

**Milk Pricing Problems and Solutions:
An Essay on the Need for New State Level
Milk Price Regulation in the Northeast,
with Special Attention to
Connecticut Substitute Bill No. 5642**

by

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Executive Summary

- For 2004 raw milk prices are expected to be much higher and may well average over the \$15.00 per cwt farm-gate or mailbox price that most New England farmers need to stay in business long term.
- But by the end of the year Connecticut farmers will be back in a cost-price squeeze with mailbox prices below \$15.00 per cwt.
- Milk prices are currently regulated by many states including Pennsylvania, New York, Maine, California, and Nevada.
- Northeast farmers that have suffered low prices relative to cost of production and relative to farm milk prices in other regions of the country, most notably the upper Midwest, the nearest “supply basin” for the milk deficit Northeast.
- Absent some form of new state/regional policy intervention it is clear New England dairy farmers will continue to go out of business.
- In New England we have witnessed a serious and substantial departure from competitive milk pricing by the regions leading supermarket retailers. At times it has been as high as \$1 per gallon. This overcharge has come from farmers as well as consumers.
- Recent farm level milk prices, in fact, indicate that Northeast farmers receive LOWER NOT HIGHER maibox prices than farmers in the upper Midwest. These regional prices are perverse because farm prices should be substantially higher in the densely populated Northeast, the region that “imports” milk and milk products from the upper Midwest.
- From a consumer perspective as Northeast farmers go out of business, prices for milk and milk products from the Midwest that are based on higher raw milk prices will be higher not lower. Northeast dairy farmers are losing out to farmers in other regions, most notably the upper Midwest and far west. Northeast consumers are also losing out and will continue to do so in the future.
- Instead of securing over-order premiums in the relaxed federal order environment, Northeast farmers and their cooperatives have had to accept lower prices as powerful retailers have demanded price concessions from processors. Federal order minimum prices in the Northeast are a floor that prevents even deeper discounts to powerful retailers. The higher prices that are being paid to Midwest farmers for milk and milk products sold in the Northeast over the past 2 years are not being paid to Northeast farmers.
- A second reason that Northeast farmers are losing out to other regions is that they are being out flanked in the state, regional and national economic game that is being played in the milk policy arena. Upper Midwest farmers and their cooperatives have been able to depool massive amounts of milk during recent price run-ups in butter and cheese markets. Although there is no direct link, depooling seems to enhance the ability to capture premiums and increase the farm gate prices relative to the Northeast.
- A solution to the New England milk-pricing problem is regulation that increases raw milk prices paid to Northeast farmers for bottled milk and cuts retail prices paid by New England consumers. This redistribution of the retailers’ excess margin should not affect the processors’ margin at supermarket accounts, which our research shows are not

excessive. In fact a lower consumer price from reduced retail margins would benefit processors because demand for their milk would increase, and they would be able to capture more of their brand equity.

- Some observers, including lobbyists representing supermarkets, have opposed a state level regulatory solution. Their most common complaint is a philosophical aversion to regulation. Such abstract reasoning hardly merits consideration given the current level of regulation in the milk industry and documented poor price performance for Northeast farmers and New England consumers.
- Under the proposed price regulatory authority in Connecticut General Assembly Revised Bill No. 5624 the Connecticut Milk Regulation Board will gain regulatory authority more in line with that in other states including New York, Pennsylvania, Maine, and California.
- Traditionally, dairy pricing policy has focused on raw fluid milk prices. Pricing in the down-stream market channel was ignored because the channel was effectively competitive. That no longer is the case. Farmers now have more compelling options than an exclusive focus on getting a higher raw price. Those options are more compelling because they promote economic efficiency, a net gain to society, while gaining a higher price.
- In conclusion, absent redress via enhanced state level regulation dairy farming will continue to decline in New England. Products will come in an increasing fashion from the upper Midwest and elsewhere. Retail prices for milk and milk products based upon the higher upper Midwest mailbox prices plus transportation will be higher, not lower. Retail prices based upon a lack of competition in our region's retailing sector will be higher, not lower. Regulation that restores more competitive pricing in our regional dairy marketing channel may be able to benefit our region's farmers, processors, and consumers.
- Connecticut Substitute Bill no 5642 merely gives the Milk Regulation Board the authority to regulate the milk marketing channel. Once it has such authority the MRB would have to study the industry and decide whether and how to promulgate price regulation. This first step certainly seems justified given the documented economic plight of the industry.

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Before one can talk about solutions to the “milk pricing problem” one needs to identify its many dimensions and then target solutions to specific aspects of the problem.

Is the problem one of supply outpacing demand on the national level? Is it the importation of milk components and products from other countries? Is it the importation of dairy replacement heifers from Canada? For the Northeast is it the loss of the class 1 fluid differential relative to the upper Midwest in the federal milk market orders? Does pooling of milk from distant producers on the Northeast market order lower Northeast farm –gate prices? Does depooling in other market orders, when manufacturing milk prices rapidly increase, disadvantage the Northeast? Is the problem an increasing imbalance of power between Northeast dairy farmers who bargain via their cooperatives with processors and retailers in milk marketing channels? Specifically, is it an increase in market pricing power by retailers that results in higher consumer prices and lower price premiums for farmers?

Over the past three years Northeast dairy farmers and consumers have seen not one but all of these issues influence milk prices. For 2004 raw milk prices are expected to be much higher and may well average over the \$15.00 per cwt farm-gate or mailbox price that most New England farmers need to stay in business long term. Agri-Mark’s March 23, 2004 price forecast is for the Boston blend price to average \$16.03 per cwt for 2004. Once one deducts hauling and other charges to obtain the farm-gate or mailbox price, it will be close to \$15.00 for many farmers. (If you are a farmer you can calculate your own mailbox prices given your known deductions relative to the announced forecast Boston blend prices). This is good news for dairy

farmers, but higher prices for feed and fuel will take some of the bloom off of these 2004 milk prices. Moreover milk prices are projected to peak in May 2004 fall thereafter. By the end of the year farmers will be back in a cost-price squeeze with mailbox prices below \$15.00 per cwt. (See forecast Boston blend prices in Table 1.) This is not good news for Northeast dairy farmers.

Milk prices are currently regulated by many states including Pennsylvania, New York, Maine, California, and Nevada. New York has a price gouging law that triggers investigation of retail prices when they are more than 200% of the raw fluid 3.5% butterfat milk price paid by processors (Huff 2003). This regulation has kept average supermarket retail prices in New York, well below New England retail prices. For example, University of Connecticut research found that New York retail prices were 59 cents per gallon less than New England retail prices in November 2002 and 70 cents per gallon in June 2003 (Cotterill et al., November 2002 p 24 and Rabinowitz et al., September 2003 p 27). The New York regulatory program, however, provides no benefits to Northeast farmers that have suffered low prices relative to cost of production and relative to farm milk prices in other regions of the country, most notably the upper Midwest, the nearest “supply basin” for the milk deficit Northeast.

Absent some form of new state/regional policy intervention it is clear New England dairy farmers will continue to go out of business. Other states in the Northeast will also be affected. Milk and milk products will come in an increasing volume from central and western New York and from more distant points in the Midwest and far west. Milk processing and manufacturing activities will also continue to exit New England. Consolidation via mergers and acquisitions will continue to transform milk-marketing channels away from competitive markets. Prices at all stages of the market channel will increasingly be dominated by powerful processors and retailers.

In addition and in interaction with market power in regional milk markets, dairy policy moves in other regions of the country are damaging Northeast dairy farmers and consumers. In this Darwinian world what policy solutions are available to dairy farmers and consumers, the two least organized players in the milk industry? What should the goals of public policy be?

