# Milk Pricing Policy Options and Consequences

## *An Analysis for the American Farm Bureau Foundation for Agriculture*

by

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# Foreword

People involved in milk production and processing are often challenged to "think outside the box" for new ideas about milk pricing policy options. The truth is that the box is more than 70 years old and its dimensions have been explored for more years than that. Many of the ideas which are brought to the table are often complex compilations of old ideas.

If the dairy industry's problem is that milk prices are too volatile, then the solution is to knock off some of the price peaks and fill in some of the valleys. Individual can do this by investing in high price years and divesting in low years. Government programs could encourage such producer behavior through incentives. An alternative is to conduct an industry-wide program like the price support program which seeks to accomplish the same goal by investing in stocks in low price periods and divesting of stocks in high price months.

If the industry's problem is one of inadequate price, then there are only two choices: reduce the milk supply or increase the demand for the product. Producer and processor funded advertising seek to increase domestic demand for the product. The Dairy Export Incentive Program (DEIP) and a portion of the Cooperatives Working Together (CWT) program try to expand demand outside of our borders. CWT also works explicitly to reduce the milk supply by removing cows from the herd. Other programs such as the Dairy Termination Program have been used the same way. But it is important to realize that most other "outside the box" thinking will have to use one or the other of these choices to increase market prices

If the milk price is deemed to be inequitably distributed, then there are methods which could be employed to change those outcomes. For example, the federal milk marketing orders already pool revenues and redistribute them to producers to equalize payments from different types of processors. Federal orders also distribute payments according to local supply-demand factors within the orders (zoning). Payments could be pooled over a larger area or nationally to create different access to the pool of dollars generated in the market place.

Another possibility for distributed income would be a function of social policy. If it is deemed desirable to pay more to one farm segment than to another (eg, farm size), then targeted income can be distributed through a regulated milk price such as orders or in the form of direct payments such as the Milk Income Loss Contracts.

Anyway you slice it, policies, whether complex or simple, boil down to moderating volatility, expanding demand, reducing supply, or redistributing income through targeted payments. In this paper, the authors set the stage by looking at the history of U.S. dairy policy, consider modifications to current policies that may improve their performance, look at the impacts of eliminating major dairy policies, examine state-level options such as compacts, reflect on modifying crop programs to accommodate dairy, opine about cooperatives role as a replacement of federal regulation, and consider other policy options to mitigate price risk.

The Executive Summary of this report begins with a brief review of the policy options that were considered. The four pages which follow, describe the major options and provide an index of the pages with more complete detail of each discussion point.

The authors have not tried to be prescriptive about milk pricing policy but rather have tried to outline the options and consequences of obvious changes that could be made. We hope that readers will challenge themselves to imagine their industry in the light of these changes and to think about what kind of industry they would like to shape. Recently there have been discussions about a National Dairy Equity Act. To many folks, this policy change looks like a collection of new ideas. However, a closer inspection should lead to the conclusion that it is a complex compilation of bits and pieces of previous policy.

We have examined the dimensions of the box and have found that it contains many possibilities. Getting outside that box will require creative thinking indeed!

# Executive Summary

An abbreviated **history of public policies for milk pricing** (page 2) shows how major pieces of policies have developed piecemeal over time in response to market conditions in the industry. As dairy farms have become less homogeneous and production has concentrated in a few regions, regional differences on milk pricing policies have become more common. This has led to Congressional actions that are less focused on overall goals for the industry and more focused on details of policy.

In the public policy process, rarely is the policy sheet wiped clean for a fresh start. This section is a summary of milk pricing policy options presented in the remainder of the report. Some of the options are relatively minor changes in existing policy. Other options are a clear break with current policies. As noted in the introduction of this report, these policy options are meant to be a departure point for discussions of future milking pricing policies, not prescriptive conclusions about what should or should not be done. The page numbers at the end of each point refer to the page in the report where this point is discussed in more detail.

## Current policies

The **existing support price program and support level** offer a minimal safety net and continues the philosophy of market orientation of the last 20 years. Price support history clearly demonstrates that a support level that is too high will result in a misallocation of resources into surplus milk production. The $9.90 per hundredweight support price level is below the full cost of production for most milk producers and below the cash costs for many. (page 15)

This low safety net has increased dairy product and farm level price volatility. This volatility has encouraged the development of price risk management tools for milk producers, processors and wholesalers. (page 16)

The spread in the cost of production between modern and larger dairy operations and the traditional smaller operations is large. A $9.90 support level is probably a very adequate support level for modern larger operations, but not for smaller traditional ones. (page 16)

If price enhancement is the objective of the price support program, then effective domestic milk supply control and import protection are needed to avoid misallocation of resources to milk production and burdensome milk surpluses. (page 16)

In recent years, **prices for milk used to make cheese** (Class III) have fallen far below the support price. Three alternatives may maintain prices for Class III and IV closer to the support price during times of milk surplus (pages 17-19). The cheese purchase price could be increased to reflect the added costs of selling to the government versus the commercial market. The CCC could be an active participant on the CME offering to purchase cheese at the established support price. The support level could be used as a floor for Class III and IV milk under the federal order system.

The **butter/powder tilt adjustment** decision puts the Secretary of Agriculture under intense political pressure because lowering the Class IV price can lower the Class I fluid price. To avoid distorting the market for milk products and increasing government outlays, the decisions should be based on market decisions and not on political pressure. (pages 19)

The **Milk Income Loss Contract (MILC)** program combined with a milk price support is not sound policy. (pages 19-21) MILC payments maintain and encourage surplus milk production that must be purchased under the prices support program. Markets are not allowed to work to clear the surplus milk production.

Two alterations may be considered:

(1) The benefit to smaller producers at the expense of larger producers could be reduced by lowering the target price and expanding or eliminating the 2.4 million pound cap.
(2) Drop CCC purchases from the support program with a target price of $10-11 per hundredweight for manufacturing use milk.

The effectiveness of **DEIP (Dairy Export Incentive Program)** program may be enhanced by (page 22):

(1) Exporters should be encouraged to submit bids for products and countries that offer the greatest potential for long-term market development.
(2) USDA should consider bids for any eligible products, not primarily for those in current surplus.
(3) USDA needs to act under a shorter time frame in reviewing and accepting bids.

The **Federal Milk Market Orders** and dairy price support programs are closely interrelated because FMMO class prices are based on manufacturing milk values, but the purposes of the two programs are different. The support program is to provide a safety net for milk prices while the FMMOs are to provide orderly marketing and price stability through classified pricing and pooling. Suggested changes in FMMOs to further their purposes include (pages 24-28):

(1) It currently takes two years or more for changes to be made in FMMOs. *This should be reduced to a reasonable time period—perhaps six months or less.*
(2) Base the butter/powder CCC purchase price adjustments on established economic criteria, not political influence, and/or change the “higher of” provision as the mover of Class I to a weighted average of the advanced Class IV and Class III price.
(3) Reduce the number of classes by merging the Class IV and Class III products into one manufacturing use class. This fixes problem (2) above.
(4) Pooling provisions should require a greater commitment to a given FMMO by requiring plants to stay pooled when the Producer Price Differential (PPD) is negative or require an extended time before a plant can region a pool.

The **economic impacts of possible changes in the MILC program have** substantial tradeoffs (pages 31-34):

(1) Removing the 2.4 million pound market cap would result in costs of $2.8 billion per year for 2008 to 2012 and production would be 1.7 billion pounds greater than the base.

(2) Eliminating the MILC program when it expires in 2005 would cause outlays by 2008-2012 to average about $0.2 billion per year and milk production average 200 million pounds per year less than the baseline.
(3) Continuing MILC in its present form would result in outlays at $1.5 billion per year for 2008-2012.
(4) By 2008-2012, the net revenue to producers (market revenue plus government payments) is about the same under all three scenarios.
(5) As would be expected, states with smaller average dairy herd sizes benefit more from a MILC program similar to the current program, while states with larger herds benefit from a MILC program that does not have a marketing limit. The benefits for all size farms are partially reduced by the lower milk prices that result from the higher milk production encouraged by the MILC payments.

## Eliminate Existing Programs

**Eliminating the price support program** would cause lower milk prices in the first two years of implementation. After that time, production would be slightly lower and market prices would improve. A reduction in the supply of butterfat would cause imports of butter to rise (Pages 34-37).

**Eliminating the DEIP program** has a greater impact on nonfat dried milk than on other products because it cannot compete in world markets (pages 34-37).

**Eliminating the FMMOs** is hard to model because they have been an integral part of the marketing system for 70 years (pages 37-38). Fluid consumption would increase by 2.5 percent. Prices would be lower in the first few years and then begin to recover. States with 20 percent or less fluid utilization seem to gain while states with utilization higher than 35 percent would lose. The California program was considered to be unchanged and they would gain from higher prices for manufacturing prices.

For **representative dairy farms**, the elimination of all federal dairy policy would make California and Idaho dairy farms and large ones in Washington state better off. All other representative farms would be worse off, with those with historically high Class I differentials being impacted the most (pages 41-43). Moderate and large Wisconsin dairies and moderate sized Washington state dairies would lose the least.

## Dairy Compacts

Dairy compacts have substantial regional impacts (pages 45-53). The higher class I prices encourage more milk to be shipped into the compact area from outside the area for fluid use. Increases in milk production within the compact area can lower prices for products that have national markets, such as cheese, butter and powder. Once a compact is formed, states close to the region with a relatively high Class I utilization have an incentive to join the compact.

## Dairy Cooperatives

Dairy cooperatives are view by some as a potential substitute for federal dairy policy (pages 55-61).

(1) Without FMMOs, cooperatives would be under pressure to pay competitive prices. Serving all size members would become more difficult. They would likely not be paid for market balancing functions. Closed coops may become more common.
(2) While the Cooperatives Working Together (CWT) has shown that cooperatives can work together in the short run to shore up prices, that is not likely to be sustainable in the long run.
(3) Cooperative members are less homogenous than previous generations. That raises major governance issues. Rolling over equity capital from past members to current members limits the ability of cooperatives to use capital for new investments.

## Other Policy Options

Using **traditional crop program as a base for dairy policy** appears to have few benefits (pages 63-68).

(1) Establishing base production and keeping the base from growing is critical.
(2) Having a target price program that makes direct payments and a price support program that accumulates stocks leads to excess production.
(3) The timing of disposing of stocks adds to the difficulties of managing the programs.

**Nontraditional risk management programs** may have a role to play in dealing with the increased price volatility of more market-based programs (pages 69-84).

(1) Farm and Risk Management Accounts (FARRM) would allow producers to set money aside in tax free accounts in high income years (like 2001 in dairy) for use in lower income years.
(2) Canada has a Canadian Agricultural Income Stabilization Program based on the five-year average of a producer's operating margin.
(3) Individual Risk Management Accounts (IRMA) would allow producers to place 2 percent of their Schedule F gross income into an account. That amount would be matched by a federal government contribution using money that is now spent on crop insurance.
(4) Farm Program Payment Reserve Accounts (FPPR) would allow producers to have 50 percent of their farm program payments, like MILC payments, placed by the Farm Service Agency into an account to be used as a counter-cyclical payment.
(5) The USDA Risk Management Agency is supporting pilot programs to develop livestock producer insurance programs.

