

## **Report on the Operation and Performance of the Northeast Interstate Dairy Compact**

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July 2000

This study provides an analysis of the operation and performance of the Northeast Interstate Dairy Compact (Northeast Compact). The purpose of the study is to detail the impacts of the Northeast Compact on the different sectors of the Northeast dairy industry, in particular farmers, processors, retailers and consumers. Most of the data used in this analysis was provided by Ken Becker, Executive Director of the Northeast Interstate Compact Commission, and Erik Rasmussen, Market Administrator for the Northeast Federal Order.

Penn State University does not advocate any particular dairy policy option. Our role is to provide information and analysis on the economic impacts of existing or proposed policies. The results of this study suggest that the Northeast Interstate Dairy Compact has had impacts that may be viewed differently depending on whether one is a farmer, processor, retailer or consumer in the compact region.

The results and summary below pertain to the Northeast Interstate Dairy Compact which is applicable to just six New England states. This summary draws no implications regarding an expansion of the Northeast Compact beyond these six states. In other words, conclusions cannot be inferred from the experience of the Northeast Compact and directly applied to either a) an expansion to other Northeast states, and/or b) creation of new interstate dairy compacts.

### **Compact Terminology**

<b><i>Compact commission:</i></b>	The governing organization that directs the Compact.
<b><i>Compact price:</i></b>	A fixed per cwt price set by the compact commission that effectively creates a floor on the Class I price of fluid milk. Fluid handlers (processors) must pay this price for any milk used for bottling purposes.
<b><i>Class I price:</i></b>	The minimum federal order price for milk used for Class I or fluid purposes.
<b><i>Compact obligation:</i></b>	Also known as a compact premium, is the monthly processor obligation to the Compact Commission. It is equal to the compact price less the federal order Class I price.
<b><i>Cooperative over-order premium</i></b>	Fluid processors will sometimes pay in excess of the minimum Class I price in order to secure a reliable supply of Class I milk and for other handling services. This is called an over-order premium. Cooperatives often negotiate and collect these premiums.
<b><i>Compact producer price</i></b>	This is the per cwt benefit that dairy producers receive from the Dairy Compact. It is calculated by multiplying the compact obligation by the Class I utilization, and making certain deductions.
<b><i>Compact producer payment</i></b>	Equal to the compact producer price times the producer's milk volume.

Note: cwt = hundredweight.

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<sup>2</sup> I would like to thank Ken Becker and Erik Rasmussen for their thoughtful comments on earlier drafts of this report.

***What is a dairy compact?***

A dairy compact is a formal agreement enacted through state and federal legislation to regulate the price of milk used for fluid purposes. It affects only fluid milk sales in a compact region. The region is defined in the enabling legislation that created the compact.

***Can a dairy compact regulate manufacturing milk?***

It can, but it would be very difficult since milk used for manufacturing purposes is converted to dairy commodities that trade on a national market. For that reason, the Northeast Dairy Compact Commission was required by law to focus on fluid milk. Dairy compact obligations (see text box above) are collected only on fluid milk (milk sold in the bottle). The Compact Commission has broad authority and decides how to distribute the proceeds of compact dollars to all dairy farmers that supply the compact region.

***How are dairy compacts formed?***

The U.S. Constitution prevents state laws from interfering with the interstate shipment of goods and services. An exception to this may be found in the Commerce Clause to the U.S. Constitution. It allows states to “compact” together if they gain federal authorization to do so. Thus, a dairy compact can be formed if Congress consents to it. In the case of the Northeast Interstate Dairy Compact, Congress attached certain requirements along with an expiration date. In addition to gaining Congressional consent, each state in the Northeast Compact passed identical enabling legislation.

***Do any dairy compacts currently exist?***

Yes. The Northeast Interstate Dairy Compact (Northeast Compact) was approved by Congress in the 1996 Farm Bill and became effective July 1997. It has been authorized by Congress to operate through September 30, 2001. It affects fluid milk pricing in six New England states.

***How does a compact work?***

First, a Compact Commission is formed. The commission then establishes regulations through a notice and comment rulemaking procedure that includes producer referenda for adoption or amendment of the regulations. Once these regulations are in place, the Northeast Dairy Compact Commission establishes a fluid milk price (compact price) above the minimum federal order price in the compact region (Class I price). This acts to stabilize and enhance the fluid portion of a farmer's milk check. The difference between the compact price and the Class I price (called the compact obligation) is collected by the Compact Commission and distributed back to compact farmers (net of certain deductions).

***What is the compact price?***

It is the price announced by the Compact Commission for all fluid milk sales in the compact region. This price essentially creates a "price floor" on all fluid milk sales in the compact region. In the Northeast Compact, the Compact Commission has maintained the compact price at \$16.94 per cwt, but has the authority to change it. The Northeast Dairy Compact Commission took into consideration the cost of producing milk in setting this price.

***What is the compact over-order obligation?***

It is the monthly difference between the compact price and the federal order Class I price. Since the Class I price changes each month, the compact over-order obligation is also expected to change. In fact, if markets are strong enough (e.g. 1998, 1999), the minimum federal Class I price could exceed the compact price. In that case, there would be no compact over-order obligation.

***Where does the compact over-order obligation come from?***

Fluid milk processors that supply the compact region pay the compact over-order obligation to the Compact Commission and also pay the administrative cost of running the program.

***What is the compact producer price and how is it calculated?***

Dairy farmers that supply milk to the compact receive an economic benefit in the form of a compact producer price. It is a separate price on their milk check and is derived from the Northeast Dairy Compact and is computed by the Compact Commission. It is calculated by multiplying the compact over-order obligation paid by fluid handlers by the Class I utilization rate in the compact region. Other deductions are then made for escrow, the WIC and school lunch programs, etc.

***What happens to cooperative over-order premiums once a compact is formed?***

Dairy cooperatives often negotiate market over-order premiums in excess of minimum federal order Class I prices. Part of these over-order premiums reflects fluid milk handling charges that cooperatives incur while supplying the fluid market. The rest is pooled and paid back to farmers. The experience of the Northeast Interstate Dairy Compact indicates that the over-order premiums collected by dairy cooperatives in the region were reduced, but were not eliminated when the compact was implemented.

***Who collects the money and how is it disbursed to farmers?***

The Compact Commission receives monthly reports of milk purchases and sales from all milk handlers that operate within the region. The Commission sends each handler (fluid milk processor) a monthly invoice which includes the charges to the handler for the Class I over-order obligation and administrative assessment. These charges are based on that handler's reported sales of Class I products within the region. The invoice also includes the amount of producer credits that will be paid back to the handler based on the volume of farm milk that was reportedly purchased directly from farmers by the handler in the month. The Compact Commission collects the Class I over-order obligation charges from handlers and places this money into a Producer Settlement Fund. This money is then distributed back to handlers based on their total farm milk purchases that are eligible for the Compact premium. The handlers are responsible for paying the compact producer price directly to their farmers.

***What is the Administrative Assessment Fund and what is it used for?***

The Administrative Assessment Fund is used by the Compact Commission to cover the costs of administration and enforcement of the compact. The administrative assessment is set at \$0.032 per cwt. of Class I milk each month and is paid by fluid milk handlers.

***Is the Compact Commission audited?***

Yes, the Compact Commission is audited. The Compact legislation requires that the Commission keep accurate accounts of all receipts and disbursements. These are subject to an annual audit performed by a qualified public accountant. The audit is made an integral part of the Commission's annual reports. In addition, the fluid milk handlers that supply the compact region are subject to auditing by the Compact Commission. The Commission contracts with the USDA Market Administrator's Office to perform individual handler audits on behalf of the Commission.

***Can out-of-compact dairy farmers receive compact premiums?***

The Compact regulations, in the section that defines "producer", spell out in some detail the various ways that farmers can qualify to receive compact payments. The first way to receive compact payments is to be a dairy farmer that produces milk within the compact region and who sells milk to a pool plant (a milk processing facility for any class of milk located within the compact region). The second way a farmer can qualify is if the farmer is located outside of the compact region, but ships milk to a pool plant in the compact region on more than half the days during each December since 1996. The third way a farmer can qualify for compact payments is when the farmer is located outside of the compact region, and on more than half the days each month, that farm's milk is shipped to a compact pool plant during the current month and five subsequent months to July of the preceding calendar year (these five months do not have to be consecutive). After this five-month waiting period, the farmer is eligible to receive compact payments each month thereafter, so long as the farmer's milk continues to be shipped into the compact region on more than half the days in each subsequent month after becoming qualified. Farmers that ship their milk to a partially regulated plant (a plant outside the compact region but having fluid milk sales into the region), although not considered to be qualified producers under the compact, do receive a pro-rata share of the Compact producer price based on the total volume of class I sales that the partially regulated plant has into the

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compact region. In one of the lawsuits brought against the Compact Commission, the court stated that, "the pool payment mechanism ... does not bar the entry of milk from outside the compact region. Rather, by allowing for payments back to out-of-compact producers for Class I milk distributed inside the compact region, the over-order price could be said to encourage the entry of such milk." (New York State Dairy Foods Association, Inc. vs. Northeast Dairy Compact Commission. No. 98-2370 (First Circuit, November 30, 1999), Affirming, 26 F. Supp. 2d 249 (D. Mass. 1998)).