National and international policies play an important, even vital, role in directing the performance of the milk markets, and the firms that operate in those markets. Yet we would submit that the following statement is true. The health of the Northeast, and especially the New England milk industry, will depend critically upon state and regionally articulated state policies. We maintain that this is the case because the region faces distinctly different problems and opportunities in addition to the commonly recognized “national and international” problems facing the milk industry. Currently in Connecticut there is a move towards increased state level regulation. The proposed enabling legislation for the Connecticut Milk Regulation Board is Attachment A to this paper.

Under the relaxed federal milk market order structure, today Northeast dairy farmers and their cooperatives lack the bargaining power to capture over-order premiums. Unlike more powerful cooperatives in the upper Midwest, they also lack the ability to take maximum advantage of depooling when manufacturing milk prices rapidly move up as they have over the past year (Cotterill, U.S. Senate Testimony, October 27, 2003). Our research shows that retailers not processors in New England have benefited most from this power imbalance with farmers. Retailers in New England have benefited from substantial market power that allowed retail prices to remain high as farm prices dropped to depression levels during 2001-2003.

To see this, look at Figure 1, a price chart for June 2003. The first column gives “all milk” average prices and margins for the major fluid milk products sold at supermarkets.

Farmers received \$1.03 per gallon. Processors charged an additional 60 cents per gallon for delivering bottled milk into supermarket dairy case coolers. Thus the average wholesale price for delivered milk was \$1.63 per gallon.¹ Research at Penn State and the New York Dept. of Agriculture and Markets on in-store costs for supermarkets including a competitive return on invested capital indicates that 45-55 cents per gallon is sufficient. Larger supermarket chain stores are at the lower end of this range. As documented in Figure 1, large, leading supermarket chains in southern New England, however, capture \$1.45 per gallon by charging consumers, on average, \$3.07 per gallon for milk.

When one examines prices at the brand level for individual supermarket chains it is clear that processors who have differentiated milk to create well known brands such as Hood, Garelick and Guida milk capture very little of the brand premiums that consumers pay. For example, in Figure 1, Hood charges Stop and Shop \$1.69 per gallon for delivered milk. This is only 6 cents above the average delivered wholesale price for all milk; but, Stop and Shop marks Hood milk up much more than other milk: \$1.83 per gallon to retail it at \$3.51 per gallon. Hood and other milk processors create brands, build brand equity, but capture very little of the premiums that brands command in the market place. This retail price conduct distorts incentives for innovations such as the supply of organic milk by farmers, and brand development by farmers as well as processors.

The prices reported for June 2003 are typical of the prices observed from December 2001 thru August 2003. Figure 2 is for March 2003. Figure 3 is for October 2003. It shows that retail prices increased when farm prices increased in late 2003. October retail margins decreased; but at \$1.22 per gallon remain well above in-store costs.

¹ This wholesale price estimate is based upon processing cost information obtained from Dairy Technomics, a firm that monitors processor costs for supermarket milk buyers (Cotterill et al. April 23, 2003).

The conclusion from our retail, wholesale and farm level fluid milk price research over the past four years is clear. In New England we have witnessed a serious and substantial departure from competitive milk pricing by the regions leading supermarket retailers (Cotterill and Franklin 2001, Cotterill et al. 2002, 2003, and Rabinowitz et al 2003).² At times it has been as high as \$1 per gallon. As we show below, this overcharge has come from farmers as well as consumers.

Let's gain some perspective on the magnitude of this departure from competition by comparing it to the often-asserted claim that the federal market orders exercise market power on behalf of farmers at the expense of consumers. Economists in the Midwest, not strong supporters of fluid milk market orders in the past, now maintain that the minimum fluid prices of the orders have been so relaxed that flexible pooling and market forces via over-order premiums set fluid milk prices and farm-gate prices throughout the country (Jesse et al., 2002). In other words, today fluid milk market orders do not exercise market power that benefits farmers that supply more fluid milk (read Northeast) relative to farmers that supply more milk for manufactured dairy products (read the upper Midwest and far West).

Recent farm level milk prices confirm this conclusion. Northeast farmers have received LOWER NOT HIGHER mailbox prices than farmers in the upper Midwest for the past two years. In 2002, as documented in Table 2, the mailbox price in Wisconsin averaged \$12.02 per cwt, and

² An on going investigation by the State of Connecticut Attorney General, who has subpoenaed milk price and margin information from retailers in January 2003, has not contradicted our research findings. In 2001 a joint investigation by the Attorneys General of Vermont, Connecticut, Massachusetts and Rhode Island of the Dean Food Stop and Shop strategic alliance also raised substantial concerns about noncompetitive fluid milk pricing in New England. The Attorney Generals negotiated a co-processing agreement with Dean that sought to limit the exercise of market power by processors and retailers against farmers as well as consumers by facilitating the entry of a new processor. While constructing a new plant that entrant, under the co-processing agreement, can obtain processing services from the Dean plant in West Lynn, Massachusetts. The intent was to protect particularly against processor market power, but it also sought to support entry by a new retailer as well as a processor who could compete against the coalescing power of a dominant processor and leading retail chains. This safeguard has not protected farmers from low and consumers from high milk prices.

it was only \$11.88 per cwt in the Northeast. In 2003, the mailbox price in Wisconsin averaged \$12.64 per cwt, and it was \$12.54 in the Northeast.

These regional prices are perverse because farm prices should be substantially higher in the densely populated Northeast, the region with higher fluid milk consumption and higher aggregate demand relative to supply from the Northeast. Since milk and milk products routinely move from the Midwest excess supply region to the Northeast, farm level milk prices in the Northeast should be higher than in the Midwest by at least the cost of transportation. In economics, it is a fact that in a competitive market the last unit of supply, ie the marginal unit, determines the price for all units sold. This means that Northeast farmers should be capturing a farm gate price that is equal to the Midwest farm price plus transportation.

This perverse pricing of raw milk in the Northeast has serious implications for the future. From a consumer perspective as Northeast farmers go out of business, prices for milk and milk products from the Midwest that are based on higher raw milk prices there plus transportation to the Northeast will be higher not lower. Northeast dairy farmers are losing out to farmers in other regions, most notably the upper Midwest and far west. Northeast consumers are also losing out and will continue to do so in the future.

Why are Northeast farmers losing out in the milk supply arena? One often hears that our farmers have higher production costs but there are equally compelling reasons. One is the imbalance in bargaining power between retailers and processors/farmers in the Northeast. Instead of securing over-order premiums in the relaxed federal order environment, Northeast farmers and their cooperatives have had to accept lower prices as powerful retailers have demanded price concessions from processors. The higher prices that are being paid to Midwest

farmers for milk and milk products sold in the Northeast over the past 2 years are not being paid to Northeast farmers.

Table 3 illustrates that service charges and over-order premiums in the Northeast did not increase to protect farmers when raw milk prices crashed during the 2001-2003 milk price depression. The Boston Coop Price includes any service charges and over-order premiums paid by processors. Note that they have remained effectively constant at 14-15 cents per gallon since October 2001, the demise of the Dairy Compact. No increase in service charges and over-order premiums benefited Northeast farmers when raw milk prices crashed during the milk price depression from December 2001 thru August 2003.

