FAPRI Analysis of Dairy Policy Options for the 2002 Farm Bill Conference

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House and Senate staff working on the 2002 farm bill conference asked the Food and Agricultural Policy Research Institute to examine a number of dairy policy options. For purposes of analysis, each program is assumed to operate over 2002-2005, and no overall cap on government spending is assumed under any of the options. Under each program, producer payments would be made on a base equal to average marketings between 1999 and 2001.

1) Boston price based program. Dairy producers would get a payment each month equal to 45 percent of the difference between $16.94 per hundredweight and the Boston Class I price.
2) All-milk price based program.
    a) 0.25 payment factor, no growth factor. The producer payment would be equal to 25 percent of the difference between $14.79 per hundredweight and the monthly all-milk price. Producers would be required to refund payments if they increase production relative to the base period.
    b) 0.45 payment factor, no growth factor. Same as option (2)(a), except payments would be based on 45% of the difference between $14.79 and the monthly all-milk price.
    c) 0.25 payment factor, 2 percent growth factor. Same as option (2)(a), except producers would not be required to refund payments unless they increase production by more than 2 percent per year.
    d) 0.25 payment factor, 2 million pound growth factor. Same as option (2)(a), except producers would not be required to refund payments unless they increase production by more than 2 million pounds relative to the base period.

A number of caveats should be noted concerning this analysis:

1) The analysis is being done based on brief descriptions of proposed policies, not on legislative language.
2) Because of time constraints, the analysis is based on deterministic analysis, looking at a single likely outcome rather than a range of possible outcomes. Furthermore, it uses an annual model to conduct the analysis, and so does not consider the possible impacts of monthly variation in production or prices.
3) To fully analyze the impact of the all-milk based program, one would need information on future growth of milk production on each dairy farm. We have looked at information regarding recent changes in milk production per farm and the history of a program in the early 1990s that refunded dairy assessments to producers who had not increased milk production between one year and the next. This information allows at best rough approximations of absolute and relative effects across states.

Therefore, we would expect that with more time and information, these estimates would likely need to be revised, perhaps significantly.

With those caveats in mind, a few things to note about the results:

- The higher costs of the Boston-based program can largely be explained by the fact that essentially all of the producer base would be eligible for payments. All else equal, there would be little difference between making payments that depend on the difference between $16.94 per cwt and the Boston price or making payments that depend on the difference between $14.79 per cwt and the all-milk price.

- Average milk production per dairy farm increased by more than 7 percent per year between 1996 and 2001 (milk production increased while farm numbers declined). If farmers who increase production are forced to refund payments, then many farmers will receive no net benefits from the all-milk based options. We assume that farms accounting for most of production would receive no net benefits under the all-milk based options with the no-growth and 2 percent-growth factors. Under those options, benefits would be concentrated on farms that are not expanding production, including those that are in the process of exiting the industry.

- The largest supply effects are estimated for the programs that make net payments to the highest proportion of dairy farms, i.e., the Boston-based program and the all-milk based program with the 2 million pound growth factor. The all-milk programs with no or 2 percent growth factors are assumed to have little net effect on milk supplies. On the one hand, the additional revenues may keep some marginal producers in business. On the other hand, a small number of producers may limit planned growth in production in order to qualify for payments.

- The state-level revenue numbers reported in the accompanying table represent an average across all production in a state. In the case of the all-milk based programs with limited growth factors, the differences between the state-level averages and results for individual producers may be large. Farmers who expand production by more than the limit would receive no net payments, and so would be affected only by the modest changes in milk prices. Producers who do not expand production relative to the base period will receive payments in excess of the state-level averages. For example under the program with a 0.25 payment factor and no base growth, producers in Wisconsin who have not increased production relative to their base level would receive $0.46 per cwt while those Wisconsin producers who have expanded production sufficiently would receive no money under the program. The $0.13 per cwt figure shown in table 2 is the average across all Wisconsin producers. Under this particular option there is no market price effect since total milk supplies remain unchanged.

Table 1. FAPRI Analysis of Alternative Dairy Options (2002-2005)

	Boston Class I Price Program	All Milk Price Program, 0.25 Factor 0 Base Growth	All Milk Price Program, 0.45 Factor 0 Base Growth	All Milk Price Program, 0.25 Factor 2% Annual Base Growth	All Milk Price Program, 0.25 Factor Base + 2,000,000 lbs
Government Cost (Mil $	6,473	841	1,706	1,388	2,709
Average change in:					
Milk Production (Mil lb	1,125	0	-25	107	405
Class III Price ($/cwt)	-0.30	0.00	0.00	-0.05	-0.13
Class IV Price ($/cwt)	-0.52	0.00	0.01	-0.06	-0.20
Average Payment Rate on Eligible Milk ($/cwt	0.97	0.46	0.82	0.47	0.50
U.S. Milk Qualifying for Program (%)	96%	27%	30%	43%	79%