## **Performance of the Northeast Interstate Dairy Compact, 1997-2000**

### **Compact Price and Premiums**

The Northeast Compact Commission set a Class I Compact price of \$16.94 per cwt for July 1997 through termination of the pricing order. The difference between that price and the Class I minimum federal order price for Boston is the compact over-order obligation. The amount per cwt that is returned to farmers is another calculation called the compact producer price. Both of these prices are presented in Tables 1-4 for the years 1997-2000.

### **Class I Utilization and Farm Pay Prices**

The compact over-order obligation represents what bottlers must pay the Compact Commission. After collecting these funds, the Commission must then work out a formula for paying farmers. Part of this formula involves the fluid utilization rate for the compact region (see Table 5). The Commission computes a producer price through a procedure that includes a number of steps (see Table 6). First, the compact over-order obligation is calculated by subtracting the minimum federal order Class I price from \$16.94. This price is then multiplied by the total volume of Class I sales for the region as reported by handlers to arrive at the "compact over-order obligation value." This is the amount paid to the Compact Commission by Class I handlers.

Certain deductions are made to this pool before the compact producer price is computed. The deductions include the following:

- WIC reserve—equal to 3 percent of the compact over-order obligation value
- School milk reserve—equal to 1 percent of the compact over-order obligation value
- Court ordered escrows (when authorized by the courts)
- Potential CCC payments (when determined to be necessary)

Among the deductions are dollars set aside in reserve to reimburse the Women, Infants and Children (WIC) program and school milk programs. Also, if milk production in New England is rising at a rate faster than the national average, the Commission has from time to time held funds in reserve against potential obligations to the USDA Commodity Credit Corporation. The Commission keeps a reserve in its checking account and each month a formula is used to remove half the funds from the reserve and return that money to farmers, while additional funds are placed in this account to maintain a stable reserve amount. Finally, various handlers have at times brought legal actions against the Commission. The courts have ordered that these handlers make payments into court-ordered escrow accounts until the lawsuits have been settled. After these deductions and adjustments, the total pool value of money is divided into the total pounds of producer milk reported by handlers to arrive at the producer price for the month. The compact over-order obligation prices and compact producer prices are listed for each month in Tables 1 through 4. The Class I volume, total pool volume, and the utilization rate for the months July 1997 – April 2000 are presented in Table 5. On average, about 46 percent of all producer milk in the compact region has been used for fluid purposes.

### **Producer Prices and Pool Values**

One way to compute the economic return to dairy producers via the Northeast Compact is to compare the combined producer price (that would include the compact premium) to the federal order pool value. The latter, also known as the pool blend, is the producer price from federal order 1. These two figures can be compared in Tables 1-4. The ratio of the producer price (that includes the compact payment) to the pool value averaged 4.4 percent during the period July 1997 – June 1998, 2.6 percent during the period July 1998 – June 1999, and 5.7 percent during the period July 1999 to April 2000. The combined producer price (blend price plus compact producer price) is compared to the blend price in Figure 1.

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Table 1. Compact and Federal Order Prices, January 1997 - December 1997

	Compact Over-order Class I Price	Federal Class I Zone I Price	Compact Over-order Obligation Price	Federal Blend Zone 21 Price	Compact Producer Price	Combined Producer Price	Compact Price as a % of Total Producer Price
	-----\$/cwt-----						%
Jan	N/A	14.85	N/A	12.96	N/A	12.96	N/A
Feb	N/A	14.58	N/A	12.85	N/A	12.85	N/A
Mar	N/A	15.18	N/A	13.26	N/A	13.26	N/A
Apr	N/A	15.70	N/A	13.24	N/A	13.24	N/A
May	N/A	15.73	N/A	13.05	N/A	13.05	N/A
Jun	N/A	14.68	N/A	12.32	N/A	12.32	N/A
Jul	16.94	13.94	3.00	11.97	1.28	13.25	9.7%
Aug	16.94	13.98	2.96	12.26	1.31	13.57	9.7%
Sep	16.94	14.10	2.84	12.54	1.36	13.90	9.8%
Oct	16.94	15.10	1.63	13.60	0.81	14.41	5.6%
Nov	16.94	16.03	0.91	14.10	0.44	14.54	2.8%
Dec	16.94	16.87	0.87	14.06	0.40	14.46	2.8%
6-Mo Avg	16.94	15.00	2.04	13.09	0.93	14.02	6.7%

Source: Ken Becker, Northeast Interstate Dairy Compact Commission.

Table 2. Compact and Federal Order Prices, January 1998 - December 1998

	Compact Over-order Class I Price	Federal Class I Zone I Price	Compact Over-order Obligation Price	Federal Blend Zone 21 Price	Compact Producer Price	Combined Producer Price	Compact Price as a % of Total Producer Price
	-----\$/cwt-----						%
Jan	16.94	16.20	0.74	14.02	0.34	14.36	2.4%
Feb	16.94	16.53	0.42	14.30	0.04	14.34	0.3%
Mar	16.94	16.49	0.45	14.10	0.16	14.26	1.1%
Apr	16.94	16.56	0.38	13.96	0.14	14.10	1.0%
May	16.94	16.05	0.89	13.38	0.33	13.71	2.4%
Jun	16.94	15.25	1.69	13.68	0.71	14.39	4.9%
Jul	16.94	14.12	2.82	13.14	1.02	14.16	7.2%
Aug	16.94	16.34	0.60	15.00	0.24	15.24	1.6%
Sep	16.94	18.01	0.00	16.47	0.00	16.47	0.0%
Oct	16.94	18.23	0.00	16.76	0.00	16.76	0.0%
Nov	16.94	18.34	0.00	16.67	0.00	16.67	0.0%
Dec	16.94	19.28	0.00	17.18	0.00	17.18	0.0%
Annual Avg	16.94	16.78	0.67	14.89	0.25	15.14	1.6%

Source: Ken Becker, Northeast Interstate Dairy Compact Commission.

Table 3. Compact and Federal Order Prices, January 1999 - December 1999

	Compact Over-order Class I Price	Federal Class I Zone I Price	Compact Over-order Obligation Price	Federal Blend Zone 21 Price	Compact Producer Price	Combined Producer Price	Compact Price as a % of Total Producer Price
	-----\$/cwt-----						%
Jan	16.94	20.08	0.00	17.29	0.00	17.29	0.0%
Feb	16.94	20.58	0.00	15.82	0.00	15.82	0.0%
Mar	16.94	19.51	0.00	15.69	0.00	15.69	0.0%
Apr	16.94	13.51	3.43	11.76	1.43	13.19	10.8%
May	16.94	14.86	2.08	12.42	0.82	13.24	6.2%
Jun	16.94	15.05	1.89	12.79	0.73	13.52	5.4%
Jul	16.94	14.50	2.44	12.97	1.01	13.98	7.2%
Aug	16.94	14.65	2.28	13.64	0.70	14.34	4.9%
Sep	16.94	16.83	0.11	15.34	0.21	15.55	1.4%
Oct	16.94	19.03	0.00	15.47	0.00	15.47	0.0%
Nov	16.94	19.50	0.00	15.41	0.00	15.41	0.0%
Dec	16.94	14.73	2.21	12.15	1.00	13.15	7.6%
Annual Avg	16.94	16.90	1.20	14.23	0.49	14.72	3.3%

Source: Ken Becker, Northeast Interstate Dairy Compact Commission.