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## Introduction

The United States federal and state governments regulate many agricultural products, but none is more regulated than milk. The U.S. is not unusual in this respect; most governments in major milk-producing countries take an active role in the regulation of milk production and milk marketing. Prior to the Great Depression of the 1930's, federal and state governments were not directly involved in regulating the dairy industry. The economic collapse caused by the Depression led to the first piece of legislation that attempted to raise producer milk prices and stabilize the tumultuous market. Once involved in regulation of the dairy industry, political inertia effectively eliminated any possibility for a quick separation of the federal government from further commitments to the industry.

Milk, and its related activities of production, processing and consumption, has many unique properties. It is a highly perishable product that is bulky to transport leaving producers vulnerable to local markets for their product. There have also been many more sellers (farmers) than buyers (processors), creating the possibility for unequal market power. Unlike most commodities, production decisions and harvest take place 365 days a year. Farms employ specialized assets to produce milk. The use of these assets are not flexible in the production of other livestock products creating a relatively inelastic supply for milk. Consumer demand for dairy products is also relatively inelastic. This inelastic supply and demand result in large price swings for relatively small changes in quantity.

This paper is meant to provide a departure point for discussion of future dairy policies. The authors' intent is not to be prescriptive about policy but rather to outline possible changes that could be made and to assess some of the outcomes of those changes. It is important to note that many policies that we do not think of as dairy policy can impact the dairy industry. Tax, general trade, environmental, food safety and crop policies are examples. It is not our intent to examine the breadth of these policies in this paper. We will confine our examinations primarily to "dairy policy".

### Dairy Policy in the New Millennium

Dairy policy for much of the twentieth century was not contentious. When dairy producers were experiencing problems, such as excessive seasonal price fluctuations, it was a problem for everyone as farms were fairly homogeneous. In the last 25 years of the century, rapid growth in western milk supplies and loss of production in other regions produced regional dissent in policy objectives as witnessed by dairy Compacts. More recently, policy such as the MILC program, has demonstrated that regional support for policy may break down into a farm size discussion not necessarily pitting region against region.

Channels for enacting dairy policy have also changed. Originally, the merits of policy would be debated by Congress. A congressional act would describe a set of goals which were handed off to USDA to be implemented. USDA utilized knowledgeable staff to write the rules to accomplish those goals and administer the programs. As policy contentions became regionally represented, it was possible to work closely with influential congressmen to write detail into laws—not just goals. This circumvented the possibility of USDA implementing rules that a region did not like. In

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the last decade, dairy policy has also discovered the judicial system. Laws that a group or region may oppose have been enjoined in the courts on several occasions. In this new environment of policy need and channels, policy options become much more complex.

## A Short History Lesson

A through examination of current and future dairy policy is not possible without a brief look at how we have gotten to the policies that are in place today. Most policies have been implemented and/or altered to address a specific problem at a specific point in time. When we are in the midst of a policy debate, it is common for casual reporters on the industry to refer to the collection of dairy policies as "Byzantine" methods for pricing milk. Every policy has made sense to lawmakers at the time it was implemented. However, it is incumbent on us today to ask whether the sum of these policies still make sense. If not, where do we go from here?

The Dairy Industry Prior to 1900

Prior to the twentieth century, farming in the United States was widespread, and most people raised a high percentage of the food they consumed. In general, farms were not specialized. Changes in how food was produced and how farms evolved to become specialized operations occurred with the growth of large cities, e.g., Boston, New York, and Philadelphia. Large cities relied on nearby farms to provide a supply of food, and dairy farms, in particular, were quick to respond to population shifts as people moved from rural communities to urban centers.

The railroad was, in part, responsible for the specialization of dairy farms. The railroad provided a means of shipping goods more quickly and to more distant locations. Railroads changed the profile of dairy farmers by moving milk from saturated local markets to large cities where both the demand and price for fluid milk was higher. Dairy farmers recognized the opportunity for specialization afforded to them and began to concentrate on milk production. As the demand for fluid milk in the burgeoning cities increased, milk was shipped longer distances from more distant farms in order to meet the demands of population-dense areas. Dairy farmers transported milk to receiving stations in 40-quart cans, which were then placed on railroad cars and transported to processing plants located in the city. The introduction of refrigerated tanker cars in the late 1870s further increased the volume of milk shipments and the distance over which milk could be transported (8).

As roads improved, trucks began to replace rail cars as the main means of transporting milk to processing plants. The introduction of trucks meant greater flexibility for the farmer in terms of when the milk could be shipped to plants or receiving stations and diminished the need for farmers to transport their milk by rail. However, for the largest cities, railroads continued to be the method of choice for bringing in milk from distances greater than about 80 miles from the city (8).

Milk Distribution and Milk Cooperatives Prior to the 1920s

The expansion of the fluid milk market led to specialized dairy farms, and milk handlers and dealers evolved to facilitate distribution of fluid milk products within the cities.[1] Historically, farmers produced and distributed fluid milk as well as some manufactured products; these producer-distributors were the norm. As large cities developed and farmers faced greater demands for fluid milk and dairy products, the number of producer distributors declined. Dairymen became more involved in the production of milk and could not afford to expend time distributing their product. The distribution task became the responsibility of organizations specializing in milk processing and marketing. These firms bought, processed and distributed fluid milk and had the capacity to manufacture dairy products if surplus quantities of milk existed. Specialized processors grew to

[1] A "handler" is any milk dealer who disposes of grade A fluid milk products. Handlers include fluid milk processors who distribute milk to consumers and retailers as well as persons who sell milk to other dealers for fluid milk distribution. The term "handler" applies to proprietary operations and cooperative associations that handle milk for their members.

large sizes because of the economies of size in assembling and distributing milk, and thus, the milk produced by several dairy farmers was required to adequately supply a single processor.

The pattern of milk buying that characterized this period was that of a few large, organized distributors with some degree of market power buying a perishable product from many small, unorganized producers. The producers had little influence in pricing decisions and were consequently suspicious of the prices, weights and tests performed by buyers. The inequality in bargaining power was the primary reason for producers organizing collective bargaining units. The producers wanted to "level the playing field" when bargaining with dealers and thought that such an organization could affect the price by controlling milk supplies. Milk handlers were opposed to these collective bargaining groups and viewed milk marketing cooperatives as illegal conspiracies in restraint of trade. Handlers also claimed that the cooperatives violated the intent of the Sherman Act of 1890, which prohibited price fixing. The cooperatives, on the other hand, argued that the Clayton Act of 1914 permitted non-stock cooperatives to bargain collectively for prices on behalf of their members (8). However, the Clayton Act did not address the vague wording of the Sherman Act, nor did it provide specific provisions detailing the circumstances under which cooperatives would be protected by the law. Hence, cooperatives were subject to legal action that challenged their existence. In 1922, the Capper-Volstead Act was passed and clarified the legal status of cooperative marketing associations. The Capper-Volstead Act essentially gave limited antitrust immunity to marketing cooperatives, and under the auspices of the Act, farmers were free to collude and participate in price-setting behavior.

Pricing of Milk Prior to the 1920s

No standard pricing procedures were in place for the pricing of fluid milk products, and experimentation with different schemes was not uncommon with innovations introduced by cooperatives and private firms. Producers realized that it was the milk dealers who controlled milk pricing. Though producers attempted to band together in an effort to increase their bargaining power, dealers dominated price negotiations from the late 1800s to about 1916 (3, 4, 8).

Several problems were encountered when devising a milk pricing plan. First, production of milk was variable from year to year, and within a single year, seasonal variations in level of milk production were likely to occur. Second, consumption of fluid milk also varied seasonally, but consumption patterns did not coincide with production patterns. Third, because milk was a perishable commodity, it could not be stored to balance out the seasonal differences in supply and demand for fluid milk. Fourth, in order for milk to be eligible for fluid use, stricter sanitary requirements had to be met on the farm which led to a significant increase in the cost of production. The additional cost of producing milk eligible for fluid use had to be returned to the farmer. In absence of an economic stimulus, there would be no incentive to upgrade the sanitary standards on the farm. The combination of these factors resulted in a number of approaches to pricing milk. Flat pricing, base excess, classified pricing, and base rating formed the foundation of the pricing strategies that emerged in the early 1900s.

Flat pricing was a simple approach to the milk pricing question, but had obvious flaws that became apparent upon implementation. Under this system, the price for all milk sold by a single farmer was the same, regardless of location of purchase or production, composition, or other quality factors. Though apparently impervious to concerns about equitable producer prices, the price received could vary from farmer to farmer depending on demand of handler. Fluid milk handlers had to offer a higher price than manufacturing plants to attract milk and compensate farmers for the added expense of meeting higher sanitary requirements. However, flat pricing often compelled processors to add farmers in the short supply season and cut farmers during the flush, contributing to the instability of the dairy industry. Small processors generally used flat pricing because they did not bargain with cooperatives for milk. Large fluid processors, by virtue of the sheer volume of milk processed, usually dealt with cooperatives to obtain a supply of milk. As a result, these processors faced a

different pricing scheme - usually the base excess plan or classified pricing scheme.

The base excess plan established a base level of production according to milk deliveries during the short supply months. The base level was updated as often as every year. The farmers were paid fluid milk prices for this milk. Any milk in excess of the base received the manufacturing milk price. Base excess pricing was an improvement over flat pricing in terms of reducing instability, but price instability was not eliminated entirely because of seasonal fluctuations in production. The plan was also flawed in that neighboring farmers could receive vastly different milk prices which sparked criticism from groups concerned about equitable producer prices.

Classified pricing came about from the marketing of a cooperative's milk, and more specifically, from the problem of "surplus" milk on a seasonal basis.[2] The three main objectives of classified pricing were to obtain higher returns for producers, to facilitate disposal of the milk in excess of the fluid milk requirements so that no instability was created in the fluid milk market by the presence of surplus milk, and to reduce the inherent instability of fluid milk prices by issuing uniform prices to all handlers (3). The tenet of classified pricing was that the price farmers receive should be based on handler use of the milk. Each dairy product was assigned to a "class", and the price paid by handlers for the milk was based on the amounts of milk used in each class. A necessary complement to classified pricing was a pooling of revenues from the sales of milk. This feature allowed either all producers delivering to a single handler or all producers belonging to the same cooperative to receive the same average or "blend" price. The pooling procedure acknowledged many of the concerns about equitable producer prices which were inadequately addressed by the other pricing plans. Classified pricing started around 1886 in the Boston market and was steadily adopted in other city markets in the 1920s and 1930s (3, 4). This approach to pricing milk was the most widely accepted and equitable among all pricing plans.