A second reason that Northeast farmers are losing out to other regions is that they are being out flanked in the state, regional and national economic game that is being played in the milk policy arena. The Northeast fluid market order has just limited the ability of distant milk to join the Northeast milk pool to take advantage of and dilute the impact of its higher fluid price on the blend price that Northeast farmers receive (*Cheese Reporter*, March 26, 2004, p. 1). Yet farmers and cooperatives in the Northeast Order cannot control depooling in other orders. Upper Midwest farmers and their cooperatives depool massive amounts of milk during price run-ups in butter and cheese markets. This happened in 2003 and is now occurring in 2004. In the first instance depooling affects only the distribution of milk revenue among farmers in a milk market order where it occurs. Farmers or cooperatives who ship to manufacturing plants and depool gain at the expense of farmers or cooperatives that supply the fluid market. Yet there may be a secondary effect in markets dominated by manufacturing milk such as in the Midwest. Fluid plants there routinely must pay “give up” charges, i.e. over-order premiums to attract milk from

cheese plants. These give up charges may be higher when the manufacturing milk prices are inverted, ie above the announced fluid class 1 federal order minimum prices.

A third reason that Northeast farm gate prices are not higher than more distant farm prices is the fact that the class 1 fluid milk price differential in the federal order system has not been increased in over 25 years. At Boston one adds \$3.25 per cwt. to the Eau Claire, Wisconsin price for manufacturing milk. This is only \$1.55 per cwt. more than the \$1.70 added for fluid milk in the upper Midwest. As the general price level has increased over the past 25 years, the value of this \$1.55 fluid price advantage for the Northeast in the federal order minimum prices has decreased.

The following conclusions are warranted. Milk market orders are no longer reliable vehicles for milk price enhancement in the Northeast relative to the Midwest. Moreover farmer cooperatives within the confines of market orders exercise little or no market power to the benefit of producers closer to large fluid milk markets such as Northeast dairy farmers.³ But, New England retailers do exercise market power in the milk channel. The documented a dollar per gallon widening of the retailers' margin in New England during the recent farm milk price depression is an \$11.60 per hundredweight power premium. This retailer market power premium effectively equals what the farmer received for the milk that was bottled at the depths of the recent milk price depression. This imbalance in pricing power threatens the viability of New England dairy farming, harms processors and consumers, and invites regulation. State regulation reduce the retailer power premium to the advantage of northeast farmers and also reduce consumer prices. Regulation can also offset regional inequities in the milk policy game as

³ Compared to the co-op dominated Midwest, independent farmers in the Northeast limit cooperative power. There are approximately 4,000 independent farmers in the Northeast milk market order (Rasmussen).

currently played in Washington and other regions of the country that disadvantage Northeast farmers.

As stated above a regulatory solution to the New England milk-pricing problem can increase prices paid to Northeast farmers for bottled milk and cut prices paid by New England consumers. This redistribution of the retailers' excess margin should not affect the processors' margin at supermarket accounts, which our research shows are not excessive. In fact a lower consumer price from reduced retail margins would benefit processors because demand for their milk would increase. Research at the University of Connecticut and separate research at the University of Wisconsin indicate that a 10% market wide price reduction increases supermarket sales of milk about 7% (Cotterill and Franklin, 2001). Regulation that cuts retail margins on branded milk would also benefit processors who are currently losing most of their brand premium to retailers. (See processor and retail margins for branded milk in Figures 1 – 3.)

Some observers, including lobbyists representing supermarkets, have opposed increased state level regulation in New England. Their most common complaint is a philosophical aversion to regulation. Such abstract reasoning hardly merits consideration given the current level of regulation in the milk industry and documented poor price performance for Northeast farmers and New England consumers.

Some nondairy farmers and the Connecticut Farm Bureau have expressed opposition to retail level milk price regulation out of a fear that it might spread to other farm products. Milk prices at the retail level have been regulated in New York for 13 years and longer in other states. To our knowledge no nondairy farmers or farm organizations in those states have ever expressed such fears. State milk price regulation is unique and has not been extended to other agricultural commodities.

Under the proposed price regulatory authority in Connecticut General Assembly Revised Bill No. 5624 the Connecticut Milk Regulation Board will gain regulatory authority more in line with that in other states including New York, Pennsylvania, Maine, and California. Here we will discuss the merits of regulation that influence retail as well as raw fluid prices.

Traditionally, dairy pricing policy has focused on raw fluid milk prices. Pricing in the down-stream market channel was ignored because the channel was effectively competitive. That no longer is the case. The “no regulation” alternative for a state such as Connecticut is not a competitive market channel; it is a noncompetitive system influenced by regulation in other states, regions, and by the federal government. Farmers now have more compelling options than an exclusive focus on getting a higher raw price. Those options are more compelling because they promote economic efficiency, a net gain to society, while gaining a higher price.

Under proposed regulation, a higher farm price is justified as part of a regulatory program that restores more competitive pricing in the market channel. That regulatory program can also neutralize policy impacts from other regions and the national level that disadvantage Northeast farmers. Finally, it can return value from the market channel to preserve open space and rural economies in the Northeast.

There are at least three arguments why farmers (and the Connecticut Milk Regulation Board) should be focused on channel margins as well as the raw price that farmers receive. First, under the Dairy Compact farmers received a higher raw price and the expectation was that a more stable raw price would reduce the market margin to offset part of the higher raw price (Federal Register, May 30, 1997). But retailers raised the retail price by even more than the Compact-created raw milk price increase and attributed all of that retail price increase to the Dairy Compact program (Cotterill and Franklin, 2001, Cotterill and Dhar 2003).

Second, channel firms vigorously opposed and defeated the extension of the Dairy Compact in 2001 with the assertion that lower raw fluid prices would translate into much lower retail fluid prices. In fact their economic analysis predicts that the actual 50-cent per gallon drop in raw fluid price that happened after the Compact would create an 80 cent drop in retail prices (Bailey, 2001). As shown in Figures 4 for Hartford and Figure 5 for Boston, retail prices dropped 10 cents. Retailers' margins widened from an already uncompetitive level to those documented in Figures 1 thru 3.⁴

A third reason farmers and the Connecticut Milk Regulation Board should consider retail price cuts as well as raw fluid price increases is perhaps the most powerful from a pure economic perspective. Attachment B to this paper is selected pages from an undergraduate microeconomic theory textbook by B. Peter Pashigian titled, *Price Theory and Applications*. The front page for Chapter 19, "Impediments to Economic Efficiency" lists the three ways a market can depart from a competitive and efficient organizational structure. The New England and Connecticut milk market channels deviates for two of the three reasons, market (monopoly) power at retail and externalities at the farm level. The latter are important and include the provision of open space and other environmental and cultural amenities that dairy farms supply at no charge. We will not discuss farm level externalities here, except to observe that they also provide a very important argument for increased dairy farm income.

Page 696 from the Pashigian text deserves a close read because it succinctly explains how monopolistic pricing against consumers reduces economic efficiency. Retail milk prices that are

⁴ After the demise of the Compact, farmers received Milk Income Loss Contract payments from the federal government during the 2001-2003 milk price depression to cover part of their losses. Yet who has benefited most from this federal subsidy program? Since the program was capped at 3.4 million pounds per year (about 125 cows), New England farmers who on average have larger herds received less support than Midwest farmers where most herds are smaller than 125 cows. Also in New England, to a very large extent, the retailers took advantage of the low raw fluid market prices and did not pass them on to consumers as low retail prices. Again, see Figures 4 and 5 to examine how prices changed when the Compact expired after October 2001.

above the cost to produce and distribute fluid milk are noncompetitive. In New England we find that retail prices may be as much as a dollar above actual costs that include a competitive profit. Pashigian concludes that this situation is not economically efficient.

“...the economy is not hitting on all cylinders. The problem is that the product mix is no longer Pareto-efficient. Because price is higher under monopoly than under competition, the economy produces too little of X {milk} and too much of Y {other products}.” Brackets added for clarification. (Pashigian, p. 696).