Table 4. Compact and Federal Order Prices, January 2000 - June 2000

	Compact Over-order Class I Price	Federal Class I Zone I Price	Compact Over-order Obligation Price	Federal Statistical Uniform Price 1/ Price	Compact Producer Price	Combined Producer Price	Compact Price as a % of Total Producer Price
	-----\$/cwt-----						%
Jan	16.94	14.15	2.79	12.35	1.21	13.56	8.9%
Feb	16.94	13.96	2.98	12.21	1.29	13.50	9.6%
Mar	16.94	14.09	2.85	12.39	1.23	13.62	9.0%
Apr	16.94	14.18	2.76	12.46	1.11	13.57	8.2%
May	16.94	14.73	2.21				
Jun	16.94	14.95	1.99				

'1/ The Federal Statistical Uniform Price (SUP) reported here is the published price for Boston, MA. The SUP is published by the Market Administrator for the Northeast Marketing Area. The SUP applies on a county basis and is standardized at 3.5 percent butterfat, 2.99 percent protein and 5.69 percent other solids. The Market Administrator also publishes a SUP for selected locations throughout the northeast each month.

Source: Ken Becker, Northeast Interstate Dairy Compact Commission.

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Table 5. Compact Pool Volume and Utilization Rate By Month

Month	Class I Milk Volume	Total Pool Milk Volume	Utilization Rate	% Change from Year Ago in Class I Volume
	-----Lbs-----		%	%
<b>1997</b>				
Jul	245,001,960	531,000,726	46.1%	NA
Aug	251,670,411	532,180,093	47.3%	NA
Sept	256,358,041	503,917,650	50.9%	NA
Oct	270,552,780	517,345,975	52.3%	NA
Nov	249,814,033	498,023,775	50.2%	NA
Dec	264,936,547	535,146,037	49.5%	NA
<b>1998</b>				
Jan	267,187,950	544,161,724	49.1%	NA
Feb	234,897,947	508,104,687	46.2%	NA
Mar	262,944,181	561,242,392	46.9%	NA
Apr	248,291,753	541,755,424	45.8%	NA
May	252,572,087	580,786,219	43.5%	NA
June	243,091,584	552,127,107	44.0%	NA
July	248,178,437	567,929,595	43.7%	1.3%
Aug	246,196,943	551,257,123	44.7%	-2.2%
Sept	251,893,182	529,486,670	47.6%	-1.7%
Oct	271,577,387	544,309,299	49.9%	0.4%
Nov	248,153,426	527,299,972	47.1%	-0.7%
Dec	269,243,415	566,030,176	47.6%	1.6%
<b>1999</b>				
Jan	259,841,558	568,297,169	45.7%	-2.7%
Feb	233,805,230	528,208,431	44.3%	-0.5%
Mar	261,985,130	563,000,280	46.5%	-0.4%
Apr	252,135,199	568,505,303	44.4%	1.5%
May	252,285,179	598,956,471	42.1%	-0.1%
June	233,013,120	569,215,616	40.9%	-4.1%
July	247,855,745	564,319,166	43.9%	-0.1%
Aug	245,574,839	559,755,162	43.9%	-0.3%
Sept	256,083,868	530,408,722	48.3%	1.7%
Oct	254,832,612	545,866,478	46.7%	-6.2%
Nov	251,338,627	525,330,767	47.8%	1.3%
Dec	263,291,146	560,685,543	47.0%	-2.2%
<b>2000</b>				
Jan	256,492,334	567,734,438	45.2%	-1.3%
Feb	240,208,001	532,888,759	45.1%	2.7%
Mar	262,866,360	577,824,096	45.5%	0.3%
Apr	235,076,394	560,496,716	41.9%	-6.8%
<b>Ave 7/97-4/00</b>	<b>245,418,984</b>	<b>531,841,089</b>	<b>46.1%</b>	<b>-0.8%</b>

Source: Ken Becker, Northeast Interstate Dairy Compact Commission.



Table 6. Example Computation of the Compact Producer Price, December 1999 1/

Compact over-order price	16.94	per cwt
Federal milk market order Class I, Zone I price	14.73	per cwt
Compact over-order obligation	2.21	per cwt
Class I pounds as reported by handlers	263,291,146	lbs
Multiplied by compact over-order obligation	2.21	\$/cwt
Compact over-order obligation value	5,818,734.33	\$
Less WIC reserve @ 3%	174562.0298	\$
Less School Milk Reserve @ 1%	58187.34327	\$
Plus 1/2 unobligated cash balance	273,213.66	\$
Less reserve for cash balance	252343.18	\$
Total pool value	5,606,855.43	\$
Total producer pounds as reported by handlers	560,685,543	lbs
Total pool value divided by producer pounds	1.00	\$/cwt
Less court ordered escrow	0.00	\$/cwt
Adjusted over-order producer price	1.00	\$/cwt

1/ For milk produced in December 1999 and paid to producers in January 2000

Source: Testimony on the Northeast Dairy Compact, presented to the Committee on Agriculture, Nutrition and Forestry, United States Senate, February 9, 2000, by Linda Smith Dyer, exhibit A.

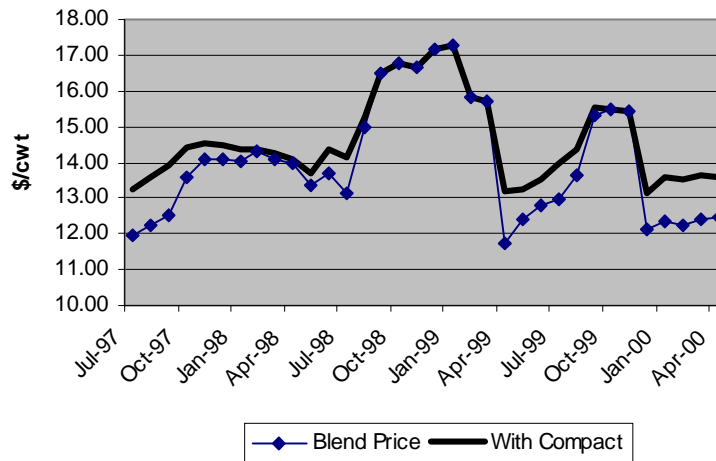


Figure 1. Comparison Between the Gross Farm Price for Producers in the Northeast Dairy Compact and the Federal Order Blend Price

The compact over-order obligation varied significantly over the period July 1997 – April 2000, from a low of zero between September 1998 to March 1999, and zero again in October and November 1999, to a peak of \$3.43 in April 1999. This volatility was due to the changing level of the Class I price in the Northeast federal order relative to the fixed compact price of \$16.94. The compact over-order obligation thus averaged \$1.40 per cwt July 1997 – June 1998, \$0.90 per cwt July 1998 – June 1999, and \$1.89 per cwt July 1999 – June 2000<sup>3</sup>.

Likewise, the compact producer price also varied significantly over the period July 1997 – April 2000, ranging from zero per cwt to \$1.43. It averaged \$0.61 per cwt July 1997 – June 1998, \$0.35 per cwt July 1998 – June 1999, and \$0.78 per cwt July 1999 – April 2000. A comparison between the compact over order obligation (what is collected from processors by the Commission) and the compact producer price is displayed in Figure 2. It should be noted that these prices are paid into and out of the Commission’s Producer Settlement Fund on very different volumes of milk. A direct comparison is only made to illustrate the magnitude of these two prices.

To summarize, the compact over-order obligation and compact producer price varied significantly over the period July 1997 – April 2000. The compact over-order obligation averaged \$1.35 per cwt and the compact producer price averaged \$0.57 per cwt over this period.

**Milk Supply**

Milk supply is analyzed over the period 1997 – 1999. Annual data was used rather than monthly or quarterly data for two reasons. First, only 20-state data is available on a monthly basis. Second, annual data avoids a lot of the seasonal variability inherent in quarterly data.

State and regional milk production data are presented in Table 7. The Northeast region is broken out on a state-by-state and compact/non-compact basis. Milk production in the six states in the Northeast compact grew 2.9 percent between 1997 and 1999. That compares with a growth rate of 3.4 percent for the rest of

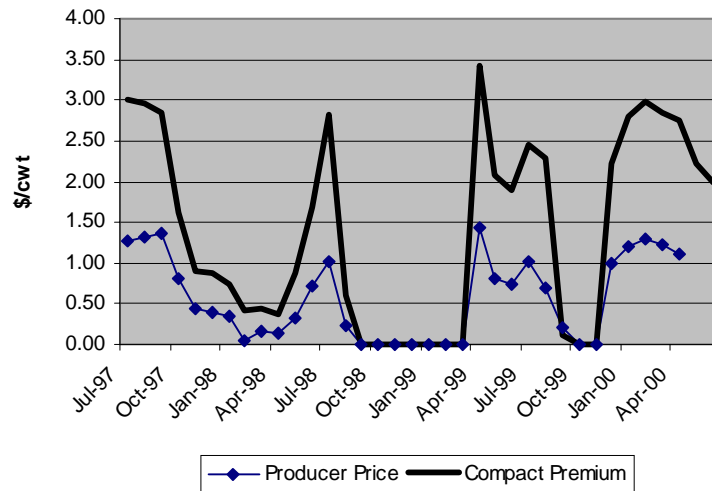


Figure 2. Comparison of the Northeast Compact Over-order Obligation and Compact Producer Price

<sup>3</sup> It should be noted that we have data for the compact over-order obligation through June 2000, but have data on the compact producer price through April 2000.