The base rating plan was a combination of two milk pricing methods - the base excess plan and the classified pricing plan. The base for each producer was set equal to the average volume of milk marketed during the months in which milk supply was short. The base price was set to the average price for all milk sold in fluid form plus any lower class milk up to an amount equal to the volume of milk representing the combined bases of all cooperative members. Surplus milk received a price equal to the manufacturing milk price. The base rating plan also attempted to distribute returns for milk among producers as an incentive to develop more stable milk production patterns from month to month and year to year.

## Problems with Milk Pricing During and After World War I

During World War I, cooperatives bargained for flat prices on all milk sold. They were successful in getting a favorable milk price because of the high demand for manufactured products in Europe. At the end of the war, demand for evaporated and condensed milk and other manufactured products diminished, and as a consequence of the disappearance of the manufactured milk market, processing plants closed all over the United States. Plants that continued to operate paid reduced prices for raw milk in order to survive. Producers and their bargaining cooperatives could not successfully force an increase in the price because the supply of milk far exceeded the demand for milk.

The most fundamental difficulty in flat pricing was that distributors sold milk products that were valued both more and less than the price they paid for producer milk, and the proportion of milk sold in each use category varied greatly between distributors. Furthermore, distributors became dissatisfied with flat pricing as a means of purchasing milk from producer cooperatives. From a distributor's view point, there was too much milk in the flush and not enough during the short months. During the flush periods, milk was priced too high to dispose of it profitably, and flat pricing failed to recognize that a large part of the distributors' volume had a market value below the

[2] In this case, "surplus" milk was used to describe milk in excess of fluid needs.

average on which the price was based (1).

From a cooperative's view point, bargaining for flat pricing was met with several difficulties. If a cooperative bargained for a flat price that approximated the weighted average of fluid versus manufactured products, the distributor who utilized more milk for fluid was advantaged, and the distributor who used more milk for manufactured products was disadvantaged. Under flat pricing, the distributors selling a significant proportion of manufactured products tended to cut off producers in order to bring their milk receipts and fluid milk sales into closer adjustment (4). For example, a handler wanted to buy the minimum amount of milk necessary to cover his fluid milk sales system. Therefore, when production increased above what was needed for fluid milk sales, several strategies were used to reduce the supply of milk. Handlers often instructed dairy farmers to hold back one day's worth of milk, which was likely to be sold elsewhere at a lower price (4). Dealers were also known to send an insufficient number of cans to farms, and dairymen who did not have access to additional cans were forced to either use the milk on the farm or dump it.

Thus, for bargaining associations that did not operate manufacturing facilities, it was crucial to persuade dealers to buy the total available supply of milk at all times.

Members of milk cooperatives met to discuss a strategy for proposing a widespread pricing plan to milk dealers, and classified pricing was recommended as the pricing plan of choice. Milk used for manufactured products which competed with similar products made outside the local fluid market was priced accordingly, which gave the cooperatives a freer hand in negotiating a price for milk sold for fluid purposes. The plan required dealers to reveal the exact use and sales of all milk products in order to determine the correct prices for each class of milk. Surprisingly, dealers accepted the proposal. However, when attempting to institute classified pricing, the cooperatives faced practical problems. For example, there were no means of assuring the accuracy of the dealers' reports of milk usage. Furthermore, extending classified pricing to non-members to prevent breakdown of the system from price cutting proved to be much more challenging than the cooperatives had anticipated. In spite of the logistical problems surrounding classified pricing, the plan saw extensive use in Boston, Washington, D.C., and Philadelphia around 1918 and increased to cover about 68 markets by 1933 (4).

## The Intervention of the Federal Government in Milk Markets

Even before the Great Depression had its effects on milk prices, classified pricing plans were breaking down. Cooperatives did not have the power to audit the records of processors to determine the accuracy of milk usage reports. Underpayment by processors was widespread because the classified pricing plan lacked provisions for enforcement of the agreement between cooperatives and processors. Furthermore, cooperatives were not able to exercise monopoly control over milk producers and the milk supply, and thus, no credible threat of withholding milk could be made. Because classified pricing was never universally accepted, a processing firm could offer to buy milk from individual farmers for a price that was slightly above the cooperative blend price and limit purchases to an amount close to the firm's fluid milk sales (4, 5).

The stock market crash in October, 1929 marked the beginning of the Great Depression and tougher times for dairy farmers. With the Great Depression came a severe drop in milk prices, resulting in a decrease in consumer purchasing power. In milk markets, instability was a predictable result of the failing economy. Producers who did not belong to cooperatives contributed to the increased instability by undercutting existing milk prices in an attempt to sell their product. On several occasions, producers who shipped milk to large markets attempted to force processors to increase prices by organizing milk strikes. Processors were able to obtain a sufficient supply of milk from producers who did not participate in the strike, and thus, the milk strikes typically proved to be largely ineffective. Dairymen, like most other farmers, began to turn to the government for reinforcement of their local efforts. Requests were made to state and federal governments for assistance in

re-establishing more orderly market conditions in hopes of increasing and stabilizing milk prices (4, 5).

Disorderliness, which refers to the lack of a predictable, sustainable, and efficient flow of a product to a specific market, ultimately led to the breakdown of dairy markets. If fluid milk markets were to have orderly supply, orderly production was required which further depended on orderly provisions for assembly and distribution. In addition, an orderly relationship between different markets in terms of price and supply was required. Without state or federal governmental intervention, there was little chance of creating orderly marketing beyond the local level. The 1933 Agricultural Adjustment Act (AAA) sought to correct these failures in dairy markets by including provisions for milk and dairy products.

The AAA attempted to improve prices and income to dairy farmers in two ways. First, milk and dairy products were designated as basic commodities, and as such they were offered the same price supports and production adjustment operations that existed for storable commodities. In spite of these allowances. the dairy industry did not support the proposal, and consequently, it was not adopted. The second set of measures that directly impacted the dairy industry was marketing agreements licenses.[3] With marketing agreements, milk dealers in a designated area were required to pay producers on a classified price basis and pool the returns to farmers either on a handler basis or a market-wide basis. In return, milk dealers were allowed to set minimum retail prices and minimum producer prices (8).[4] Marketing agreements were voluntary for processors and handlers, and they were only popular in the largest cities, such as Boston, Baltimore, Knoxville, St. Louis and Chicago. Although marketing agreements were a well-conceived solution to the problems experienced in dairy markets, violations of agreements were widespread and were dealt with inadequately by the federal government. Dealers often misused their price-setting ability and set high retail prices without appropriately adjusting the minimum prices paid to producers.

At the same time as the passage and institution of the AAA, the idea of “parity” was developed and used as a general goal for assisting farmers. Parity used the 1910 - 1914 relationship between prices received and prices paid by farmers as a benchmark for establishing price and income goals. This specific time period was selected because of the favorable ratio of prices received by farmers relative to the prices paid. Though the immediate impact of the parity concept was minimal, parity was later used explicitly in setting support prices and loan rates for many agricultural commodities.

During the middle 1930s, several Supreme Court rulings challenged the constitutionality of the 1933 AAA. Federal courts narrowly construed the passage of open-ended laws, and if the AAA was challenged in court, it might have been declared unconstitutional because it lacked specific provisions for each section. Consequently, several amendments to the Act were passed by Congress in 1935. First, licenses were replaced with “orders” that were issued by the Secretary of Agriculture. Federal Milk Marketing Orders (FMMOs) provided the means for extending uniform opportunities and responsibilities to and enforcing them upon the entire designated market (7). Marketing orders corrected a major flaw in early collective bargaining approaches to regulation, i.e., voluntary participation by processors and dealers. Second, class pricing and location price differentials were authorized within FMMOs along with market-wide pooling of revenues from milk sales. As an alternative to market-wide pooling, individual handler pooling was allowed upon approval by 75% of the producers in the order. Third, the 1935 Act authorized the use of funds for the expansion of markets and disposal of surplus agricultural products. Surplus products were to be purchased

[3] Marketing agreements were arrangements between the Secretary of Agriculture, producer associations, processors, and handlers that set prices and other terms of trade. Licenses regulated the conditions under which handlers could operate in a market.

[4] The setting of retail prices by dealers was not well received by retailers and was abandoned by 1934 as a matter of policy.

by the federal government and distributed for relief efforts. However, the impact on the dairy industry and overall milk price structure was minimal because dairy product purchases amounted to less than 1% of total milk production.

State and Federal Regulation in the 1930s

The Federal government's authority to regulate interstate agricultural markets was interpreted with little latitude by courts in general, and federal government intervention in intrastate markets was ruled illegal by federal courts.[5] The ruling led to a proliferation of legislation for state regulation of milk markets. State sovereignty gave states clear-cut authority to regulate intrastate milk markets directly so that federal devices were not needed.

State regulation manifested itself in many shapes and forms. Most included some sort of resale price regulation, and others also restricted the entry of milk dealers into the industry through state licensing. Classified pricing was yet another issue that was addressed by most state laws. In 1932, Wisconsin passed the first state milk control law (8). The chief feature of the law was that it issued regulations specifying maximum and minimum retail prices in an attempt to prevent price undercutting by retailers. New York, Virginia, Maryland and other states soon followed with their own versions of milk pricing regulation. However, by 1941 most states that had previously legislated milk pricing regulations phased out state regulation altogether. A few states such as Georgia, Florida, Alabama, Montana, California, and Oregon enacted state regulation in the 1930s that lasted at least 30 years (8). Currently, only California maintains exclusive state-wide regulation of milk markets, though a handful of other states maintain regulations in specific regions within each state's boundaries.

While federal regulation of intrastate milk markets was frowned upon by the federal courts, there was no doubt about the federal government's authority in interstate milk markets. In continuing with the intent of previous policy, the provisions for marketing agreements and orders established in the 1935 Act were basically restated and strengthened in the 1 937 Agricultural Marketing Agreement Act (AMAA). One of the policies of the AMAA was "to establish and maintain such orderly marketing conditions for agricultural commodities in interstate commerce as would provide farmers with parity prices...". However, USDA contended that the chief objective of the AMAA was to stabilize milk markets rather than to raise milk prices to artificially high levels.

The AMAA provided a framework for long-term price and market stability. One fundamental difference between the AMAA and previous agricultural acts was the focus and intent of the legislation. With the AMAA, the approach to problems in milk marketing changed from dealing with the severe income difficulties resulting from the Depression to dealing with the inherent instability in milk markets. Specifically, the AMAA addressed the instability dilemma by instituting two policies. First, all handlers serving in an approved marketing area were brought under the scope of the regulatory mechanism. Second, all handlers were placed in the same competitive position with respect to a minimum price for milk for the same use. While this in and of itself would not eliminate instability caused by fundamental changes in supply and demand, it did tend to control the fluctuations caused by imperfect competition between buyers and sellers. Thus, although the two strategies combined did not entirely erase the issue of instable fluid milk markets, the Act was instrumental in alleviating conditions of disorderly marketing.