This textbook example focuses only on market power being exercised against consumers (monopoly). It can also be expanded to focus on market power being exercised against the farmers who supply raw milk (monopsony). Large and powerful buyers, such as the regions’ leading supermarket chains, have driven very hard bargains with processors and ultimately the farmers that supply them therefore curtailing or eliminating over-order premiums that raise farm mailbox prices. This powerful conduct towards farmers also reduces economic efficiency and reduces the amount of milk sold. As explained earlier, mailbox prices for the Northeast compared to the upper Midwest show that buyer power is not as effectively countervailed in the Northeast by farmer cooperatives and state or regional pricing structures. Federal Order minimum prices in the Northeast are the primary price protection that Northeast farmers have in the fluid market.

In conclusion, absent redress via enhanced state level regulation, dairy farming will continue to decline here. The current constellation of private economic power and public policy is clearly not favorable to the Northeast. Northeast dairy farmers will continue to receive lower prices than upper Midwest dairy farmers because market power and policy imbalances pervert normal spatial pricing that would give farmers in the milk deficit Northeast higher raw milk prices. Products will come in an increasing fashion

from the upper Midwest and elsewhere. Wholesale prices for milk and milk products based upon the higher upper Midwest mailbox prices plus transportation from the Midwest will be higher, not lower. Retail prices based on these higher wholesale prices will be higher, not lower. Finally, retail prices based upon a lack of competition in our region's retailing sector already are higher, not lower.

Regulation that restores more competitive and fair pricing in our regional dairy marketing channel can benefit our region's farmers, processors, and consumers. Connecticut Substitute Bill no 5642 merely gives the Milk Regulation Board the authority to regulate the milk marketing channel. Once it has such authority the MRB would have to study the industry and decide whether and how to promulgate price regulation. This first step certainly seems justified given the documented economic plight of the industry.

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Table 1. Actual and Forecast Boston Blend Price @ 3.5% Butterfat*

	2003	2004
January	12.19	13.58
February	11.79	13.95
March	11.47	15.00
April	11.45	17.02
May	11.60	18.39
June	11.66	17.87
July	12.46	17.12
August	13.72	16.64
September	15.01	16.53
October	15.21	16.29
November	14.95	15.50
December	14.39	14.46
Annual Average	12.99	16.06

Source: Agri-Mark - March 24, 2004

Note: March 2004 - December 2004 are forecasted prices

* The blend price is the price farmers receive for all milk sold prior to deductions for transportation and other services/programs.

Table 2. Farm Mailbox Milk Prices for 2002 and 2003*

	Northeast	Wisconsin	Minnesota
Avg 2002	11.88	12.02	11.83
January	11.62	11.59	11.52
February	11.22	11.28	11.21
March	10.86	10.70	10.72
April	11.06	10.85	10.86
May	11.10	11.04	10.95
June	11.07	10.90	10.89
July	11.63	12.26	12.51
August	12.87	13.98	14.32
September	14.49	14.95	15.10
October	15.23	15.57	15.59
November	14.98	14.80	14.72
December	14.39	13.77	13.47
Annual Average	12.54	12.64	12.66

Source: *Dairy Market News*, USDA

*Mailbox prices are the price that farmers actually receive after deductions for transportation and other services/programs and addition of any over-order premiums.

Table 3: Hartford and Boston Retail Milk Prices and Raw Fluid Milk Prices

	January 1996 - April 2004				
	Hartford Class I & Compact Per gallon	Hartford Retail Per gallon	Boston Class I & Compact Per gallon	Boston Retail Price Per gallon	Boston Coop Price Per gallon
Jan'96	1.38	2.38	1.39	2.37	1.45
Feb	1.38	2.40	1.39	2.38	1.45
Mar	1.36	2.41	1.37	2.41	1.44
Apr	1.35	2.40	1.36	2.40	1.42
May	1.36	2.40	1.37	2.39	1.43
Jun	1.41	2.42	1.40	2.41	1.47
Jul	1.45	2.44	1.46	2.43	1.53
Aug	1.47	2.46	1.48	2.38	1.54
Sep	1.52	2.45	1.52	2.39	1.59
Oct	1.55	2.46	1.56	2.43	1.63
Nov	1.59	2.50	1.60	2.45	1.66
Dec	1.49	2.50	1.49	2.41	1.59
Jan'97	1.27	2.51	1.28	2.42	1.37
Feb	1.25	2.49	1.25	2.45	1.35
Mar	1.30	2.49	1.31	2.45	1.40
Apr	1.34	2.49	1.35	2.45	1.42
May	1.34	2.49	1.35	2.45	1.43
Jun	1.25	2.49	1.26	2.44	1.36
Jul	1.46	2.68	1.46	2.64	1.46
Aug	1.46	2.68	1.46	2.63	1.46
Sep	1.46	2.68	1.46	2.63	1.46
Oct	1.46	2.68	1.46	2.62	1.46
Nov	1.46	2.68	1.46	2.63	1.46
Dec	1.46	2.68	1.46	2.63	1.46
Jan'98	1.46	2.68	1.46	2.60	1.46
Feb	1.46	2.68	1.46	2.59	1.48
Mar	1.46	2.68	1.46	2.60	1.47
Apr	1.46	2.69	1.46	2.60	1.47
May	1.46	2.68	1.46	2.60	1.46
Jun	1.46	2.61	1.46	2.54	1.46
Jul	1.46	2.60	1.46	2.55	1.46
Aug	1.46	2.60	1.46	2.57	1.46
Sept	1.54	2.61	1.55	2.58	1.59
Oct	1.56	2.64	1.57	2.58	1.61
Nov	1.57	2.66	1.58	2.58	1.62
Dec	1.65	2.74	1.66	2.71	1.70

(continues)

Table 3. (*continued*)

	January 1996 - April 2004				
	Hartford Class I & Compact Per gallon	Hartford Retail Price Per gallon	Boston Class I & Compact Per gallon	Boston Retail Price Per gallon	Boston Coop Price Per gallon
Jan'99	1.72	2.89	1.73	2.89	1.77
Feb	1.76	2.89	1.77	2.89	1.81
Mar	1.67	2.88	1.68	2.81	1.72
Apr	1.46	2.73	1.46	2.67	1.46
May	1.46	2.67	1.46	2.72	1.46
June	1.46	2.68	1.46	2.72	1.46
July	1.46	2.64	1.46	2.72	1.46
August	1.46	2.63	1.46	2.64	1.46
Sept	1.46	2.70	1.46	2.66	1.49
Oct	1.63	2.87	1.64	2.91	1.68
Nov	1.67	2.95	1.68	2.89	1.72
Dec	1.46	2.91	1.46	2.83	1.46
Jan'00	1.46	2.91	1.46	2.92	1.46
Feb	1.46	2.84	1.46	2.85	1.46
Mar	1.46	2.81	1.46	2.83	1.46
Apr	1.46	2.79	1.46	2.81	1.46
May	1.46	2.82	1.46	2.84	1.46
Jun	1.46	2.83	1.46	2.83	1.46
Jul	1.46	2.85	1.46	2.82	1.46
August	1.46	2.84	1.46	2.85	1.46
Sept	1.46	2.83	1.46	2.82	1.46
Oct	1.46	2.83	1.46	2.82	1.46
Nov	1.46	2.87	1.46	2.87	1.46
Dec	1.46	2.94	1.46	2.88	1.46
Jan'01	1.47	2.87	1.48	2.90	1.52
Feb	1.46	2.94	1.46	2.92	1.46
Mar	1.46	2.90	1.46	2.90	1.46
Apr	1.46	2.96	1.46	2.94	1.48
May	1.49	2.98	1.50	2.95	1.54
Jun	1.56	2.98	1.57	2.98	1.65
Jul	1.59	3.01	1.60	3.01	1.68
August	1.60	3.00	1.60	3.02	1.74
Sept	1.61	3.06	1.62	3.08	1.76
Oct	1.64	3.07	1.65	3.08	1.79
Nov	1.63	3.10	1.63	3.08	1.77
Dec	1.30	3.00	1.31	2.99	1.45