Table 7. State and Regional Annual Milk Production , 1997-99

Region/State	1997	1998	1999	% growth 97-99
	-----Million Pounds-----			%
Northeast:				
Compact States:				
Connecticut	509	529	520	2.2%
Maine	662	680	693	4.7%
Massachussetts	434	438	420	-3.2%
New Hampshire	328	333	321	-2.1%
Rhode Island	32	33	31	-2.8%
Vermont	2,600	2,650	2,712	4.3%
Subtotal	4,565	4,663	4,697	2.9%
Non-compact States:				
Delaware	148	163	171	15.5%
Maryland	1,326	1,340	1,365	2.9%
New Jersey	299	292	280	-6.4%
New York	11,530	11,750	12,040	4.4%
Pennsylvania	10,662	10,847	10,931	2.5%
Subtotal	23,965	24,392	24,787	3.4%
Total NE	28,530	29,055	29,484	3.3%
Corn Belt	14,862	14,899	14,681	-1.2%
Upper Midwest	36,988	37,482	38,004	2.7%
Northern Plains	4,422	4,506	4,730	7.0%
Appalachia	6,852	6,581	6,432	-6.1%
Southeast	4,779	4,534	4,590	-4.0%
Delta States	2,063	1,870	1,783	-13.6%
Southern Plains	7,017	6,841	6,869	-2.1%
N. Mountain States	5,572	6,136	6,836	22.7%
S. Mountain States	10,371	10,738	11,494	10.8%
Northwest	6,915	6,909	7,200	4.1%
California	27,582	27,654	30,475	10.5%
Alaska & HI	138	143	133	-3.4%
Total U.S.	156,091	157,348	162,711	4.2%

Source: USDA, NASS, Milk Production, February 2000.

the Northeast and 4.2 percent for the total U.S. The only compact states with a significant growth rate in milk production were Maine (4.7 percent) and Vermont (4.3 percent). Connecticut milk production rose more modestly by 2.2 percent. Growth in these states was offset by declines in Massachusetts (-3.2 percent), New Hampshire (-2.1 percent), and Rhode Island (-2.8 percent).

It should also be noted that during the period 1997-99, growth rates in milk production in the West were as follows: California (10.5 percent), Idaho (24.3 percent), New Mexico (17.8 percent), and Arizona (10.0 percent).

The Northeast Dairy Compact Commission funded a study on the impact of the Compact (University of Vermont). In the study Nicholson, Resosudarmo and Wackernagel developed a quarterly econometric model of milk supply for the six New England states over the period 1991 through the second quarter of 1998 (Impacts of the Compact on New England Milk Supply, pp. 23-44). They concluded that milk

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production for the six New England states increased one-percent the first full year after the compact was introduced (July 1997 – June 1998) as a direct result of the compact.

### **Supply Management and the Northeast Compact**

The enabling legislation for the Northeast Interstate Dairy Compact allows the Compact Commission to take “such action necessary and feasible to ensure that the over-order price does not create an incentive for producers to generate additional supplies of milk.” The Commission prepared a supply management program that passed in a producer referendum by a vote of 92 percent in favor of the program. This program will be implemented beginning with milk produced in July 2000 (Federal Register, Volume 65, Number 105, pages 34570-34881, May 31, 2000).

The program can be described as an assessment/refund program. It withholds money each month from the producer pool that is generated by the compact over-order obligation. Then, at the end of the year, the funds are redistributed back to eligible producers who had stable milk production.

The program would require withholding 7.5 cents per cwt each month from the producer pool. These funds would go into a supply management settlement fund. The Commission estimates that this fund would generate approximately \$4.5 million per year, assuming a compact obligation is collected in all twelve months.

At the end of the year, the funds would be distributed to eligible producers who expanded milk production one percent or less. Producers not meeting this requirement would not be eligible for the supply management funds. The funds are disbursed in two parts. One-half of the funds would be distributed to eligible producers at a flat rate, per farm payment calculated by dividing the number of eligible producers into one-half of the balance in the supply management settlement fund. So, whether you were a 50 cow dairy or a 500 cow dairy, both farms would receive the same payment so long as they were eligible (i.e. did not expand milk production in the last year above one percent).

The other half of the supply management settlement fund would be paid out on a per cwt basis. The payment rate would be determined by dividing the number of eligible pounds of milk into one-half of the funds in the supply management settlement fund and paid to eligible producers accordingly.

The assessment/refund program would run from July 1 through June 30 of the following year.

### **Retail Fluid Milk Prices and the Compact**

The relationship between retail and wholesale fluid milk prices in the compact region is analyzed next. This relationship was studied in the University of Vermont study using an econometric model estimated over the period January 1982 to through June 1996. The model, estimated by Lass, Adanu, and Allen (Impacts of the Compact on Fluid Milk Retail Prices, pp. 73-85), was simulated over the period July 1997 through June 1998. That study concluded that an average compact over-order obligation on Class I sales equal to 12 cents per gallon (or \$1.3975 per cwt) resulted in an increase in retail fluid milk prices of 6.9 cents per gallon in Boston and 5.7 cents per gallon in Hartford. In other words, “on average, the estimated impact on the retail price was less than the over-order premium <compact over-order obligation>, suggesting that less than the full amount of the over-order premium was passed on to consumers.”

We examined the farm-to-retail markup for fluid milk over the period January 1996 through December 1999. Retail milk prices used in this study were provided by federal order 1 for Boston, Massachusetts, and Hartford, Connecticut. They surveyed monthly retail milk prices from two major chain stores and one convenience store during the first week of each month. The retail prices are reported as an average of these three prices. We developed a simple but direct markup model to evaluate the impact of the dairy compact on retail fluid milk prices in Boston and Hartford. The farm-to-retail markup was analyzed in this study in two time periods: prior to introduction of the compact (January 1996 – June 1997) and after introduction of the compact (July 1997 – December 1999). The farm price of Class I milk computed for this study

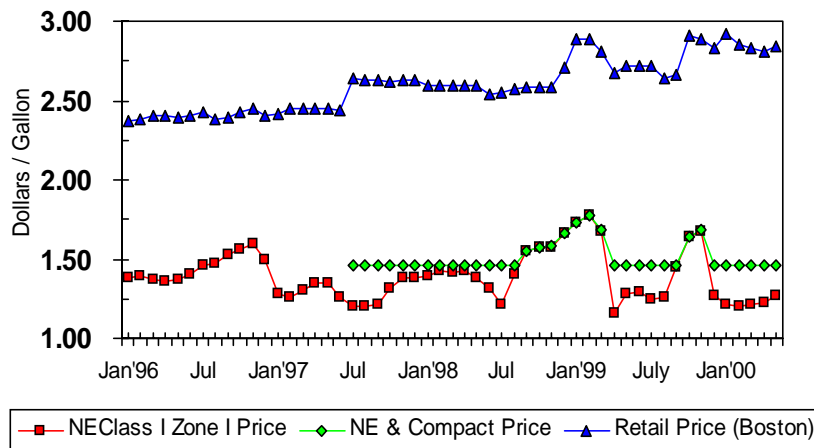
includes the minimum Class I federal order price, the compact over-order obligation, and any coop over-order premiums in affect.

**Retail Price Behavior**

Before analyzing the farm-to-retail markup in detail, let’s look at retail price behavior in the Boston market over the period January 1996 to May 2000 (see Figure 3). Prior to introduction of the compact, the retail price of milk gradually rose from \$2.37 per gallon in January 1996 to \$2.45 in May 1997. During that time period the Class I cost of milk fluctuated up and down. It rose from \$1.39 per gallon on January 1996 to a peak of \$1.60 per gallon by November 1996, and then fell to a low of \$1.25 per gallon in February 1997. The point is, prior to introduction of the compact, the retail price of milk rose steadily whereas the wholesale cost of milk fluctuated.