A Continuation of 1930s Policies During WWII and Throughout the 1940s

The policies of the 1930s served to increase the farm price of milk and led to overproduction in many markets, gaining the attention of policy makers. Legislators attempted to set milk prices to bring supply and demand in each market into closer adjustment, but not all markets responded as anticipated to set prices. In some markets surpluses accumulated, making quick

[5] Intrastate milk markets must have the milkshed (area of milk production) and the markets (points of sales) within the state boundaries.

price adjustments impossible without seriously impacting the welfare of thousands of dairy farmers.

The solution to the problem of localized surpluses was the United States' involvement in World War II. Excess supplies disappeared quickly in the face of increasing wartime demands, and the problem soon became one of inducing sufficient production to satisfy wartime needs for milk. The Steagall Amendment was one of many instruments devised to cope with the shortage of milk. The amendment set the support price at not less than 85 percent of parity for dairy products and other nonbasic commodities for which increased production was needed to satisfy the demands induced by WWII (12). Furthermore, open market purchases of butter by the government were instituted in 1941, marking the first widespread attempt to support the price of milk by purchasing manufactured dairy products (8).[6] As another alternative to bolster milk supplies, government incentive payments were available to dairy farmers who were willing to increase milk production.

In addition to increases in the cost of production and complications stemming from the United States' involvement in WWII, competition from manufacturing plants for limited milk supplies threatened to create a shortage of fluid milk. A formula pricing scheme for fluid (class 1) milk was developed to induce dairy farmers and milk cooperatives to provide a sufficient supply of milk for beverage purposes. Under the formula pricing approach, fluid milk prices were set at a fixed amount above the price for milk used in manufacturing dairy products. The formula pricing of fluid milk was adopted in most FMMOs during WWII. Supply and demand adjusters were added later to vary the price actually paid from that determined through the use of the formula. The inclusion of the supply and demand adjusters was intended to reflect local market conditions, but they were limited in their usefulness as a result of difficulties encountered when incorporating them into pricing mechanisms.

Government Intervention in Milk Markets After World War II

The end of World War II brought about the demise of several temporary milk price enhancement mechanisms. However, the concept of governmental purchases of manufactured dairy products as a price support mechanism was retained and became the cornerstone of the dairy price support program, as specified by the Agricultural Act of 1949. Other features of the Act affecting the dairy industry were the ideas of a modern parity formula, so named because of the changes made to parity calculations, and a flexible price support mechanism.[7] The 1949 Act also gave the Commodity Credit Corporation (CCC) the authority to purchase manufactured dairy products, and the CCC continues to operate accordingly today.[8]

Import Restrictions on Dairy Products

In the absence of import restrictions, the dairy price support program would be burdened with the task of supporting world dairy prices because domestic prices for manufactured dairy products are generally higher than world market prices. Import

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[6] Similar direct market purchases on a smaller scale occurred in the early 1920s and throughout the 1930s after the Commodity Credit Corporation was established.

[7] "Flexible`. refers to the discretionary power of the Secretary of Agriculture to set the minimum support price within a range of 75 to 90 percent of parity.

[8] The government-owned Commodity Credit Corporation carries out price support activities for many agricultural commodities. To support milk prices, the CCC offers to buy butter, nonfat dry milk, and cheddar cheese at prices calculated to return at least the support price, on the average, to manufacturing grade milk. Because the support price is a goal price established by the federal government and not a "real" price, dairy farmers may receive prices that are either above or below the support price. The CCC purchasing mechanism indirectly establishes a price floor for milk used for manufacturing dairy products which, in turn, indirectly supports the price for all milk.

controls are a necessary component of U.S. dairy policy. Even as early as 1933, legislators foresaw the potential impact on the dairy sector by allowing dairy products to flow into the United States unchecked. Hence, section 22 of the 1933 AAA included a list of general provisions under which the entry of foreign manufactured dairy products could be restricted to avoid such complications. The import restrictions allowed by section 22 were not applied until the implementation of the Trade Agreements Extension Act of 1951, two years after the institution of the dairy price support program. Imported products have typically been held to about 1 to 3 percent of total U.S. milk production. Products in direct competition with supported products are most tightly restricted while products that are not produced in the U.S. or produced in low quantities are less restricted.

Dairy Policy in the 1960s

Dairy policy in the 1960s was characterized by a growing awareness of market interrelationships, and improvements in transportation methods, roads, and trucks led to sweeping changes in the FMMO system. What was once considered a series of disparate and loosely linked marketing orders was increasingly viewed an integrated system. Two key features that developed in the 1960s that contributed to uniting the FMMOs was the Minnesota-Wisconsin (M-W) price and a class pricing system that used the M-W price as the basic formula price (BFP).[9] Over a decade elapsed before all FMMOs accepted and totally converted to the M-W system, but once they adopted the M-W system, class prices were determined by adding differentials of various magnitude to the M-W price. Milk used in products with an intrinsically higher value received larger differentials, e.g. the class I price for milk used in beverage milk products was higher than the class price for the identical volume of milk used to produce ice cream or butter. By using the M-W price as the basic mover of grade A milk prices in FMMOs, price changes were reflected simultaneously in all order areas. With the acceptance of the M-W came the demise of the supply and demand adjusters that were developed after WWII.

A second important advancement during the 1960s was the recognition of a rationale for determining class I prices. In a series of studies which aspired to explain the existing pattern of fluid milk prices across the country, researchers hypothesized that the relationship between fluid market I prices depended on two factors - distance from the Upper Midwest and transportation costs (10). To verify the supposition, a base point in Eau Claire, WI was selected to represent the center of the area of greatest surplus grade A milk production, and market prices (not federal order prices) were estimated relative to distance from Eau Claire. The hypothesis concerning market prices proved to be valid, and transportation based pricing using Eau Claire as the base point has since evolved into the primary explanation for the regulated geographic structure of class I prices. It became accepted practice to set class I prices in other cities by adding a fixed differential to the Eau Claire class I price which generally reflected costs of transportation with some allowance for local supply and demand conditions (10). This approach to milk pricing served to align class I prices in FMMOs east of the Rocky Mountains.

Dairy Policy in the 1970s and 1980s

The theme of the early 1970s was to get government out of agriculture, as advocated by Secretary of Agriculture Earl Butz. However, despite the ambitious effort to separate government from agriculture, the focus of the late 1970s through the early 1980s was to reestablish more aggressive support of dairy farmers. Consequently, policy makers started to see the results of past legislation in the form of increased dairy product surpluses and increased government expenditures as early as 1977.

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[9] The M-W price is determined by a survey of grade B milk processing plants in Minnesota and Wisconsin. It is a market pay price for manufacturing grade milk resulting from competition among the grade B plants. The survey is administered by each states' agricultural statistics service, and the results of the survey are forwarded to the National Agricultural Statistics Service which determines the final M-W price.

Starting in late 1972, several factors converged to create a domestic shortage of dairy products. With milk supplies lagging behind projected levels and commercial disappearance of dairy products remaining unchanged, milk prices increased as expected. However, President Richard Nixon was determined to control both wages and rising prices, and when milk prices increased by 30 percent in the span of a few months in late 1973, President Nixon attempted to carry out his decree by temporarily suspending a select group of import quotas. Furthermore, to take political advantage of the market price increases, support prices for milk were increased concurrently.

Revisions in dairy policy and price support increases came about with the passage of the Agriculture and Consumer Protection Act of 1973. As mandated by previous acts, the new legislation called for milk prices to be established at levels that would "...assure a sufficient quantity of pure and wholesome milk to meet current consumption needs." The 1973 Act also addressed the issue of depressed farm income levels, an added twist not seen in earlier legislation. Specifically, the 1973 Act sought to assure a level of farm income "...adequate to maintain productive capacity sufficient to meet anticipated future needs." Furthermore, the Act noted that a price structure which recognized the sum total of forces affecting the national supply and demand for fluid and manufacturing grade milk was necessary if milk prices were to be set equitably. No other Act in history attempted to account for as many factors in determining the right price for milk. For example, the total supply of milk was shown to depend on the prices received, costs of production, income producing alternatives on and off the farm, and future expectations of milk price. Demand for milk and other dairy products, on the other hand, depended on retail prices, consumer income, changes in demographics, availability of substitutes, and advertising. Despite the encouragement from farmers to boost milk prices, legislators acted conservatively and set parity at 80 percent. It was generally agreed that the increase in parity level was trivial as a result of the high prevailing M-W price at the time the Act was passed.

Eventually, domestic milk prices dropped as a result of the relaxation of the import quotas, which led to a "collision" between the market price for milk and the mandated increase in support prices. Dairy farmers, seeing the sudden drop in the price of milk, felt that the times of favorable milk prices were slipping away, and strongly requested assistance from Congress and the new president.

When President Carter entered the office of the presidency in 1976, he came with the promise for higher milk prices. In his first year, he used his authority to set the support price at a level in excess of 80 percent of parity. Congress used the Food and Agriculture Act of 1977 as the legislative vehicle for maintaining higher prices for dairy farmers. The 1977 Act set the support price at 80 percent of parity and also required that it be adjusted semi-annually to reflect changes in prices paid by farmers for input supplies, known as the Prices Paid Index. These provisions were authorized for two years, but because the price support provisions seemed to function as planned, i.e., the support price seemed to follow the Prices Paid Index, they were extended for another two years in 1979. Policy makers did not recognize that market forces were bringing milk supplies into adjustment with demand and that the support price increases promised during President Carter's campaign did not coincide with the prevailing conditions.

In the four years following the passage of the 1977 Food and Agriculture Act, the support price for grade A milk rose to $13.10 per hundredweight, and annual net governmental expenditures on the dairy sector increased to nearly $2 billion. Faced with staggering expenditures on dairy products and no end in sight, the federal government and Congress were forced to act on one of two alternatives—either reduce the support price to stop encouraging milk production or continue to support dairy farmers but reduce the production surplus by some other means. A fierce political battle ensued to determine which alternative, if either, would be best suited to achieve a reduction in governmental expenditures. Reducing the support price was eventually chosen as the means for reducing the surplus of milk and dairy products. Nonetheless, legislators soon realized that cutting the support price was nearly impossible because

of political inertia, and therefore, they opted for the less difficult and controversial decision of freezing the support price. Consequently, by legislative act, the last scheduled price increase for the 1980 - 1981 time frame as outlined in the 1979 Act was rescinded, and the support price became frozen at $13.10 per hundredweight. Recognizing that something had to be done in the 1981 farm bill, Congress not only eliminated semi-annual adjustments, it also temporarily severed the tie to parity. Under the 1981 Agriculture and Food Act, minimum support prices were legislatively set at incrementally increasing levels for the years 1982 through 1985 in dollars per hundredweight.

By the end of 1981, milk production was still increasing and net removals remained high. Legislators concerned only with the federal budget and the mounting deficit stepped into the picture with the intent of reducing governmental expenditures on dairy products. Not satisfied with the immediate impact on the budget, Congress introduced the 1982 Omnibus Budget Reconciliation Act which authorized a means for dairymen to help fund the dairy price support program. A $0.50 assessment was placed on every hundredweight of milk marketed with the first collection of the assessment schedule for April, 1983. Furthermore, the bill also allowed for an additional but refundable $0.50 deduction per hundredweight implemented in September, 1983. The deduction was refundable to producers who reduced marketings by an amount specified by the Secretary of Agriculture. The assessments and deductions proved to be effective instruments for generating revenue to assist in the funding of the dairy price support program; from October 1, 1983 to September 30, 1984 over $800 million was collected from dairy farmers. However, the assessments were extremely unpopular with farmers and did little to curb total milk production, forcing legislators to seek other means of reducing milk production.

