decreases in commercial disappearance because of higher retail prices. The study by the Agricultural and Food Policy Center projected that commercial disappearance would fall from 136.7 billion pounds (milk equivalent) in 1987, under the Food Security Act price support level, to 120.6 billion pounds in 1988, under the Family Farm Bill. Assuming this 11.8 percent decrease in commercial disappearance for 1986 and exports of 2.5 billion pounds, these results suggest that the Milk Marketing Allocation Factor in 1986 would have been 91.7 percent. Using the formula in equation (1), the national average base in 1986 would have been 121.9 billion pounds, compared with actual marketings of 142.8 billion pounds. Therefore, the national average RFAM would have been 14.6 percent in 1986 had the Harkin-Gephardt supply control provisions been implemented.

At a 14.6 percent RFAM, the Average farm's net income in the HG scenario was 59% lower in Case 1 and 247% higher in Case 2 than the base scenario. The Forage Only farm had a significantly lower net income in Case 1 (68 percent lower) and just about the same income in Case 2, relative to the base scenario at this reduction level. In general, it appears that farms in New York that purchase all their concentrate would be worse off if the price and supply control provisions of the Harkin-Gephardt Bill were implemented. Farms falling into the Some Grain category are projected to be better off at a 14.6 percent cutback relative to income influenced by current policy. At this national average reduction, the Some Grain farm increased its income by 64 and 217 percent for Case 1 and 2 strategies, respectively in the HG scenario. The results for the All Grain resource group indicate that net incomes would rise if the HG Bill were implemented, regardless of the reduction strategy followed. Net income for Case 1 and 2 reduction strategies at the 14.6 percent reduction level were projected to be 80 and 130 percent higher in the HG scenario.

Summary and Implications

The impact of mandatory supply control and pricing provisions incorporated in the Harkin-Gephardt Bill would differ depending upon how reductions in milk marketing are made as well as on the resource endowment of dairy farms. Net benefits of this Bill relative to provisions in the 1985 Food Security Act would be highly skewed to farms that grow grain and farms that can satisfy reduction by reducing their herd average production.

Forage Only producers would be worse off under the HG Bill. The net income for this farm in the HG scenario was projected to range from 0 to 68 percent lower than base scenario income at the estimated national average reduction level. On the other hand, the Some Grain and All Grain farmers were consistently better off in the HG scenario. It must be remembered that all results assume successful reductions in marketings for Case 1 and 2 strategies.

The implications of these results for New York dairy farmers suggest that the majority of farmers would be worse off under provisions of the Harkin-Gephardt Bill. This is due to the fact that the majority of New York dairy farmers purchase substantial quantities of feed (57% according to the 1982 Agricultural Census). The rise in feed costs would more than offset the benefits of higher milk prices.

While the results of a static model make it difficult to determine how farms would make production and marketing adjustments over time if the HG Bill were adopted, the inclusion of two reduction strategies does shed some useful light on the matter. The Forage Only and Some Grain farms would definitely want to reduce their grain costs by either feeding less, or possibly growing more corn if the Bill became law. While following the lower grain feeding strategy improved net income for the Some Grain farms in this study, it was not a successful strategy for the Forage Only farms. As a result, the Forage Only farms might be long run, as well as short run, losers if the HG Bill were adopted.

References

Department of Agricultural Economics, Cornell University, Dairy Farm Business Summary Records, 1986.

Food and Agricultural Policy Research Institute. "Comparative Analysis of Selected Policy Options for U.S. Agriculture." *FAPRI Staff Report #1-87,* Center for National Food and Agricultural Policy, Department of Agricultural Econom-

ics. University of Missouri and Center for Trade and Agricultural Policy, Department of Economics, Iowa State University, February 1987.

Food and Agricultural Policy Research Institute. "The Commodity Supply Management Program." *FAPRI Staff Report #2-87,* Center for National Food and Agricultural Policy, Department of Agricultural Economics, University of Missouri and Center for Trade and Agricultural Policy, Department of Economics, Iowa State University. February 1987.

jesse. Ed and Bob Cropp. "Use of Mandatory Supply Control in the U.S. Dairy Sector." *Marketing and Policy Briefing Paper* 2, Department of Agricultural Economics, University of Wisconsin, May 1986.

Kaiser, Harry M. "Economic Issues and Implications of a U.S. Milk Quota Program." *Journal of Dairy Sciences.* 70:1318, 1987.

Kaiser. Harry M. and Edward H. Heslop. "A Summary of House Congressional Bill H.R. 5588 a.k.a. The 'Save the Family Farm Act'." *A.E. Ext, 86-36,* Department of Agricultural Economics, Cornell University, December 1986.

Kaiser. Harry M., Edward H. Heslop. and Robert A. Milligan. "The Economic Impacts of the ^Save the Family Farm' Bill on New York Dairy Farmers." *A.E. Res. 87-1!*, Department of Agricultural Economics, Cornell University, April 1987.

Kalter. Robert J., Robert Milligan, William Lesser, William Magrath, LorenTauer, Dale Bauinan. "Biotechnology and the Dairy Industry: Production Costs, Commercial Potential, and the Economic Impact of the Bovine Growth Hormone." *A.E. Res. 85-20,* Department of Agricultural Economics, Cornell University, December 1985.

Knutson, Ronald D., Edward G. Smith, James W. Richardson, John B. Penson, Jr., Dean W. Hughs, Mechel S. Paggi, Robert D. Yonkers, and Dean T. Chen. "Policy Alternatives for Modifying the 1985 Farm Bill." Agricultural and Food Policy Center, *Paper B-1561,* Texas Agricultural Research Station and Extension Service, The Texas A&M University, January 1987.

Market Administrator, Federal Milk Marketing Order No. 2. Statistical Handbook, August 1957 to August 1986. 1986.

Mason, Judson P. "Alternative Ways of Balancing Production to Market Needs." *Journal of Dairy Science.* 62:1365, 1979.

"New York Economic Handbook: Agricultural Situation and Outlook." *A.E. Ext. 86-35.* Prepared by Extension Staff, Department of Agricultural Economics, Cornell University, December 1986.

Nott, Sherrill B. and Larry Hamm. "Quotas for U.S. Dairy Farmers? A Review." Unpublished Mimeograph, Department of Agricultural Economics, Michigan State University, September 1986.

Oltenacu, Pascal. Department of Animal Science, Cornell University, Conversation regarding appropriate reductions in lowest producing cows to achieve cutbacks in milk marketings required of HG.

U.S. Department of Agriculture, Economic Research Service. Dairy Situation and Outlook Yearbook, July 1986.

U.S. Department of Commerce, Bureau of the Census, *1982 Agricultural Census.*