(continues)

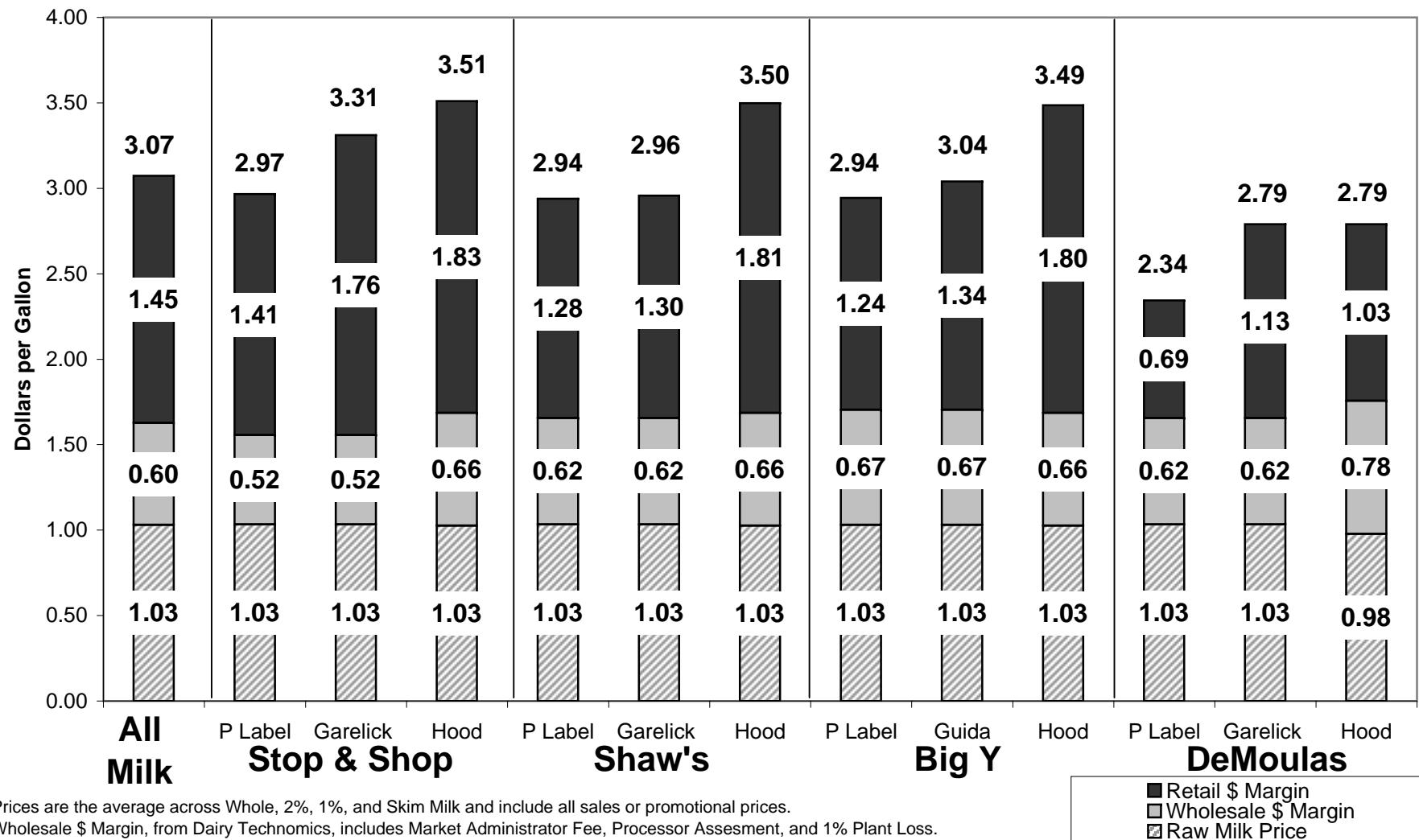
Table 3. (*continued*)

	January 1996 - April 2004				
	Hartford Class I & Compact Per gallon	Hartford Retail Price Per gallon	Boston Class I & Compact Per gallon	Boston Retail Price Per gallon	Boston Coop Price Per gallon
Jan'02	1.30	3.01	1.31	2.99	1.45
Feb	1.30	3.00	1.31	2.98	1.44
Mar	1.27	3.00	1.28	2.99	1.42
Apr	1.26	2.99	1.27	2.99	1.40
May	1.24	2.99	1.25	2.99	1.39
Jun	1.22	2.99	1.23	2.99	1.37
Jul	1.18	2.99	1.19	2.99	1.33
August	1.17	2.99	1.18	2.97	1.30
Sept	1.17	2.99	1.18	2.97	1.30
Oct	1.14	2.99	1.15	2.97	1.27
Nov	1.18	2.99	1.19	2.97	1.31
Dec	1.18	2.99	1.18	2.97	1.30
Jan'03	1.18	2.99	1.19	2.97	1.31
Feb	1.15	2.99	1.16	2.97	1.28
Mar	1.11	2.99	1.12	2.97	1.24
Apr	1.10	2.99	1.11	2.97	1.23
May	1.11	2.99	1.11	2.97	1.23
Jun	1.11	2.99	1.12	2.97	1.24
Jul	1.11	3.02	1.12	2.97	1.27
Aug	1.21	3.02	1.22	2.97	1.37
Sept	1.45	3.07	1.46	3.06	1.60
Oct	1.50	3.10	1.51	3.06	1.65
Nov	1.51	3.11	1.52	3.06	1.66
Dec	1.46	3.18	1.47	3.13	1.62
Jan'04	1.29	3.18	1.30	3.13	1.44
Feb	1.27	3.08	1.28	3.03	1.42
Mar	1.30	3.08	1.31	3.03	1.45
Apr	1.44		1.45		1.60