The 1983 Dairy Production Stabilization Act marked the first attempt by the federal government to control the supply of milk. The Act featured the Milk Diversion Program (MDP), devised to encourage dairy producers to reduce the amount of milk marketed. Under the MDP, direct payments of $10.00 per hundredweight were offered to dairy farmers who reduced marketings by a percentage of a historical base. The decrease in the amount of milk marketed was in the range of 5 to 30 percent. The MDP operated from January 1984 to March 1985, and about 38,000 or 20 percent of commercial dairy producers participated (2, 11). Marketings for 1984 and the first quarter of 1985 were reduced by approximately 9.4 billion pounds. However, it was estimated that 2.2 billion pounds of the volume reduced was “air”, that is, some producers had already reduced their level of production relative to the base prior to the contract period (2, 11). Nonparticipants also increased their production during the time that the program was operational so that total reductions were somewhat less than the 7.4 million pounds of milk actually diverted. Participants received a total of $955 million in payments for the reduced production levels (12). At the conclusion of the MDP, it became clear that the MDP did not solve any problems; it had only delayed the time in which the problem manifested itself. Program participants, who were no longer under any obligation to reduce milk production, restored cows to their herds. This resulted in a surge in national milk production to record levels, triggering the CCC purchasing mechanism in an attempt to maintain the mandated level of price support.

Another highlight from the Act included the authorization of a National Dairy Promotion and Research Board. The National Dairy Board (NDB) is responsible for promotion and advertisement of any dairy products, nutritional education, and related research, and it is funded by a nonrefundable assessment of $0.15 per hundredweight on milk marketed (9, 12). Although the National Dairy Board was authorized in December 1983, it was not constituted until the middle of 1984, which meant that there was no immediate impact on altering demand for dairy products through promotion and advertising. Producers initially viewed the NDB favorably, but it was soon criticized by some producers because of the mandatory assessments and perceived ineffectiveness in boosting demand for dairy products.

In continuing with the policy of reducing governmental expenditures on surplus dairy products, the Dairy Production Stabilization Act also included provisions for price support adjustments and assessments. The support price was reduced to $12.60 on December 1, 1983, and was reduced further on April 1, 1985 and July 1, 1985 because net removals were expected to exceed preset levels.[10] A $0.50 per hundredweight nonrefundable deduction, like that conceived by the 1982 Budget Reconciliation Act, was also approved through March, 1985. With the expectation of a new farm bill, most provisions were slated to end at some point during 1985.

The Food Security Act of 1985 (FSA) brought about several changes in dairy policy, and it included provisions for modifying class I differentials, a whole herd buyout program, and a program to assist in exporting dairy products. In what would later be viewed as a landmark maneuver, Congress legislated specific pricing in FMMOs by increasing the class I differentials. The change in the differentials, however, was not nearly as sensitive an issue as the manner in which they were modified, i.e., the differentials were not increased uniformly across all orders. For example, the class I differential increased by 8¢ per hundredweight in the Upper Midwest, but increased by $1.03 per hundredweight in Southeast Florida. Producers in the Upper Midwest perceived the changes as discriminatory and would later advance the concept of eliminating class I differentials altogether.

The FSA authorized the Dairy Termination Program (DTP), marking the second major attempt to initiate some form of supply control in the dairy industry. The idea behind the DTP was to buy out an entire dairy herd and obtain a commitment from the participating farmers not to partake in dairying for the next five years. Cows and heifers that were purchased from farmers exiting the dairy farming business were required to be exported or slaughtered. The buyout program was voluntary; interested parties submitted sealed bids for the minimum price per hundredweight for which they would be willing to comply with the regulations. A total of 12 billion pounds of milk was targeted for removal from the market. The DTP accepted about 14,000 bids of the 39,534 bids submitted (6). The national cutoff point for acceptable bids was $22.50, and over the 18-month span which marked the operation of the DTP (April, 1986 through September, 1987), the total cost in payments to farmers was $1.827 billion (6). Participation in the DTP was not uniform throughout the country. California accounted for the largest portion of the 12.28 billion pounds purchased, but the percentage of farmers participating was not exceptionally high in any particular state (6). Farmers from southeastern states had a disproportionately larger application and acceptance rate than farmers from other regions of the country; the states of Wisconsin, New York, Pennsylvania, and Nevada had the lowest participation rates.

The Dairy Export Incentive Program was also devised to reduce surplus dairy products. The program was designed to assist U.S. exporters of dairy products in entering foreign markets. The CCC was authorized to accept or reject bids for export subsidies from any qualified exporter of dairy products. These payments were given to offset some of the costs involved in selling the higher priced U.S. dairy products in the lower priced world market. Payments were originally made via certificates redeemable in commodities held by the CCC, but this policy was later changed to a direct cash subsidy. Although still in existence, the DEIP represents only a modest effort to increase U.S. exports of dairy products.

The FSA specified changes in the support price as well. For the calendar year of 1986, the support price was dropped to $11.60 per hundredweight.

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[10] The United States Department of Agriculture (USDA) was authorized to decrease the support price on April 1, 1985 to $12.10 if net removals were expected to exceed six billion pounds on a milk equivalent, fat-solids basis (M.E.) from April 1, 1985 to March 30, 1986. Furthermore, the USDA was empowered to decrease the support price by an additional $0.50 per hundredweight on July 1, 1985 if projected net removals exceeded five billion pounds, M.E. from July 1, 1985 to June 30, 1986 (9).

Further reductions dropped the support price to $11.35 per hundredweight for January through September of 1987, after which the support price dropped to $11.10 per hundredweight for the remainder of the year. Moreover, triggered price cuts were approved for the next three years.[11] However, drought conditions in 1989 brought about emergency relief amendments to the 1985 FSA scheduled support price reductions. On April 1, 1989, the support price decreased by $0.50 per hundredweight followed by a $0.50 per hundredweight reduction on July 1, 1989, bringing the price support to $10.60 per hundredweight. On January 1, 1990 the last of the triggered price cuts went into effect, dropping the price support to $10.10 per hundredweight (subsequent changes in the price support level increased the level to $10.35 and later reduced it to $9.90 where it remains today).

Dairy Policy in the 1990s and Early 2000s

The dominant dairy policy theme of the 1970s and 1980s was that of price supports. In particular, the legislation that emerged in the 1980s was intended to address problems that resulted from well-intended but ultimately-disastrous strategies in the 1970s. In contrast, the approach to dairy policy that was developed in the 1990s moved away from the issue of price supports and toward topics that concern FMMOs and international trade.

The Food, Agriculture, Conservation and Trade Act of 1990 (FACTA) emerged as the first piece of legislation to impact the dairy industry in the 1990s. The FACTA did little more than complete the trend that started in the 1980s by establishing a schedule of support price changes related to surpluses and a price floor of $10.10 per hundredweight. The Act also contained a controversial and fiercely contested provision—Section 102, entitled Milk Manufacturing Margin Adjustment. This provision attempts to prevent states which still have milk pricing authority from setting prices for milk used in manufacturing less than that which pertains to federal orders. Growing discontent with the M-W price series among both processors and producers prompted legislators to address the issue of devising a new BFP. In 1992, USDA held a hearing to accept proposals for alternatives to the M-W price as authorized by Section 103 of FACTA. In August, 1994, a recommended decision was issued by USDA for a new BFP.

On April 4, 1996, President Clinton signed into law the delayed and contentious farm bill known as the Federal Agriculture Improvement and Reform Act of 1996 (FAIR Act). The FAIR Act continued the systematic reduction in support by lowering the target 15¢ per cwt. per year beginning at $10.35 in 1996 and ending at $9.90 in 1999. After 1999, the relatively meaningless price support program (at its low level) was to have been eliminated entirely. In actuality, after passage, dairy interests lobbied congress and the price support program was extended until the next farm bill. The Secretary was also required to refund to producers the entire assessment collected if annual marketings in 1997 did not exceed annual marketings in 1996.

Perhaps the greatest challenge for the dairy industry from the FAIR Act was the mandated consolidation and reform of Federal Milk Marketing Orders. The act specified that the number of orders be reduced from 32 to no less than 10 and no more than 14. To accomplish this task, four committees were appointed by the Dairy Division of the Agricultural Marketing Service. One of the committees was to consider a replacement for the basic formula price; one to look at price structure; one to determine uniform provisions for the new orders; and one to review dairy product classification.

The FAIR Act also contained a provision that would enable the Secretary to temporarily authorize a dairy Compact in the six New England states. The Compact was authorized and implemented in the fall of 1996. It was set to expire when Federal Order reform was implemented.

The Federal Order reforms were arguably the most

[10] On January 1 of 1988, 1989, and 1990 the support price was to be reduced by $0.50 per hundredweight if net removals exceeded 5 billion pounds ME, and if net removals were less than 2.5 billion pounds ME, the support price was to increase by $0.50 per hundredweight.

sweeping changes ever attempted to the federal program. After numerous judicial challenges, the reforms were implemented by producer vote in January of 2000 and, after operating on temporary extensions, the Northeast Dairy Compact was allowed to expire in September of 2001. Milestones of the reform package included: a consolidation of existing Federal Orders into 11 new Orders; adoption of multiple component pricing for 7 of the 11 Orders; the use of product price formulas to calculate minimum prices for four classes of milk; minor tinkering of class I differentials.

On May12, 2002, President Bush signed into law the Farm Security and Rural Investment Act of 2002. The dairy subtitle of this bill included: an extension of the Milk Price Support Program but authorizes the secretary of agriculture, at his/her discretion, to change the "tilt" up to twice a year to minimize government expenditures; extension of the Dairy Export Incentive Program; and the National Dairy Market Loss Payments program (now referred to as the Milk Income Loss Contracts or MILC program).

From the point of view of the dairy industry, the MILC program was the most interesting and the most controversial portion of the farm bill. The MILC program was a compromise program between the Northeastern states and the Upper Midwest. It was a direct payment to producers and not an indirect support of a market price. Many provisions of the program look much like the former Compact. The MILC program provides support to dairy producers when the price of class I milk in Boston falls below $16.94. That is the same trigger that was used by the Northeast Dairy Compact when it was in place. The payment is equal to 45 percent of the difference between $16.94 and the lower class I federal order price. Forty-five percent is approximately the class I utilization in the Northeast federal milk marketing order. The program was retroactive to December 1, 2001 and runs through September 30, 2005.

Producers in all regions of the country have access to identical payments under this program. However, there is a production cap for payments equal to 2.4 million pounds of milk per farm during a federal fiscal year (October 1 through September 30). This volume is not determined from any prior base period. It is calculated from current production.