The month in which the dairy compact was introduced the compact over-order obligation was \$0.26 per gallon and the retail price of milk rose \$0.20 per gallon. Between July 1997 and August 1998 the cost of milk to processors (the Class I minimum price plus the compact over-order obligation) was fixed at \$1.46 per gallon. During this period, when the cost of raw milk to fluid processors was flat, the retail price of milk eroded from \$2.64 per gallon in July 1997 to \$2.54 per gallon by June 1998. It is likely that this erosion was due to increased competition between fluid milk processors and retailers.

The federal order Class I price then increased beyond the compact price of \$1.69 during the months September 1998 through March 1999, forming a new “price spike”. The Class I price of milk in Boston rose from \$1.41 per gallon in August 1998 to a peak of \$1.77 by February 1999. The retail price of milk followed suit, rising from \$2.57 per gallon in August 1998 to \$2.89 per gallon by February 1999. Thereafter the Class I price plus the compact over-order obligation fell back to the floor price of \$1.46 per gallon during the months April 1999 through September 1999. However, the retail price fell to a range of \$2.64-\$2.72 per gallon, or an average of \$2.69 per gallon during this time period. That price averaged nine-cents-per-gallon higher than the retail price during the earlier period July 1997 – August 1998 when the Class I price plus the compact over-order obligation was again \$1.46 per gallon.



Source: Erik Rasmussen, Market Administrator, Federal Order No. 1.

Figure 3. Fluid Milk Prices in Boston, Class I Cost to Retail, Dollars per Gallon

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Another price spike in the wholesale cost of milk came in October and November 1999 when the Class I price of milk exceeded the compact price and rose to \$1.64 and \$1.68 per gallon, respectively. The retail price of milk also rose, to \$2.91 and \$2.89 per gallon respectively, during these same months. Thereafter, the Class I price plus the compact over-order obligation stabilized at \$1.46 per gallon from December 1999 through May 2000. The retail price of milk during this same period, however, averaged \$2.85 per gallon. That's 16 cents per gallon higher than the average retail price of \$2.69 per gallon during the period April 1999 through September 1999, and \$0.24 per gallon higher than the period July 1997 – August 1998. It would appear that with each successive spike in the Class I cost of milk to processors, the retail price of milk found a higher average price point.

### *Markup Model Used in the Analysis*

A standard markup model was used in this analysis. That model starts from cost and adds a farm-to-retail markup to arrive at the retail price. The retail prices used in this study were provided by the market administrator's office. The cost of milk is derived in this study from numerous sources. The cost of milk to processors is equal to the minimum federal order Class I price, the compact over-order obligation, and any cooperative over-order premiums.

The markup is computed by dividing the retail price of milk by the cost of milk. This markup reflects processing costs and profits, distribution costs, and retail costs and profits. The markup is computed this way since all margins, from processors to retailers, are computed in relation to costs. This is particularly true in retail, where all goods sold are marked up from cost. Retailers set markups and hence margins (the difference between the retail price and the cost of the good, divided by the retail price) based on goals, cost of the good, competition in the marketplace, and consumer reaction.

This study used the computed fixed percent markup and the cost of milk to the processor to specify the retail price of milk. Note that the cost of the compact over-order obligation was reflected in the cost of milk. Thus, the retail impact of the compact would implicitly reflect the compact over-order obligation times the computed markup. This supports a careful observation of the data that reveals higher retail prices whenever the cost of milk to processors increases.

### *Boston Market*

The data in Table 8 summarizes the minimum federal order Class I price for the Northeast order in Zone 1 (Boston), the compact over-order obligation (difference between the compact price and the Class I price), cooperative market over-order premiums, and the retail milk price for Boston. The data reported on a cwt basis was converted to gallons by dividing by 11.628.

A farm-to-retail markup was computed by dividing the retail price of milk in Boston by the processor's cost of Class I milk. This cost was equal to the sum of the Class I price, the compact over-order obligation, and the cooperative market over-order premiums. An average farm-to-retail markup was then estimated before and after introduction of the Northeast Interstate Dairy Compact.

The retail price of milk in Boston averaged \$2.42 per gallon during the period January 1996 – June 1997. It averaged \$2.67 per gallon after introduction of the compact over the period July 1997 – December 1999.

The farm-to-retail markup for Boston prior to the introduction of the compact was estimated to average 65.3 percent (January 1996 – June 1997). After introduction of the compact in July 1997 the average markup (July 1997 – December 1999) rose to 71.6 percent. Note that the farm-to-retail markup does not reflect the cost of the Compact; that was already reflected in the Class I cost of milk to processors.

The average minimum federal order Class I price of milk in Zone 1 (Boston) prior to the introduction of the compact was \$16.28 per cwt, or \$1.40 per gallon (January 1996 – June 1997). The cooperative market over-order premium averaged \$0.72 per cwt, or \$0.06 per gallon. After introduction of the compact, during the period July 1997 – December 1999, the average minimum federal order Class I price of milk was \$16.46 per cwt, or \$1.42 per gallon. The cooperative market over-order premium fell \$0.20 per cwt to an

Table 8. Analysis of the Farm-to-Retail Markup of Milk Prices in Boston

	New England		Coop	Compact	NE Class I + Premiums		Boston	Farm to	Gross
	Class 1, Zone 1		Premiums	Premium			Retail	Retail	Margin 2/
	\$/cwt	\$/gallon	\$/cwt	\$/cwt	\$/cwt	\$/gallon	\$/gallon	%	%
1996									
Jan	16.11	1.39	0.63		16.74	1.44	2.37	64.6%	39.3%
Feb	16.15	1.39	0.62		16.77	1.44	2.38	65.0%	39.4%
Mar	15.97	1.37	0.60		16.57	1.43	2.41	69.1%	40.9%
Apr	15.83	1.36	0.60		16.43	1.41	2.40	69.9%	41.1%
May	15.94	1.37	0.61		16.55	1.42	2.39	67.9%	40.4%
Jun	16.33	1.40	0.61		16.94	1.46	2.41	65.4%	39.6%
Jul	17.01	1.46	0.61		17.62	1.52	2.43	60.4%	37.6%
Aug	17.16	1.48	0.62		17.78	1.53	2.38	55.7%	35.8%
Sep	17.73	1.52	0.64		18.37	1.58	2.39	51.3%	33.9%
Oct	18.18	1.56	0.63		18.81	1.62	2.43	50.2%	33.4%
Nov	18.61	1.60	0.64		19.25	1.66	2.45	48.0%	32.4%
Dec	17.37	1.49	0.73		18.10	1.56	2.41	54.8%	35.4%
AVERAGE	16.87	1.45	0.63		17.49	1.50	2.40	59.8%	37.4%
1997									
Jan	14.85	1.28	0.84		15.69	1.35	2.42	79.3%	44.2%
Feb	14.58	1.25	0.88		15.46	1.33	2.45	84.3%	45.7%
Mar	15.18	1.31	0.88		16.06	1.38	2.45	77.4%	43.6%
Apr	15.70	1.35	0.92		16.62	1.43	2.45	71.4%	41.7%
May	15.73	1.35	0.91		16.64	1.43	2.45	71.2%	41.6%
Jun	14.68	1.26	0.90		15.58	1.34	2.44	82.1%	45.1%
Jul	13.94	1.20	0.91	3.00	17.85	1.54	2.64	72.0%	41.9%
Aug	13.98	1.20	0.80	2.96	17.74	1.53	2.63	72.4%	42.0%
Sep	14.10	1.21	0.60	2.84	17.54	1.51	2.63	74.4%	42.6%
Oct	15.31	1.32	0.56	1.63	17.50	1.50	2.62	74.1%	42.6%
Nov	16.03	1.38	0.55	0.91	17.49	1.50	2.63	74.9%	42.8%
Dec	16.07	1.38	0.55	0.87	17.49	1.50	2.63	74.9%	42.8%
AVERAGE:									
Jan-Jun	15.12	1.30	0.89		16.01	1.38	2.44	77.5%	43.7%
Jul-Dec	14.91	1.28	0.66	2.04	17.60	1.51	2.63	73.7%	42.4%
1998									
Jan	16.20	1.39	0.55	0.74	17.49	1.50	2.60	72.9%	42.1%
Feb	16.53	1.42	0.54	0.41	17.48	1.50	2.59	72.3%	42.0%
Mar	16.49	1.42	0.47	0.45	17.41	1.50	2.60	73.7%	42.4%
Apr	16.56	1.42	0.47	0.38	17.41	1.50	2.60	73.7%	42.4%
May	16.05	1.38	0.47	0.89	17.41	1.50	2.60	73.7%	42.4%
Jun	15.25	1.31	0.47	1.69	17.41	1.50	2.54	69.6%	41.1%
Jul	14.12	1.21	0.47	2.82	17.41	1.50	2.55	70.3%	41.3%
Aug	16.34	1.41	0.46	0.60	17.40	1.50	2.57	71.7%	41.8%
Sep	18.01	1.55	0.46	0.00	18.47	1.59	2.58	62.4%	38.4%
Oct	18.23	1.57	0.46	0.00	18.69	1.61	2.58	60.5%	37.7%
Nov	18.34	1.58	0.47	0.00	18.81	1.62	2.58	59.5%	37.3%
Dec	19.28	1.66	0.46	0.00	19.74	1.70	2.71	59.6%	37.4%
AVERAGE	16.78	1.44	0.48	0.67	17.93	1.54	2.59	68.1%	40.5%
1999									
Jan	20.08	1.73	0.46	0	20.54	1.77	2.89	63.6%	38.9%
Feb	20.58	1.77	0.46	0	21.04	1.81	2.89	59.7%	37.4%
Mar	19.51	1.68	0.47	0	19.98	1.72	2.81	63.5%	38.9%
Apr	13.51	1.16	0.48	3.43	17.42	1.50	2.67	78.2%	43.9%
May	14.86	1.28	0.47	2.08	17.41	1.50	2.72	81.7%	45.0%
Jun	15.05	1.29	0.47	1.89	17.41	1.50	2.72	81.7%	45.0%
Jul	14.50	1.25	0.47	2.44	17.41	1.50	2.72	81.7%	45.0%
Aug	14.66	1.26	0.46	2.28	17.40	1.50	2.64	76.4%	43.3%
Sep	16.83	1.45	0.46	0.11	17.40	1.50	2.66	77.8%	43.7%
Oct	19.03	1.64	0.46	0	19.49	1.68	2.91	73.6%	42.4%
Nov	19.50	1.68	0.47	0	19.97	1.72	2.89	68.3%	40.6%
Dec	14.73	1.27	0.47	2.21	17.41	1.50	2.83	89.0%	47.1%
AVERAGE	16.90	1.45	0.47	1.20	18.57	1.60	2.78	74.0%	42.5%