Source: Data from Order One Market Administrator and Dairy Market News

Note: Northeast Dairy Compact began 7/97 and ended 9/01

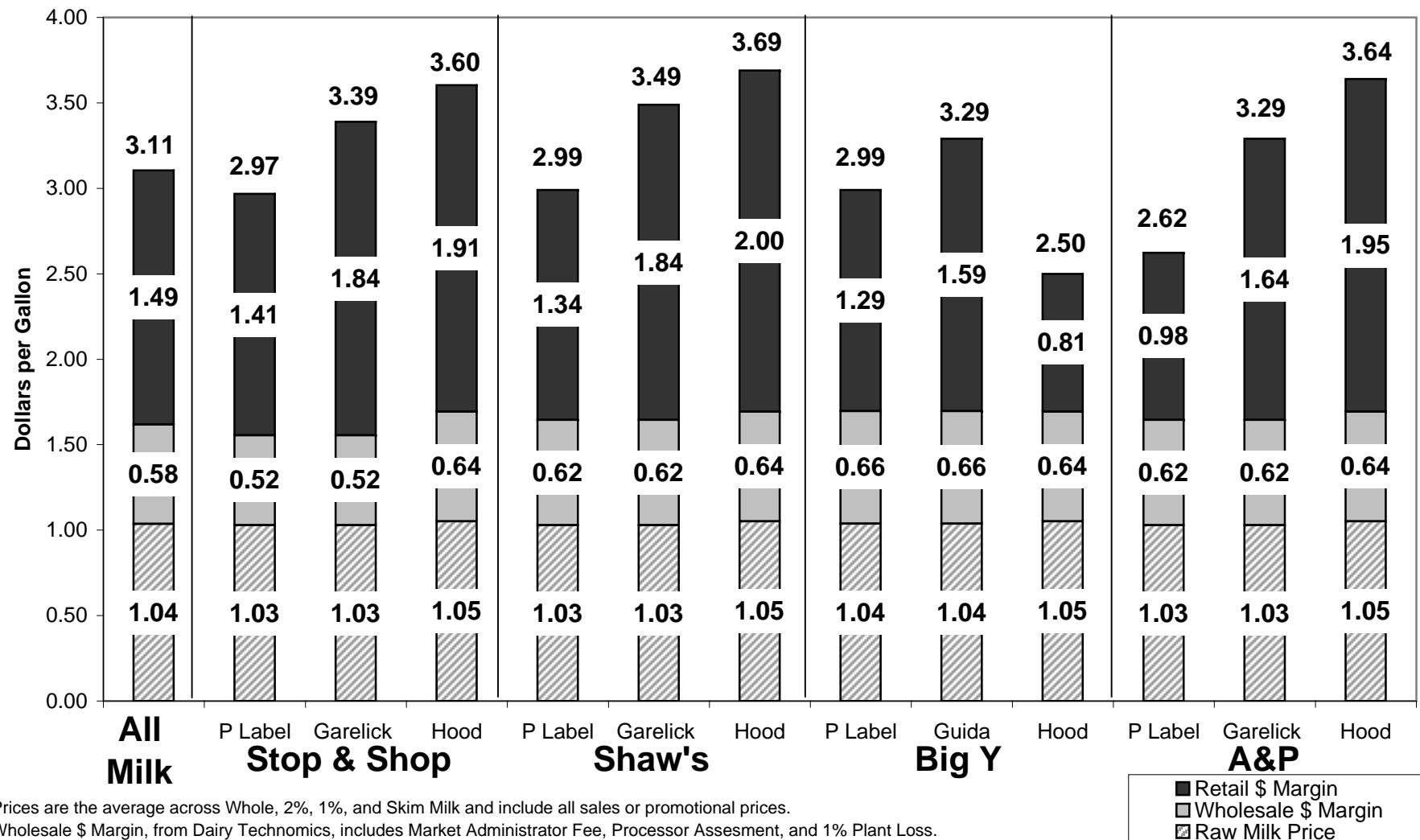
Figure 1: Actual Raw Milk, Estimated Wholesale, and Actual Retail Milk Pricing by Brand for the Four Leading Supermarket Chains in Southern New England: June 2003



Prices are the average across Whole, 2%, 1%, and Skim Milk and include all sales or promotional prices.

Wholesale \$ Margin, from Dairy Technomics, includes Market Administrator Fee, Processor Assesment, and 1% Plant Loss.

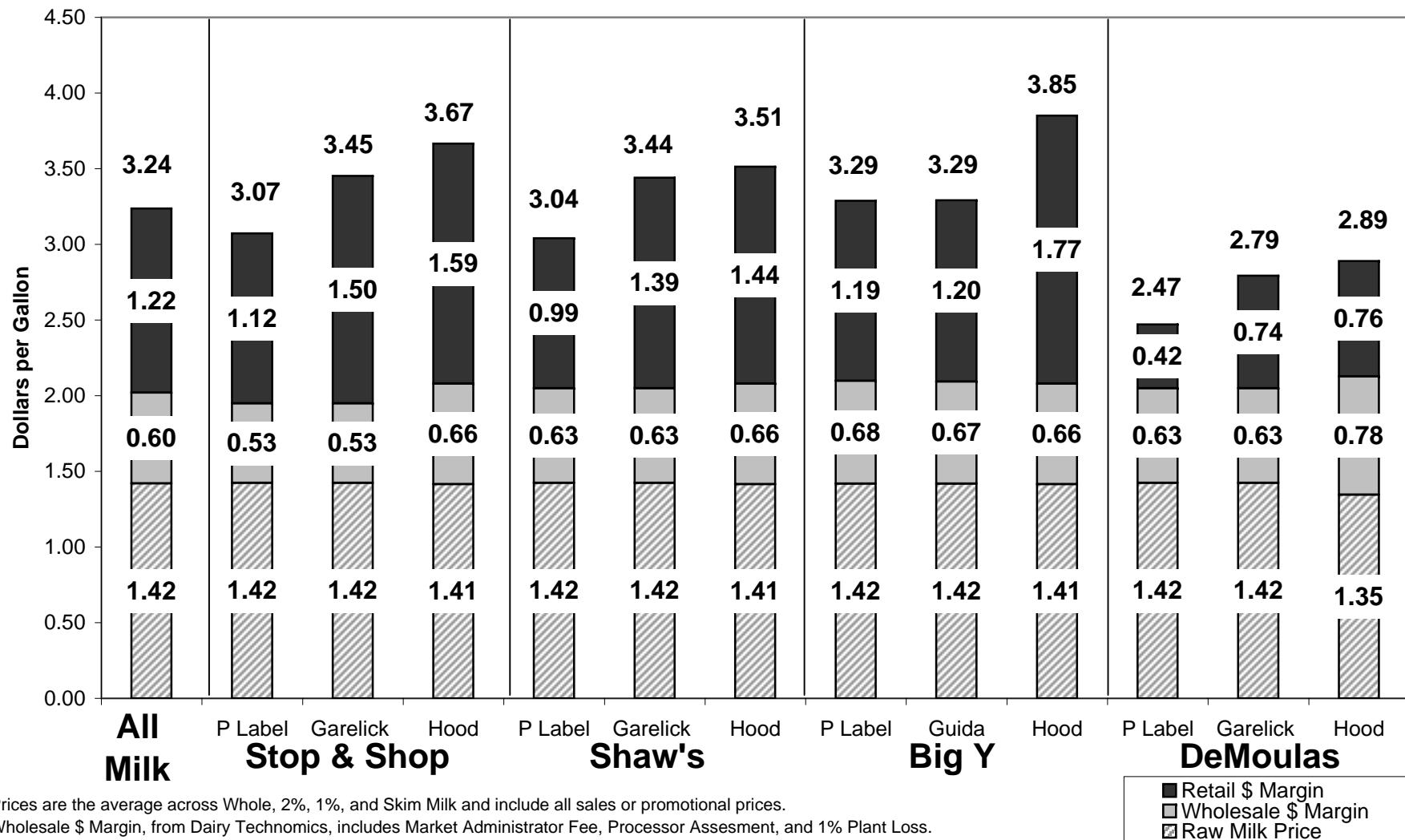
Figure 2: Actual Raw Milk, Estimated Wholesale, and Actual Retail Milk Pricing by Brand for the Four Leading Supermarket Chains in Southern New England: March 2003



Prices are the average across Whole, 2%, 1%, and Skim Milk and include all sales or promotional prices.

Wholesale \$ Margin, from Dairy Technomics, includes Market Administrator Fee, Processor Assesment, and 1% Plant Loss.

Figure 3: Actual Raw Milk, Estimated Wholesale, and Actual Retail Milk Pricing by Brand for the Four Leading Supermarket Chains in Southern New England: October 2003



Prices are the average across Whole, 2%, 1%, and Skim Milk and include all sales or promotional prices.

Wholesale \$ Margin, from Dairy Technomics, includes Market Administrator Fee, Processor Assesment, and 1% Plant Loss.

Figure 4.