Boston Class I Price Program
Payment Rate = (16.94-Boston Class I Price)*0.45, No Cap on Base Marketings Eligble for Payments

All Milk Price Program, 0.25 Factor, 0 Base Growth
Producer Payment = Max(0, (14.79-All Milk Price)*0.25*Base Marketings - Max(0,(Current Marketings-Base Marketings)*All Milk Price))

All Milk Price Program, 0.45 Factor, 0 Base Growth
Producer Payment = Max(0, (14.79-All Milk Price)*0.45*Base Marketings - Max(0,(Current Marketings-Base Marketings)*All Milk Price))

All Milk Price Program, 0.25 Factor, 2% Annual Base Growth
Producer Payment = Max(0, (14.79-All Milk Price)*0.25*Base Marketings - Max(0,(Current Marketings-1.02^(Year-2001)*Base Marketings *All Milk Price))

All Milk Price Program, 0.25 Factor, Base + 2,000,000 lbs
Producer Payment = Max(0, (14.79-All Milk Price)*0.25*Base Marketings - Max(0,(Current Marketings-(Base Marketings+2,000,000) *All Milk Price))

Table 2. FAPRI Analysis of the Change in Average Milk Revenue Under Alternative Dairy Options (02-05 Ave.)

(Revenue change includes both milk price and direct payment effects)

	Boston Class I Price Program	All Milk Price Program, 0.25 Factor 0 Base Growth	All Milk Price Program, 0.45 Factor 0 Base Growth	All Milk Price Program, 0.25 Factor 2% Annual Base Growth	All Milk Price Program, 0.25 Factor Base + 2,000,000 lbs
			(Dollars per cwt.)		
Alabama	0.52	0.14	0.28	0.17	0.17
Alaska	0.54	0.19	0.36	0.23	0.18
Arizona	0.55	0.14	0.28	0.17	0.10
Arkansas	0.52	0.17	0.34	0.22	0.17
California	0.54	0.11	0.23	0.14	0.14
Colorado	0.57	0.13	0.27	0.17	0.12
Connecticut	0.54	0.20	0.38	0.24	0.18
Delaware	0.54	0.16	0.32	0.21	0.18
Florida	0.50	0.13	0.26	0.15	0.09
Georgia	0.52	0.14	0.28	0.17	0.14
Hawaii	0.55	0.20	0.39	0.25	0.18
Idaho	0.56	0.05	0.11	0.01	0.19
Illinois	0.57	0.15	0.30	0.19	0.22
Indiana	0.53	0.11	0.22	0.13	0.12
Iowa	0.57	0.13	0.27	0.16	0.23
Kansas	0.57	0.10	0.20	0.11	0.19
Kentucky	0.49	0.17	0.33	0.21	0.23
Louisiana	0.52	0.16	0.31	0.19	0.17
Maine	0.54	0.15	0.30	0.19	0.18
Maryland	0.54	0.17	0.34	0.22	0.20
Massachusetts	0.54	0.16	0.32	0.21	0.18
Michigan	0.53	0.13	0.26	0.15	0.14
Minnesota	0.64	0.14	0.28	0.18	0.23
Mississippi	0.52	0.18	0.35	0.22	0.17
Missouri	0.52	0.19	0.37	0.24	0.21
Montana	0.56	0.13	0.26	0.16	0.19
Nebraska	0.57	0.10	0.21	0.11	0.19
Nevada	0.56	0.12	0.25	0.15	0.19
New Hampshire	0.54	0.13	0.27	0.17	0.18
New Jersey	0.54	0.17	0.33	0.21	0.18
New Mexico	0.56	0.05	0.11	0.02	0.10
New York	0.54	0.14	0.28	0.18	0.20
North Carolina	0.49	0.16	0.32	0.20	0.19
North Dakota	0.64	0.14	0.27	0.17	0.21
Ohio	0.53	0.15	0.30	0.19	0.21
Oklahoma	0.57	0.13	0.26	0.16	0.16
Oregon	0.54	0.10	0.21	0.11	0.18
Pennsylvania	0.54	0.17	0.34	0.22	0.23
Rhode Island	0.54	0.20	0.39	0.24	0.18
South Carolina	0.49	0.13	0.26	0.15	0.16
South Dakota	0.57	0.07	0.15	0.06	0.10
Tennessee	0.52	0.15	0.30	0.19	0.22
Texas	0.56	0.11	0.23	0.13	0.14
Utah	0.56	0.15	0.30	0.19	0.14
Vermont	0.54	0.13	0.27	0.16	0.16
Virginia	0.54	0.15	0.30	0.19	0.23
Washington	0.54	0.08	0.17	0.08	0.10
West Virginia	0.53	0.14	0.28	0.17	0.18
Wisconsin	0.64	0.13	0.26	0.16	0.22
Wyoming	0.56	0.22	0.42	0.26	0.19
United States	0.51	0.12	0.25	0.15	0.17