SUMMARY:

1/96-6/97	16.28	1.40	0.72	0.00	17.00	1.46	2.42	65.3%	39.5%
7/97-12/99	16.46	1.42	0.51	1.15	18.12	1.56	\$2.674	71.6%	41.7%

1/ Equal to the retail milk price divided by the total Class I cost of milk to handlers less one.

2/ Equal to the retail milk price less the cost of Class I milk to handlers divided by the retail price.

Source: Erik Rasmussen, Market Administrator, USDA.

average \$0.51 per cwt, or \$0.04 per gallon, after the compact was introduced. Also during this period, the compact over-order obligation averaged \$1.15 per cwt, or \$0.10 per gallon.

It is interesting to note that the sum of the minimum federal order Class I price of milk and the cooperative market over-order premiums was identical during the two time periods: about \$1.46 per gallon.

Figure 4 illustrates the relationship between the minimum federal order Class I price of milk, the compact and cooperative market over-order premiums, and the retail price of milk in Boston. The graph shows that the retail price of milk increased after introduction of the compact in July 1997.

So what impact did the compact have on retail fluid milk prices in Boston over the period analyzed in this report? That question was addressed in this study by analyzing the farm-to-retail price spread before and after introduction of the compact using a simple markup model. The results of this analysis for Boston may be found in Appendix Table 1.

The actual retail price of milk during the compact period (July 1997 – December 1999) was \$2.674 per gallon. Mathematically it can be expressed as:

$$\text{Boston Retail Price} = (\text{Class I price} + \text{coop premium} + \text{compact obligation}) * (1 + \text{Markup}), \text{ or}$$

$$\$2.674 = ((\$16.456 + \$0.511 + \$1.154)/11.628) * (1 + 71.6\%)$$

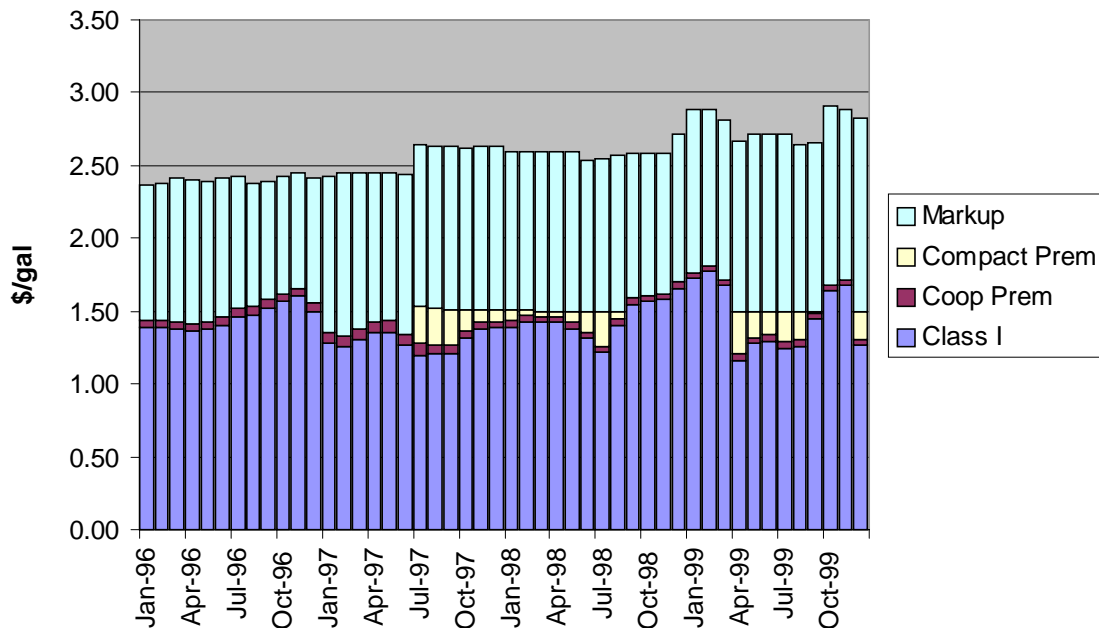


Figure 4. Farm-to-Retail Markup for Fluid Milk in Boston



Next, we simulated what the retail price would have been with a) a zero compact obligation, b) the cooperative premium that existed prior to introduction of the compact (\$0.715/cwt), and c) the farm-to-retail markup that existed prior to the compact (65.3%).

The results of this simple analysis imply that the retail price of milk rose \$0.24 per gallon during the compact period July 1997 – December 1999 when compared to the period January 1996 – June 1997. Part of this increase in the retail price of milk--\$0.17 per gallon--was directly due to the compact. This increase was partially offset by a 3-cent-per-gallon decline in the retail price of milk due to the reduction in the cooperative market over-order premium. One could argue that this was an indirect impact of the compact. The rest of the increase in the retail price of milk--\$0.10 per gallon—appears to be related to other factors.

### ***Hartford Market***

A similar analysis was conducted for the Hartford market. Detailed results are presented in Table 9 and Appendix Table 2. The minimum federal order Class I price of milk for Zone 5 (Hartford) prior to the introduction of the compact averaged \$16.20 per cwt, or \$1.39 per gallon. It averaged \$16.36 per cwt, or \$1.41 per gallon, after introduction of the compact.

The retail price of milk averaged \$2.45 per gallon prior to the compact and \$2.71 per gallon after introduction of the compact.

The farm-to-retail markup in Hartford before the compact was 68.8 percent. Again, this markup was from a farm price that reflected all Class I costs to handlers including the minimum federal order Class I price, cooperative market over-order premiums, and the compact obligation. The markup after introduction of the compact was 75.0 percent.

Figure 5 illustrates the relationship between the minimum federal order Class I price of milk, the compact and cooperative market over-order premiums, and the retail price of milk in Hartford. Again, the graph shows the retail price of milk increased after introduction of the compact in July 1997.