Hartford
Market Level Retail and Farm Fluid Milk Price
January 1996 - April 2004

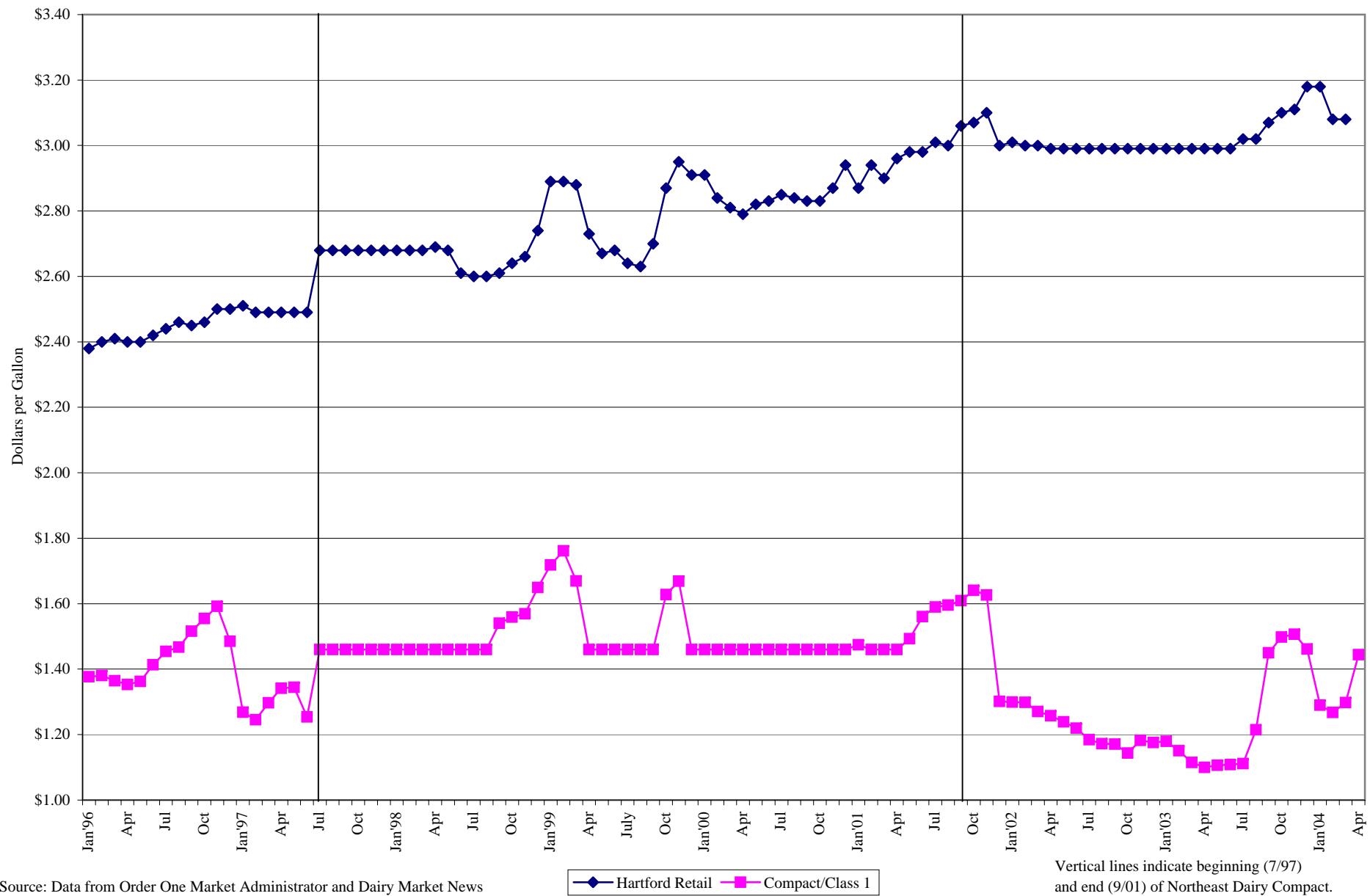
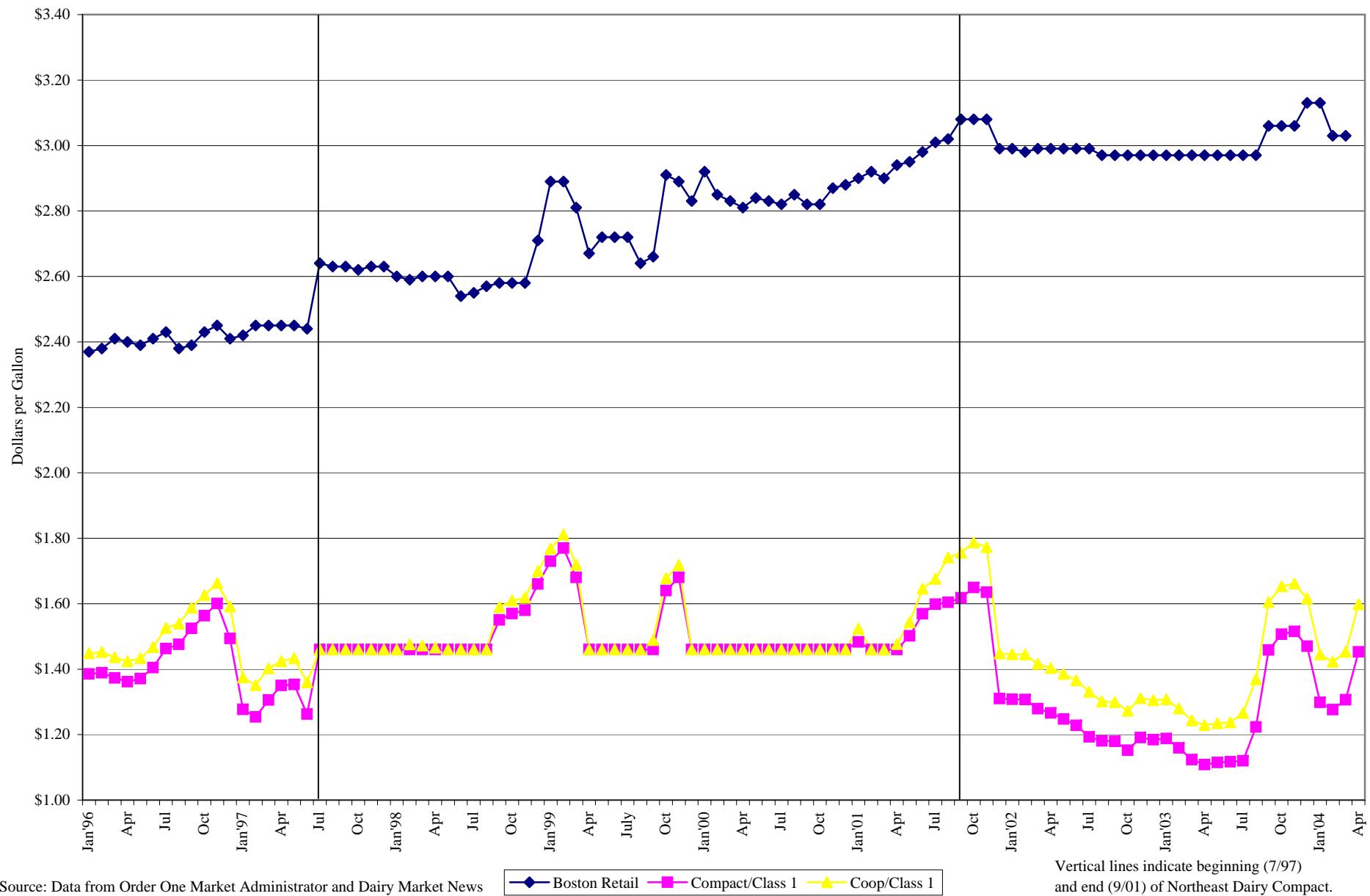
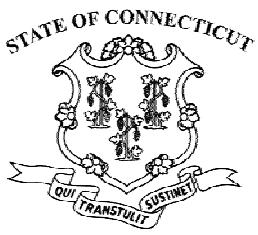


Figure 5.