## Alterations to Current Programs

Farm level prices for raw milk and dairy product prices are impacted by several different but related federal dairy policies. The federal dairy price support program, federal milk marketing orders, the Dairy Export Incentive Program (DEIP) and the Milk Income Loss Contract Program (MILC) all impact these prices. A goal of each of these programs is to provide some level of price stabilization, a safety net and/or revenue enhance to dairy producers. But, these programs have not always operated in sink with one another to achieve these objectives. Some programs have been amended at times without full consideration of the impact on the other programs.

The federal dairy price support program and federal milk marketing orders have been around since the 1930's. DEIP began in the 1980s and the MILC was implemented in 2002. Programs must be adjusted from time to time to reflect a modern dairy industry. But political pressures have at times hindered or slowed proper adjustments. At times the real objectives of a given program have been ignored.

Since the late 1980's, the focus of dairy policy has been more market oriented. One that allows market forces to operate. One that encourages the best allocation of resources, whether at the farm level or the dairy processing level. But, amendments to existing federal dairy polices have at times interfered with, or simply have not kept pace with, this more market oriented philosophy.

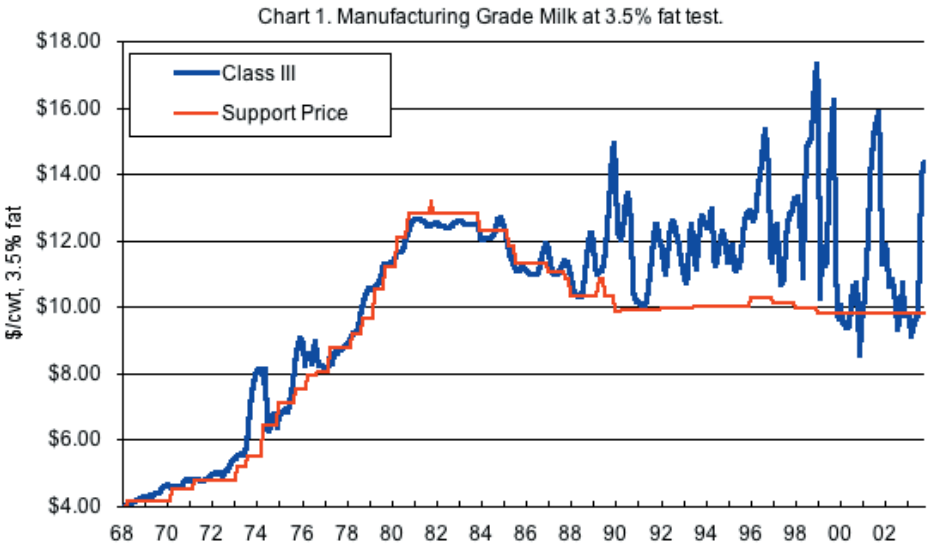
Assuming that a market oriented philosophy remains an objective of federal dairy policy, this section offers possible alterations to four existing federal dairy programs, the federal dairy prices support program, federal milk marketing orders, DEIP and MILC.

Federal Dairy Price Support Program:

Price support history clearly demonstrates that a support level that is too high will result in misallocation of resources into surplus milk production. Once the fixed resources are committed to expanding milk production, it takes time and major changes in federal policy to correct the surplus milk situation. So it is important that the support level is adjusted as market conditions change to avoid burdensome surpluses, or implement as part of the price support program an effective supply management program.

The existing $9.90 support level is below the full cost of production for most dairy farmers and below the cash cost of many. As a result, the existing support program offers a minimal safety net to dairy farmers and continues the philosophy of market orientation. Since the early 1990s and until recently, wholesale prices of butter, nonfat dry milk and cheddar cheese have been above the CCC support purchase prices most of the time and CCC purchases of surplus dairy products have been well below a billion pounds of milk fat equivalent. But, beginning in 2000, CCC purchases of surpluses of nonfat dry milk and resulting CCC stocks have become a burden. There have been only limited quantities of both butter and cheddar cheese purchased by the CCC under support. The CCC purchase price of nonfat dry milk versus butter and the MILC program have both contributed to burdensome levels of nonfat dry milk rather than the $9.90 support level by itself. More explanation of this follows later. A result of this low safety net has been increased dairy product and farm level milk price volatility (Chart 1). This price volatility encouraged the development of price risk management tools for dairy farmers as well as milk processors and wholesalers. Today, the Chicago Mercantile Exchange offers futures and options contracts for milk (Class III and Class IV contacts), butter, cheese and nonfat dry milk. Most dairy cooperatives and many other milk buyers use these tools to offer cash forward milk price contracts to dairy farmers. So, risk management tools are available to dairy farmers to manage this increased milk price risk.

If price enhancement is deemed to be the objective of the price support program, then an effective domestic milk supply control program is necessary as well as import protection in order to avoid misallocation of resources to milk production and to avoid burdensome milk surpluses. This would be a major departure from current dairy policy. But, if market orientation remains as the objective, then




the following alterations should be considered to make the existing support program more effective in a modern dairy industry and one that is in sync with other federal dairy programs.

*Level of support*: The experience with the support level during the late 1970s and early 1980s clearly demonstrated the problems of misallocation of resources to milk production resulting in burdensome milk surpluses. From 1981 to 1990, a trigger mechanisms based upon the level, or anticipated level, of CCC purchases was used to determine changes in the support level. But with both the demand and supply of milk being highly inelastic, relatively small changes in either milk production and/or commercial disappearance result in rather large changes in farm level milk prices. To avoid these large changes in milk prices would require raising the support level above the current $9.90 per hundredweight. But, this reduces the market orientation approach and creates a potential situation where CCC purchases of surplus dairy products could occur most years. Further, raising the support level to reduce price volatility will reduce the viability and/or need for dairy price risk management tools.

Production and information technologies have enabled the production of milk on large dairies at relatively low costs. Costs well below the cost of production of the traditional 100 cows or less dairy operation. Cash cost of these dairies is near or below the existing $9.90 per hundredweight support price. Unlike during the 1950 to 1980 period, and prior to these technologies and larger dairies, the spread in the cost of production between dairies might not have been as great. The support level provided about the same safety net for all dairy farmers. But today, the spread in the cost of production between modern and larger dairy operations and the traditional smaller operation is large. A $9.90 support level probably provides a very adequate support level for the modern and larger operation, but not for the smaller traditional operation. But, raising the support level will reduce the price risk and encourage even more expansions to larger dairy operations and more milk production. Unless something significantly changes the cost of milk production, such as much higher feed prices or environmental regulations (waste management requirements), the current $9.90 support level is most likely adequate to provide some safety net to dairy producers and not to encourage misallocation of resources to milk production.

•*Achieving the support level:* While the objective of the federal dairy price support program is often stated to establish a floor price for manufacturing grade milk, and absolute price floor to dairy farmers, it was never the case. Rather, the objective was to have established CCC purchase prices of butter, nonfat dry milk and cheese at a level that would on the average allow butter, powder and cheese plants to pay at least the support price. So at times manufacturing milk prices would fall below the support price during periods of rather large milk surpluses. But more recently, manufacturing use milk, specifically milk used for cheese (the Class III price) has fallen far below the support level. During 2000, the Class III price was below the $9.80 support price (3.5% fat test) for 7 of the 12 months and by as much as $1.23 per hundredweight in November (Table 1). In 2002 the Class III price was below support 4 of the 12 months and as much as $0.47 per hundredweight in July. In 2003, January through August, the Class III was below support for 6 of the 8 months and as much as $0.69 in March. But, during this period of time the Class IV price was above support, except for 4 months during January through August 2003, and then

the most it was below support was just $0.07 per hundredweight in April 2003.

The Class III fell well below support for two major reasons. First, there is no support price for dry whey. The Class III formula assumes a make allowance for dry whey of 15.9 cents per pound. Whenever the dry whey price is less than this, the Class III price is reduced. The dry whey market was depressed and prices were below 15.9 cents per pound most of 2002 and into 2003.

Second, the price of 40-pound and 500-pound barrel cheese fell well below CCC purchase prices under the support program. During 2000, the CME 40-pound block cheddar cheese price fell below

Table 1: Class III and Class IV Prices Versus Support Price, 2000-2003

| Month/Year | Support Price, $/Cwt. | Class III Price, $/Cwt. | Difference: Class III vs. Support | Class IV Price, $/Cwt. | Difference: Class IV vs. Support |
|---|---|---|---|---|---|
| Jan-00 | 9.80 | 10.05 | 0.25 | 10.73 | 0.93 |
| Feb-00 | 9.80 | 9.54 | -0.26 | 10.80 | 1.00 |
| Mar-00 | 9.80 | 9.54 | -0.26 | 11.00 | 1.20 |
| Apr-00 | 9.80 | 9.41 | -0.39 | 11.38 | 1.58 |
| May-00 | 9.80 | 9.37 | -0.43 | 11.91 | 2.11 |
| Jun-00 | 9.80 | 9.46 | -0.34 | 12.38 | 2.58 |
| Jul-00 | 9.80 | 10.66 | 0.86 | 11.87 | 2.07 |
| Aug-00 | 9.80 | 10.13 | 0.33 | 11.87 | 2.07 |
| Sept-00 | 9.80 | 10.76 | 0.96 | 11.94 | 2.14 |
| Oct-00 | 9.80 | 10.02 | 0.22 | 11.81 | 2.01 |
| Nov-00 | 9.80 | 8.57 | -1.23 | 13.00 | 3.20 |
| Dec-00 | 9.80 | 9.37 | -0.43 | 13.27 | 3.47 |
| Jan-01 | 9.80 | 9.99 | 0.19 | 12.13 | 2.33 |
| Feb-01 | 9.80 | 10.27 | 0.47 | 12.70 | 2.90 |
| Mar-01 | 9.80 | 11.42 | 1.62 | 13.46 | 3.66 |
| Apr-01 | 9.80 | 12.06 | 2.26 | 14.41 | 4.61 |
| May-01 | 9.80 | 13.83 | 4.03 | 15.04 | 5.24 |
| Jun-01 | 9.80 | 15.02 | 5.22 | 15.33 | 5.53 |
| Jul-01 | 9.80 | 15.46 | 5.66 | 14.81 | 5.01 |
| Aug-01 | 9.80 | 15.55 | 5.75 | 15.06 | 5.26 |
| Sep-01 | 9.80 | 15.9 | 6.10 | 15.59 | 5.79 |
| Oct-01 | 9.80 | 14.6 | 4.80 | 12.77 | 2.97 |
| Nov-01 | 9.80 | 11.31 | 1.51 | 11.97 | 2.17 |
| Dec-01 | 9.80 | 11.8 | 2.00 | 11.79 | 1.99 |
| Jan-02 | 9.80 | 11.87 | 2.07 | 11.93 | 2.13 |
| Feb-02 | 9.80 | 11.63 | 1.83 | 11.54 | 1.74 |
| Mar-02 | 9.80 | 10.65 | 0.85 | 11.42 | 1.62 |
| Apr-02 | 9.80 | 10.85 | 1.05 | 11.09 | 1.29 |
| May-02 | 9.80 | 10.82 | 1.02 | 10.57 | 0.77 |
| Jun-02 | 9.80 | 10.09 | 0.29 | 10.52 | 0.72 |
| Jul-02 | 9.80 | 9.33 | -0.47 | 10.45 | 0.65 |
| Aug-02 | 9.80 | 9.55 | -0.25 | 10.41 | 0.61 |
| Sept-02 | 9.80 | 9.92 | 0.12 | 10.22 | 0.42 |
| Oct-02 | 9.80 | 10.72 | 0.92 | 10.50 | 0.70 |
| Nov-02 | 9.80 | 9.84 | 0.04 | 10.58 | 0.78 |
| Dec-02 | 9.80 | 9.74 | -0.06 | 10.49 | 0.69 |
| Jan-03 | 9.80 | 9.78 | -0.02 | 10.07 | 0.27 |
| Feb-03 | 9.80 | 9.66 | -0.14 | 9.81 | 0.01 |
| Mar-03 | 9.80 | 9.11 | -0.69 | 9.79 | -0.01 |
| Apr-03 | 9.80 | 9.41 | -0.39 | 9.73 | -0.07 |
| May-03 | 9.80 | 9.71 | -0.09 | 9.74 | -0.06 |
| Jun-03 | 9.80 | 9.75 | -0.05 | 9.76 | -0.04 |
| Jul-03 | 9.80 | 11.78 | 1.98 | 9.95 | 0.15 |
| Aug-03 | 9.80 | 13.80 | 4.00 | 10.14 | 0.34 |