The average retail price of milk in Hartford during the compact period July 1997 – December 1999 was \$2.713 per gallon. Mathematically it can be expressed as:

$$\begin{aligned} \text{Hartford Retail Price} &= (\text{Class I price} + \text{coop premium} + \text{compact obligation}) * (1 + \text{Markup}), \text{ or} \\ \$2.713 &= ((\$16.356 + \$0.511 + \$1.154)/11.628) * (1 + 75.0\%) \end{aligned}$$

Next, we simulated what the retail price would have been with a) a zero compact obligation, b) the cooperative premium that existed prior to introduction of the compact (\$0.715/cwt), and c) the farm-to-retail markup that existed prior to the compact (68.8%).

The results of this simple analysis implied that the retail price of milk rose \$0.24 per gallon during the compact period July 1997 – December 1999 when compared to the period January 1996 – June 1997. These results exactly mirrored those for Boston. Part of the increase in the retail price of milk--\$0.17 per gallon--was directly due to the compact. This increase was partially offset by a 3-cent-per-gallon decline in the retail price of milk due to the reduction in the cooperative market over-order premium. The rest of the increase in the retail price of milk--\$0.10 per gallon--was not related to the compact.

Table 9. Analysis of the Farm-to-Retail Markup of Milk Prices in Hartford

	New England Class 1 Zone 5		Coop Premiums	Compact Premium	NE Class I + Premiums		Hartford Retail Price	Farm to Retail Markup 1/ %	Gross Margin 2/ %
	\$/cwt	\$/gallon	\$/cwt	\$/cwt	\$/cwt	\$/gallon	\$/gallon		
1996									
Jan	16.01	1.38	0.63		16.64	1.43	2.38	66.3%	39.9%
Feb	16.05	1.38	0.62		16.67	1.43	2.40	67.4%	40.3%
Mar	15.87	1.36	0.60		16.47	1.42	2.41	70.1%	41.2%
Apr	15.73	1.35	0.60		16.33	1.40	2.40	70.9%	41.5%
May	15.84	1.36	0.61		16.45	1.41	2.40	69.6%	41.1%
Jun	16.43	1.41	0.61		17.04	1.47	2.42	65.1%	39.4%
Jul	16.91	1.45	0.61		17.52	1.51	2.44	61.9%	38.2%
Aug	17.06	1.47	0.62		17.68	1.52	2.46	61.8%	38.2%
Sep	17.63	1.52	0.64		18.27	1.57	2.45	55.9%	35.9%
Oct	18.08	1.55	0.63		18.71	1.61	2.46	52.9%	34.6%
Nov	18.51	1.59	0.64		19.15	1.65	2.50	51.8%	34.1%
Dec	17.27	1.49	0.73		18.00	1.55	2.50	61.5%	38.1%
AVERAGE	16.78	1.44	0.63		17.41	1.50	2.44	62.6%	38.5%
1997									
Jan	14.75	1.27	0.84		15.59	1.34	2.51	87.2%	46.6%
Feb	14.48	1.25	0.88		15.36	1.32	2.49	88.5%	46.9%
Mar	15.08	1.30	0.88		15.96	1.37	2.49	81.4%	44.9%
Apr	15.60	1.34	0.92		16.52	1.42	2.49	75.3%	42.9%
May	15.63	1.34	0.91		16.54	1.42	2.49	75.1%	42.9%
Jun	14.58	1.25	0.90		15.48	1.33	2.49	87.0%	46.5%
Jul	13.84	1.19	0.91	3.00	17.75	1.53	2.68	75.6%	43.0%
Aug	13.88	1.19	0.80	2.96	17.64	1.52	2.68	76.7%	43.4%
Sep	14.00	1.20	0.60	2.84	17.44	1.50	2.68	78.7%	44.0%
Oct	15.21	1.31	0.56	1.63	17.40	1.50	2.68	79.1%	44.2%
Nov	15.93	1.37	0.55	0.91	17.39	1.50	2.68	79.2%	44.2%
Dec	15.97	1.37	0.55	0.87	17.39	1.50	2.68	79.2%	44.2%
AVERAGE:									
Jan-Jun	15.02	1.29	0.89		15.91	1.37	2.49	82.4%	45.1%
Jul-Dec	14.81	1.27	0.66	2.04	17.50	1.51	2.68	78.1%	43.8%
1998									
Jan	16.10	1.38	0.55	0.74	17.39	1.50	2.68	79.2%	44.2%
Feb	16.43	1.41	0.54	0.41	17.38	1.49	2.68	79.3%	44.2%
Mar	16.39	1.41	0.47	0.45	17.31	1.49	2.68	80.0%	44.5%
Apr	16.46	1.42	0.47	0.38	17.31	1.49	2.68	80.0%	44.5%
May	15.95	1.37	0.47	0.89	17.31	1.49	2.68	80.0%	44.5%
Jun	15.15	1.30	0.47	1.69	17.31	1.49	2.61	75.3%	43.0%
Jul	14.02	1.21	0.47	2.82	17.31	1.49	2.60	74.7%	42.7%
Aug	16.24	1.40	0.46	0.60	17.30	1.49	2.60	74.8%	42.8%
Sep	17.91	1.54	0.46	0.00	18.37	1.58	2.61	65.2%	39.5%
Oct	18.13	1.56	0.46	0.00	18.59	1.60	2.64	65.1%	39.4%
Nov	18.24	1.57	0.47	0.00	18.71	1.61	2.66	65.3%	39.5%
Dec	19.18	1.65	0.46	0.00	19.64	1.69	2.74	62.2%	38.4%
AVERAGE	16.68	1.43	0.48	0.67	17.83	1.53	2.66	73.2%	42.3%
1999									
Jan	19.98	1.72	0.46	0	20.44	1.76	2.89	64.4%	39.2%
Feb	20.48	1.76	0.46	0	20.94	1.80	2.89	60.5%	37.7%
Mar	19.41	1.67	0.47	0	19.88	1.71	2.88	68.5%	40.6%
Apr	13.41	1.15	0.48	3.43	17.32	1.49	2.73	83.3%	45.4%
May	14.76	1.27	0.47	2.08	17.31	1.49	2.67	79.4%	44.2%
Jun	14.95	1.29	0.47	1.89	17.31	1.49	2.68	80.0%	44.5%
Jul	14.40	1.24	0.47	2.44	17.31	1.49	2.64	77.3%	43.6%
Aug	14.56	1.25	0.46	2.28	17.30	1.49	2.63	76.8%	43.4%
Sep	16.73	1.44	0.46	0.11	17.30	1.49	2.70	81.5%	44.9%
Oct	18.93	1.63	0.46	0	19.39	1.67	2.87	72.1%	41.9%
Nov	19.40	1.67	0.47	0	19.87	1.71	2.95	72.6%	42.1%
Dec	14.63	1.26	0.47	2.21	17.31	1.49	2.91	95.5%	48.8%
AVERAGE	16.80	1.45	0.47	1.20	18.47	1.59	2.79	75.4%	43.0%

SUMMARY:

1/96-6/97	16.20	1.39	0.72	0.00	16.91	1.45	2.45	68.8%	40.8%
7/97-12/99	16.36	1.41	0.51	1.15	18.02	1.55	\$2.713	75.0%	42.9%

1/ Equal to the retail milk price divided by the total Class I cost of milk to handlers less one.

2/ Equal to the retail milk price less the cost of Class I milk to handlers divided by the retail price.

Source: Erik Rasmussen, Market Administrator, USDA.