Boston
Market Level Retail and Farm Fluid Milk Price
January 1996 - April 2004



Attachment A



General Assembly

Substitute Bill No. 5642

February Session, 2004

* HB05642ENV_031704 *

AN ACT CONCERNING THE MILK REGULATION BOARD.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

1 Section 1. (NEW) (*Effective from passage*) The Commissioner of
2 Agriculture, in consultation with the Milk Regulation Board, shall, not
3 later than January 1, 2005, adopt regulations, in accordance with the
4 provisions of chapter 54 of the general statutes, regarding a system of
5 milk prices, premiums and fees. Such regulations may include (1) a
6 minimum price to be paid by milk dealers for Class I milk, Class II
7 milk and Class III milk, as defined by the United States Department of
8 Agriculture (7 CFR 1000), and (2) a premium to be paid by dealers or
9 retailers to producers for milk. Such regulations shall take into
10 account the price paid to milk dealers for the various classes or grades
11 of milk defined by the Federal Milk Order applicable to Connecticut,
12 the cost of producing milk in this state and the public interest.

This act shall take effect as follows:	
Section 1	<i>from passage</i>

ENV Joint Favorable Subst.

Attachment B

PRICE

THEORY

AND

APPLICATIONS

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New York St. Louis San Francisco Auckland Bogotá Caracas
Lisbon London Madrid Mexico City Milan Montreal
New Delhi San Juan Singapore Sydney Tokyo Toronto

IMPEDIMENTS TO ECONOMIC EFFICIENCY

■ 19-1 Departures from Pareto Efficiency Because of Monopoly

■ 19-2 External Effects and Pareto Efficiency

Internalizing the Externality

Application 19-1: Internalizing an Externality in a Shopping Mall

Maximizing Social Surplus with a Per Unit Tax

The Coase Theorem

Transaction Costs

Application 19-2: Neighborhoods for Sale

Application 19-3: View Wars and Defining Property Rights

Application 19-4: Saving the African Elephant

Taxation and Pareto Efficiency

■ 19-3 Public Goods and Pareto Efficiency

The Optimal Quantity of a Public Good

Financing a Public Good

■ Summary

■ Key Terms

■ Review Questions

■ Exercises

Chapter 18 demonstrated that Pareto efficiency conditions are satisfied when all markets are organized competitively. However, this conclusion is far less sweeping than it first appears. Chapter 18 not only assumed that all markets are competitive but that information is distributed symmetrically, external effects are nonexistent, and no public goods exist in the kingdom of Zeoz. This chapter investigates each of these topics with the exception of asymmetric information which was discussed in Chapter 14.

19-1 DEPARTURES FROM PARETO EFFICIENCY BECAUSE OF MONOPOLY

Monopoly power is one impediment to achieving Pareto efficiency. This section shows how the presence of monopoly in a product market prevents the economy from achieving all the Pareto efficiency conditions.

In an economy with two goods, X and Y, we assume that the production of X is monopolized and that Y is produced competitively. Price exceeds marginal cost in the monopolized market, while price equals marginal cost in industry Y. When a monopolist produces X,

$$\text{Price} > \text{Marginal revenue} = \text{Marginal cost}$$

$$\text{Price} > \text{Marginal cost}$$

Because the monopoly price exceeds the marginal cost in industry X, the price of X relative to the price of Y is greater than the marginal cost of producing X relative to the marginal cost of producing Y. The relative price of X is no longer an accurate measure of the relative marginal cost of producing X.

$$\frac{P_X}{P_Y} > \frac{MC_X}{MC_Y} \quad (19-1)$$

In this situation consumers will sensibly substitute away from X and purchase relatively more units of Y because the monopoly price of X is higher relative to the price of Y than it would be if X were supplied by competitive firms. Because every consumer faces the same higher price ratio, each purchases a market basket where the higher price ratio equals the consumer's marginal rate of substitution. Consequently, the marginal rates of substitution are still equal for all consumers in the economy. So, the economy is Pareto-efficient in exchange even when a monopolist produces product X.

Although the producer of X is a monopolist in the product market, the firm is still a price taker in factor markets. Consequently, all producers in the economy, whether they are producing Y or X, are price takers in factor markets and face the same factor price ratio. Therefore, the marginal rates of technical substitution will still be equal in the two industries, and so production is Pareto-efficient.

Nevertheless, the economy is not hitting on all cylinders. The problem is that the product mix is no longer Pareto-efficient. Because price is higher under monopoly than under competition, the economy produces too little of X and too much of Y. We have

$${}^A\text{MRS}_{YX} = {}^B\text{MRS}_{YX} = -\frac{P_X}{P_Y} < -\frac{\text{MC}_X}{\text{MC}_Y} = \text{MRT}_{YX} \quad (\text{Product Mix Is Not Pareto-Efficient}) \quad (19-2)$$

where ${}^A\text{MRS}_{YX}$ is the marginal rate of substitution of consumer A and ${}^B\text{MRS}_{YX}$ is the marginal substitution of consumer B. Therefore, the marginal rate of substitution of each consumer is less than the marginal rate of transformation.

$${}^A\text{MRS}_{YX} = {}^B\text{MRS}_{YX} < \text{MRT}_{YX}$$

When a firm monopolizes the market for X, the marginal rates of substitution of consumers no longer equal the economy's marginal rate of transformation. For example, consumers might be indifferent when giving up one unit of Y for two units of X given P_X/P_Y , but the economy can produce four more units of X by producing one less unit of Y. The economy is producing too few units of X, the monopolized good, and too many units of Y, the competitive good. This means that the slope of each consumer's indifference curve is steeper than the slope of the production possibility curve when there is a monopoly in X given the mix of goods produced in the economy.

Figure 19-1 shows a situation where P_X/P_Y is greater than MC_X/MC_Y when a monopolist produces X. At point e , mm is tangent to the indifference curves of consumers A and B but is steeper than bb , the slope of the production possibility curve at point a . The marginal rates of substitution of the two consumers are equal,

MONOPOLY IN ONE MARKET CAUSES AN INEFFICIENCY IN THE PRODUCT MIX

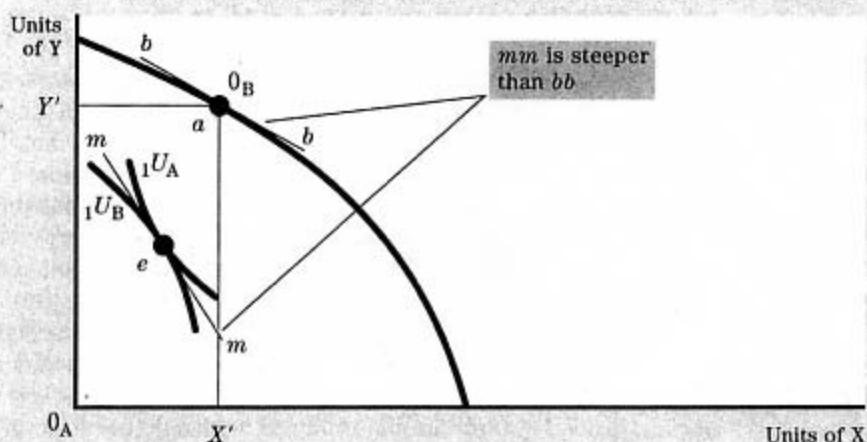


Figure 19-1 When a firm monopolizes the production of X, the economy produces Y' and X' units. Less of X is produced and more of Y because a monopolist produces X. At point e the slope of mm equals the marginal rate of substitution of consumers A and B. Line bb is tangent to the production possibility curve at point a . Line mm is steeper than line bb . Therefore, the product mix is not Pareto-efficient because the ratio of prices does not equal the ratio of marginal cost.