the CCC purchase price 6 of the 12 months and as much as 6.32 cents per pound in November. Barrels fell below the CCC purchase level for 5 months and as much as 8.68 cents per pound in October. In 2001, the CME 40-pound block price was below the CCC purchase price only during January and blocks were above the CCC purchase price all year. For four months during 2002 the CME 40-pound block price was below support and as much as 4.25 cents per pound in July. Barrels were below the CCC purchase price for 3 months with November being the most at 3.09 cents per pound. For 2003, the CME 40-pound block price was below support February, March and April with March being 4.97 cents per pound lower. Barrels were below the CCC purchase price January through April with February being the most at 5.84 cents per pound.

Before 1995, the effectiveness of the support price could be measured by comparing the MW and the BFP to the support price. But now the value of milk for butter and powder, the Class IV price, is separate from the value of milk to make cheese, the Class III price. And since January 2000 the Class I minimum price in federal orders is based on the "higher of" the advanced Class IV price or the advanced Class III price. This puts a disconnect between the support program and supporting all milk prices. While the support program may be successful in keeping the Class IV price above support and thereby benefiting dairy farmers in regions of relatively high Class I and/or IV utilizations, dairy farmers in regions where the vast majority of milk is used to make cheese do not receive the same level of support for their prices. So as long as the "higher of" is used as the mover of Class I prices, it is important that the support program maintains the floor price for both Class IV and Class III in a similar relation to the support price.

Three alternatives may be considered to maintain the minimum Class III and Class IV prices closer to the support level during periods of milk surplus. The first is to increase the CCC cheese purchase price to reflect added costs of selling to the government versus the commercial market. These added costs include packaging for longer term storage, meeting stricter grading standards particularly on moisture, time lag before the cheese is made and approved for sale by federal graders, the cost of selling any rejected offers to the government onto the commercial market, the time lag from actual sale to the government and payment received and other related factors. While this amendment would surely help in keeping a minimum cheese price closer to the support level, care must be taken not to make sales to the government under the support program the sale of first choice by cheese plants. Further, increasing the CCC purchase price would increase the cost of the support program.

A second alternative proposed is for the CCC to be an active participant on the CME offering to purchase cheese at the established support prices. Since prices established on the CME are heavily used in establishing commercial cheese sales, such activity would assure a minimum cheese price near the support level. A downside that would need consideration is the cheese standards under the CME differ from those established under the support program that considers longer-term storage of the cheese.

A third alternative would floor the Class III and Class IV prices under federal orders at the support level. This could be achieved one of two ways: (1) Use the support price as the Class III or Class IV price if the price generated by the federal order formula fell below the support price. or (2) Use the higher of NASS or CCC purchase prices in the Class III or Class IV pricing formulas. This approach has been implemented in California.

Flooring Class III or Class IV prices at support does however, create pressure on butter, powder and cheese plants. This approach does not prevent market prices for butter, nonfat dry milk or cheese from falling below the support level, but yet these processors would be required to pay the support price for raw milk. Plant margins could be adversely affected. But, on a positive side, such a situation may encourage plants to more seriously consider sales to the government during surplus periods. However, if the make allowance used to establish the CCC purchase prices are not adequate to reflect the added cost to sell to the government, plant margins would still be adversely affected.

*The proper tilt:* To achieve the established level of support for manufacturing use milk, the Secretary of Agriculture has some discretion in establishing the related CCC purchase prices for butter and nonfat dry milk since these are considered joint products manufactured from 100 pounds of milk. This is referred to as the 'butter/powder tilt'. The criteria for determining the relationship between butter and nonfat dry milk values was to bring the relative balance of supply and demand into alignment and to minimize the cost of the support program. For example, in the 1960s the relative value of nonfat dry milk under the support program was increased relative to butter because of a fairly tight supply/demand for nonfat dry milk while the commercial butter market was declining. The 1990 farm bill permitted the Secretary to adjust the butter and nonfat price relationship twice within a calendar year. The 2002 farm bill continues this authority. The 1990 farm bill set the support price at $10.10 per hundredweight, but on three occasions (04/90; 05/92, and 07/93) the Secretary reduced the CCC purchase price on butter and increase it on nonfat dry milk. While the MW price was above support the CCC was still purchasing relatively large quantities of butter and no purchases of either nonfat dry milk or cheese under the support program. The purchase price of butter was reduced and the price of nonfat dry milk raised to encourage less production of butter and stimulate new uses of butterfat and it worked. Butter production slowed and butter prices rose.

But changing the Class I mover in 2000 from the weighted average manufacturing use milk value to the "higher of" of the advanced Class IV or Class III price has put political pressure on the Secretary of Agriculture in carrying out the authority for a twice-a-year butter/powder tilt to bring a relative balance between butter and nonfat dry milk and to minimize the cost of the price support program. While CCC purchases of and burdensome government stocks of surplus nonfat dry milk were growing beginning in 2000, not until June, 13, 2001 was the purchase price of butter increased $0.1999 per pound and the purchase price of nonfat dry milk decreased $0.0932 per pound. In this decision USDA stated, "The decision to change the butter and nonfat dry milk prices was based on an accumulation of nonfat dry milk stocks in quantities well above USDA's ability to use the product, the level of expenditures to USDA, and significant market distortions. Since nonfat dry milk was in surplus and at support, the wholesale price of nonfat dry milk declined. And since the advanced Class IV price was well above the advanced Class III price, it was the mover of Class I prices. With the drop in nonfat dry milk prices the Class IV price declined lowering the Class I prices. This is why there had been strong political pressure on the Secretary from relatively high Class I use markets to not do the tilt. But, then on November 15, 2002, based on the same reasoning as the previous tilt, the Secretary did another tilt reducing the purchase price on nonfat dry milk $0.10 per pound and raising the purchase price on butter $0.1952 per pound.

In order for the support program to achieve its objective and not to distort markets and increase government costs for the program, the decision of the Secretary of Agriculture in establishing appropriate CCC product purchase prices should be based on market conditions and not subject to political pressure. The intent of the support program should not be one of partially isolating Class I prices from a surplus milk situation and place most of the burden of needed reduced milk marketings on one segment of dairy farmers in the dairy industry.

The Milk Income Loss Contract Program

*The workings of the program:* The Farm Security and Rural Investment Act of 2002 established for the first time a target price deficiency payment program for dairy farmers, Milk Income Loss Contract (MILC) program. It makes direct payments to all U.S. dairy farmers based on the Boston Class I milk price relative to $16.94 per hundredweight. Payments are made monthly from December 2001 through September 2005, and are capped at 2.4 million pounds of annual marketings (the total production of a herd of about 130 milk cows). The deficiency payment, which applies only in those months when the market price is less than the target price, is 45 percent of the difference between $16.94 and the Boston Class I price.

All dairy farmers are eligible for the MILC payments up to the 2.4 million pound annual cap. About 80 percent of dairy farmers are under the cap. Nearly 60 percent of the nation's milk marketings are covered under the cap. For these dairy farmers the MILC payments provided substantial relief from the depressed milk prices during 2002 and the first half of 2003. MILC payments averaged $1.206 per hundredweight for 2002. Substantial payments have been made in 2003--- January $1.4085, February $1.5570, March $1.7460, April $1.7460, May $1.7910, June $1.7775, July $1.7640 and August $1.2240. Improvement in milk prices resulted in no payments in September.

While MILC payments provided substantial relief from low milk prices, relatively large dairy operations received little benefit as payments were spread over larger volumes of milk. In fact, operations having about 700 or more milk cows were actually negatively impacted. The MILC payments on about 60 percent of milk marketings slowed the production response by dairy farmers to low milk prices and thereby meant milk prices were depressed more with the program and took longer to recover. Analysis by the Food and Agricultural Policy Research Institute shows that MILC payments may have resulted in milk prices being about $0.25 per hundredweight lower than if the program was not in place. Further, the MILC program will be much more costly than initially projected. It was estimated that it would cost about $1.3 billion over the life of the program. More recent estimates show the cost could exceed $4 billion.

*Alterations to consider:* The MILC program is scheduled to expire September 30, 2005. Nevertheless, there is interest in extending the program. If the program is extended, what alterations may be considered to make the program more effective and more equitable amongst different sized dairy operations? But, first it needs to be noted that a target price deficiency program coupled with a dairy price CCC purchase support program is not sound dairy policy. Target price deficiency payments have been a major part of feed grain and oilseed policy, but not in addition to a CCC surplus purchase program for grain and oilseeds. The idea behind target price deficiency payments is to allow the markets to work to clear the commodity at market prices and then make payments to farmers based on the difference between the target price and the market price. But with the existing dairy program, MILC payments maintain and encourage surplus milk production (as due deficiency payments for grains and oilseeds encourage more production of these commodities) that must be purchased by the CCC under the price support program. Markets are not allowed to work to clear the surplus milk production. This adds to the cost of the dairy program since there is the cost of the deficiency payments plus the cost to purchase surplus dairy products.