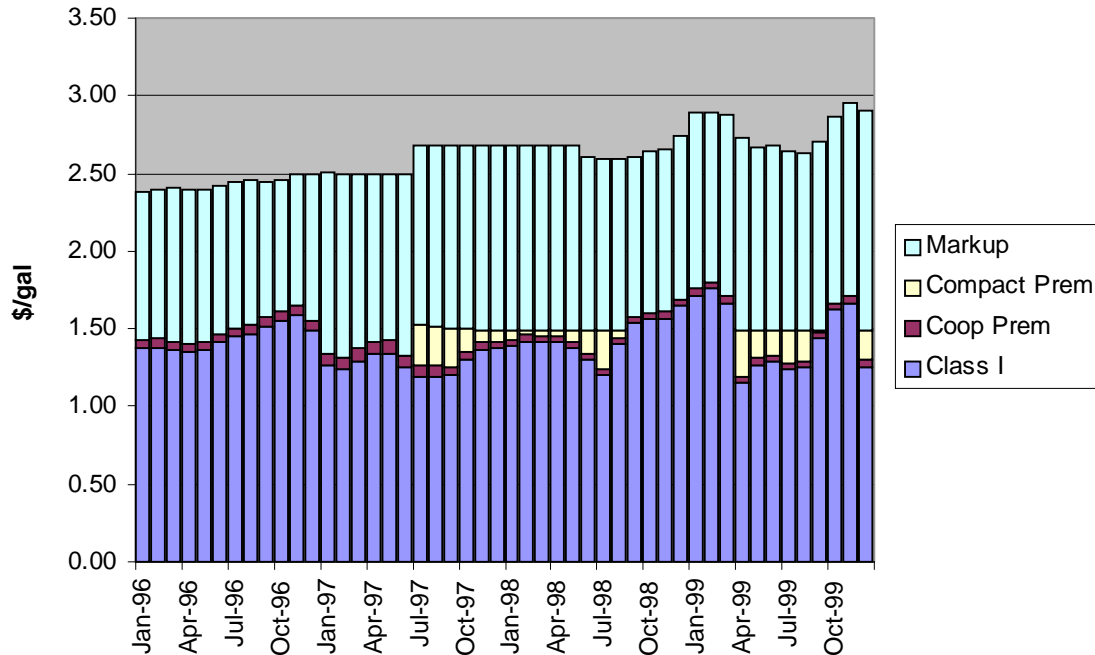


Figure 5. Farm to Retail Markup for Fluid Milk in Hartford

**Retail Fluid Milk Consumption and the Compact**

This study observed that the retail price of milk rose \$0.24 per gallon in the Hartford and Boston market during the period July 1997 – December 1999 due to an average \$0.10 per gallon dairy compact obligation and a general rise in the farm-to-retail mark up. What impact did this have on retail fluid milk consumption?

The best source of data to answer this question is the Class I use of fluid milk in the New England federal milk order during the period of study. That data are contained in Table 10. Adding up the monthly data and comparing it across the years indicates no observable change in fluid milk consumption in the New England order during the years 1997 – 1999.

Table 10. Class I Sales from All Sources:  
New England Marketing Area Order No. 1

	-----Mil Lbs-----			
	1996	1997	1998	1999
Jan	238.0	236.9	235.2	229.6
Feb	221.6	212.3	210.6	211.0
Mar	234.1	233.8	231.2	233.5
Apr	223.2	224.4	222.3	223.2
May	228.2	234.7	226.1	225.7
Jun	207.9	208.9	217.3	215.9
Jul	215.2	214.4	218.3	222.5
Aug	223.8	219.5	218.4	223.7
Sep	222.4	229.0	227.4	229.0
Oct	236.8	239.3	239.3	234.2
Nov	233.8	224.7	221.4	227.8
Dec	230.1	237.6	233.5	236.1
Year	4,710.9	4,712.6	4,698.9	4,711.2
% change		0.04%	-0.29%	0.26%

Source: Erik Rasmussen, Market Administrator, Order 1.

## Conclusions

The Northeast Dairy Compact generated additional revenue for farmers who shipped milk into the compact region. Participating farmers received an additional \$0.48 per cwt from the Compact Commission over the period analyzed in this report (July 1997 – December 1999) as a direct result of the compact. The Compact Commission paid out \$105.6 million in payments (net of escrow requirements) to eligible dairy farmers over the period July 1997 – April 2000, an average of \$0.57 per cwt over this longer time period.

Processors paid an extra \$1.15 per cwt, or \$0.10 per gallon on average since inception of the compact for Class I milk (over the period July 1997 – December 1999) in the form of compact over-order obligations. In addition, the cooperative Class I over-order premium paid by processors in the New England federal order dropped from an average \$0.72 per cwt prior to the compact to \$0.51 per cwt after introduction of the compact. This decline was likely due to the compact. Thus, the net affect was processors paid an extra \$0.95 per cwt, or \$0.08 per gallon more for Class I milk due to the compact.

Total milk production in the six states in the Northeast compact region grew 2.9 percent between 1997 and 1999. That compares with a growth rate of 3.4 percent for the rest of the Northeast and 4.2 percent for the total U.S. The only compact states with a significant growth rate in milk production were Maine (4.7 percent) and Vermont (4.3 percent). Connecticut milk production grew moderately at 2.2 percent.

The markup from farm to retail was analyzed next. A standard markup model was used in this analysis. That model starts with farm cost and adds a farm-to-retail markup to arrive at the retail price. The retail prices used in this study were provided by the market administrator's office. The cost of milk to processors is equal to the sum of the minimum federal order Class I price, the compact over-order obligation, and any cooperative over-order premiums. The markup is then derived in this study by dividing the retail price of milk by the cost of milk. This markup reflects processing costs and profits, distribution costs, and retail costs and profits. The markup is computed this way to reflect the general practice in the fluid industry that all margins, from processors to retailers, are computed in relation to costs.

The retail price of milk in Hartford and Boston rose \$0.24 per gallon during the compact period July 1997 – December 1999 compared to the pre-compact period January 1996 – June 1997. Part of this increase--

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\$0.17 per gallon—was directly due to the compact. This increase was partially offset by a 3-cent-per-gallon decline in the retail price of milk due to the reduction in the cooperative Class I over-order premium. One could argue that this was an indirect result of the compact. The rest of the increase, \$0.10 per gallon, was not related to the compact. It is likely that this increase of \$0.10 per gallon in the retail milk price was associated with the two significant price spikes in the wholesale cost of Class I milk that were observed over the period of analysis. With each successive spike in the Class I cost of milk to processors--for reasons that appear to be related to other factors--the retail price of milk found a higher average price point.

Total fluid milk consumption for the New England federal order 1 did not change appreciably after introduction of the Northeast Interstate Dairy Compact.

As indicated above, no inferences can be drawn from this analysis as to what would occur if the Northeast Compact were expanded to other states (i.e. Pennsylvania and New York), or if new interstate dairy compacts were formed in other regions of the country.

In conclusion, the results of this study suggest that the Northeast Interstate Dairy Compact has had impacts that may be viewed differently depending on whether one is a farmer, processor, retailer or consumer in the compact region.

**References:**

Agricultural Experiment Station, University of Vermont. March 2000. "The Northeast Interstate Dairy Compact: Milk Market Impacts." Research Report 73. Edited by Charles F. Nicholson.

Appendix Table 1. Analysis of the Impact of the Northeast Dairy Compact on Retail Milk Prices in Boston

	Pre-Compact 1/	Compact 2/	Change
Cost of Class I milk to processors (\$/gallon):			
Class I price	1.400	1.415	0.015
coop premiums	0.061	0.044	-0.018
compact premiums	0.000	0.099	0.099
Total Class I cost of milk	1.462	1.558	0.096
Farm-to-retail markup (%)	65.3%	71.6%	6.3%
Average retail price (\$/gallon)	2.417	2.674	0.257
Simulated impact of changes in factors affecting retail prices:			
Actual retail price		2.674	
Retail price without compact		2.504	
Retail price with old coop premiums.		2.704	
Retail price with compact but old markup		2.577	
Impact of compact 3/			0.17
Impact of change in coop premiums due to compact 4/			-0.03
Impact of change in markup 5/			0.10
Total of all retail impacts			0.24

1/ January 1996 - June 1997.

2/ July 1997 - December 1999.

3/ Actual retail price less retail price without the compact.

4/ Actual retail price less the retail price with the old coop premiums.

5/ Actual retail price less retail price with compact and old markup.

Appendix Table 2. Analysis of the Impact of the Northeast Dairy Compact on Retail Milk Prices in Hartford

	Pre-Compact 1/	Compact 2/	Change
Cost of Class I milk to processors (\$/gallon):			
Class I price	1.393	1.407	0.014
coop premiums	0.061	0.044	-0.018
compact premiums	0.000	0.099	0.099
Total Class I cost of milk	1.454	1.550	0.096
Farm-to-retail markup (%)	68.8%	75.0%	6.3%
Average retail price (\$/gallon)	2.454	2.713	0.258
Simulated impact of changes in factors affecting retail prices:			
Actual retail price		2.713	
Retail price without compact		2.539	
Retail price with old coop premiums.		2.743	
Retail price with compact but old markup		2.616	
Impact of compact 3/			0.17
Impact of change in coop premiums due to compact 4/			-0.03
Impact of change in markup 5/			0.10
Total of all retail impacts			0.24

1/ January 1996 - June 1997.

2/ July 1997 - December 1999.

3/ Actual retail price less retail price without the compact.

4/ Actual retail price less the retail price with the old coop premiums.

5/ Actual retail price less retail price with compact and old markup.