Two alterations may be considered for the continuation of a target price deficiency program for dairy, one rather minor and the other major. First, the benefit to smaller producers at the expense of larger producers should be reduced. This could be accomplished by lowering the target price and expanding or eliminating the 2.4 million pound cap. The $16.94 target price under existing MILC payments is high. Any time the Class I mover is less than $13.69 per hundredweight MILC payments are triggered. At this target level we can expect MILC payments for the majority of months. Prior to January 2000, the Class I mover was the Class III price lagged two months. Over the 10-year period 1990 through 1999, the Class III price averaged $12.28, or $1.41 less than the equivalent Class III target price of $13.69. The Class III price was below the target in 104 of the 120 months. Since January 2000, the Class mover is the higher of the advanced Class IV or Class III price. While using the "higher of" reduces somewhat the extent MILC payments triggered and the size of payments per hundredweight, it is not likely that either the Class IV price or Class III price will be above $13.69 any year for many months. The Class III price is highly seasonal. A $1.00 to $2.00 change from its low point in the spring to its high point late summer or early fall is normal. This presents a situation where the average milk price for the year may historically be very good, but yet has several months where MILC payments are made. With this in mind, consideration should be given for the trigger for MILC payments at $12.00 per hundredweight or even lower. A lower target

price also keeps the program more in tune with a market-oriented approach. Then by expanding the 2.4 million pound cap, or eliminating it completely, both the program itself and the associated cost may be politically more acceptable as a whole.

But, as indicated, the concept of a target price deficiency payment coupled with a CCC purchase program of surplus products is not consistent dairy policy, but rather conflicted. Therefore, serious consideration should be given to dropping the long-standing CCC purchases from the support program. The income support price would then become the target price. Markets would be allowed to work and no surplus dairy products would be purchased under the support program. Deficiency payments would be triggered whenever the determined U.S. average manufacturing use milk price fell below the target price. This target price could possibly be higher than the existing $9.90 support price to provide a higher safety net to dairy farmers. But, not so high as to encourage misallocation of resources to milk production and to control costs. A target price in the $10.00 to $11.00 range on manufacturing use milk may be appropriate.

Some potential advantages of this type of target price deficiency program for dairy are:

1. Milk would be allocated by milk processors based on market clearing prices and not government support prices. Thus, milk allocation would be based on the highest and best value use in the market place.
2. Eliminates administration difficulties and controversy over USDA establishing appropriate CCC purchase prices for butter, nonfat dry milk and cheese. The butter/powder tilt controversy, for example.
3. With nonfat dry milk prices allowed to seek a market clearing level, there may be more incentive on the part of processors to explore the domestic production of milk proteins.
4. Government stocks of surplus dairy products would be eliminated.
5. The dairy program would be more similar to the grains and oilseeds program.

Some possible disadvantages include:

1. Increase market risk for dairy product processors.
2. Increase risk for dairy cooperatives that perform market balancing functions via making and storing nonfat dry milk and other dairy products.
3. Federal government budget exposure, if the target price is established too high.

Dairy Export Incentive Program (DEIP)

The DEIP was announced by USDA on May 15, 1985, and was reauthorized by the Food, Agriculture, Conservation, and Trade Act of 1990; the Uruguay Round Agreements Act of 1995; and the Federal Agriculture Improvement and Reform Act of 1996. DEIP assists dairy exporters to meet prevailing world prices for targeted dairy products and destinations. USDA pays cash to exporters as bonuses, allowing them to sell certain products at prices lower than the exporter's costs of acquiring them. The major objective is to develop export markets for dairy products where U.S. products are not competitive because of the presence of subsidized products from other countries. Eligible products include milk powder, butterfat, and cheddar, mozzarella, Gouda, feta, cream, and processed American cheeses. USDA reviews all bids for the competitiveness of the bonus value requested and compares the bids with offers from other U.S. exporters and with sales of competitor countries. USDA has the right to reject any or all bids.

*Issues with DEIP:* DEIP has removed products from domestic market and has played an important role removing government surplus stocks acquired under the dairy price support program. Whether it has actually developed new export markets is less certain. It is difficult to develop foreign markets unless a commitment to serving the market is demonstrated. This is more difficult if a given product is only made available when it is in surplus.

As a member of the World Trade Organization (WTO), the U.S. is committed to reducing subsidized exports in both quantity and budgetary expenditure

terms. The 1996 Farm Act directed the Secretary of Agriculture to use DEIP to the maximum extent allowable under WTO commitments. However, three criticisms have been levied against USDA in this regard. First, USDA has been slow in accepting and announcing DEIP bids. Second, USDA has not made all of the eligible products available for DEIP, but rather has concentrated on products in surplus. Third, because of the first two concerns, DEIP has not been used to its maximum.

The criticism that USDA does not fully use DEIP by making all eligible products available may be illustrated by USDA's August 15, 2003 announcement of the initial allocation under DEIP for the July-June 2003/04 year. "The total WTO limits for this year's DEIP are 68,210 metric tons of nonfat dry milk, 21,097 metric tons of butterfat and 3,030 metric tons of various cheeses. Last year, in order to better manage the program, USDA announced these quantity limits in tranches (stages) and will do so again this year. Today's initial DEIP allocation will make available 22,733 metric tons of nonfat dry milk, 7,032 tons of butterfat and 1,010 tons of various cheeses. Due to current strong market prices for both butter and cheese, invitations for offers will be issued only for the tranche of nonfat dry milk."

*Alterations to consider:* The effectiveness of DEIP may be enhanced under the following changes:

1. Exporters should be encouraged to submit bids for products and countries that offer the greatest potential for longer-term market development. USDA should use DEIP in conjunction with the Foreign Agricultural Service to coordinate export assistance programs to fully develop markets.
2. USDA should consider DEIP bids for any of the eligible products and not base acceptance primarily on removing from the domestic market only products in current surplus. Bids should be accepted for products that may have the greatest market development potential and do not violate WTO subsidization volume limits.
3. USDA needs to act under a shorter time frame in reviewing and accepting DEIP bids so as to maximize the volume allowable under WTO rules.

Federal Milk Marketing Orders:

Federal milk marketing orders (FMMOs) were created under the Agricultural Marketing Agreement Act of 1937. The Act states that the purpose of orders are to: 1) establish and maintain orderly marketing; 2) establish fair prices to consumers and equitable returns to producers and fluid milk plants (called handlers); and 3) assure an ample supply of wholesome milk to consumers.

To achieve these purposes, FMMOs employ classified pricing and pooling. Classified pricing defines the classes of milk use and sets minimum prices that handlers must pay. Currently there are four classes of milk: Class I, fluid milk; Class II, soft manufactured dairy products; Class III, cheese; and Class IV, butter and nonfat dry milk. Pooling means combining all milk receipts as measured by class prices, and paying producers a common price based on the weighted average value of the milk.

FMMOs and the federal dairy price support program are closely interrelated. The reason is that FMMO class prices are based on manufacturing milk values. The federal price support program directly supports manufacturing milk values and thereby indirectly supports Grade A milk priced under FMMOs. While the two federal programs are interrelated the purposes differ. The federal support price is to provide support or a safety net to farm milk prices. FMMOs are to provide orderly marketing and some price stability through classified pricing and pooling. While classified pricing does provide some price enhancement to producers, FMMOs are not a price support program. But, some industry leaders and political representatives appear to have forgotten this difference between the two interrelated programs. A relatively high minimum floor for Class I prices or the existing "higher of" an advanced Class IV or Class III price as the mover of Class I prices are examples where Class I prices are partially or totally de-coupled from manufacturing milk prices that are directly supported by the support

program. The distinction between the purpose of the federal support price and FMMOs appeared to be lost beginning in the early 1980s when the support price began to be adjusted downward and farm level milk prices no longer trended upward and became much more volatile. As the support level fell attention was directed at FMMOs and how these orders could maintain higher prices to producers.

In the early 1960s, it was recognized that manufactured dairy products—butter, nonfat dry milk and cheese—could be made and marketed nationally. Modern processing, packaging and transportation technologies allowed raw milk as well as fluid milk products to be marketed to greater geographic areas. This brought about major changes in FMMOs. A common base price for manufacturing use milk and a common mover for Class II and Class I were established. Recognizing that the Upper Midwest was the dominate producer of manufacturing dairy products and a major reserves area of Grade A milk for fluid needs, the price paid by Minnesota and Wisconsin plants for Grade B milk (The Minnesota-Wisconsin Price Series or M-W series) was established as the base price and class price mover. Class I differentials to be added to the M-W to set the minimum Class I price were established for each order. These Class I differentials varied by order to reflect the local available supply of Grade A milk for fluid needs. Class I differentials were the lowest in areas of relatively large reserve supplies of Grade A milk, like the Upper Midwest, and higher in areas of tighter Grade A milk supplies, like the Southeast. These higher differentials partially recognized the transport cost of moving Grade A milk from Grader A reserve areas to other areas when needed.

This FMMO pricing system functioned very well until the mid to late 1980s. There were some amendments from time to time to refine orders. The number of orders stood at 80 in 1960 and priced 64% of Grade A milk and 43% of all milk. But, modern processing, packaging and transportation technologies made it possible to move fluid milk products much greater distances. In recognition of this, orders were merged and stood at 31 in 1999 and these orders priced 67% of Grade A milk and 65% of all milk. In recognition of the declining Grade B milk supply in Minnesota and Wisconsin the M-W was modified in 1997 and was called the Basic Formula Price (BFP), but it still was the common base price and Class I mover in all orders.

In the mid-1980s, regional shifts in milk production from the traditional dairy states in the Upper Midwest and Northeast to the West and Southwest began to accelerate. Producers from the Upper Midwest argued that the current Class I price differentials were no longer valid. The Upper Midwest was no longer the only major reserve supply of Grade A milk and thus, Class I differentials ought to be changed to reflect this. In response, in 1990 the Secretary of Agriculture called for federal order hearings to consider Class I pricing. Except for the Upper Midwest, testimony in support of changing Class I differentials was absent. Other than a few minor changes, Class I differentials stayed the same.

But, the Federal Agriculture Improvement and Reform Act of 1996 required USDA to consolidate to no more than 14 and no less than 10 orders within three years, authorized USDA to consider using multiple basing points and fluid milk utilization rates in setting Class I prices in consolidated orders, and authorized USDA to consider using multiple component pricing in designing a new Basic Formula Price. While these federal order reforms were to be implemented on or before April 4, 1999, full reform was delayed by Congressional action and not implemented until January 2000.

The January 2000 federal order reform consolidated the existing 31 orders to 11 orders. The BFP was replaced with a multiple component pricing (MCP) formula. Further, the BFP served two functions—as the minimum price for Class III milk and as the mover of Class I and Class II prices. The MCP provides the minimum price for Class III but a separate mover is used for Class I and Class II prices. Four classes of milk were established—Class IV, butter and nonfat dry milk; Class III, hard cheese; Class II, soft manufactured products; and Class I, fluid milk products. The new mover of Class I is the “higher of” the advanced Class IV or advanced Class III price. Class I differentials between orders were flatten some by raising differentials in the Upper Midwest and

lowering differentials in other orders. Seven of the 11 consolidated orders pay producers for the butterfat, protein and other solids-not-fat pounds sold while four orders retain fat-skim milk pricing (markets that are primarily Class I use markets).

While these federal order reforms were implemented on January 1, 2000, the Consolidated Appropriations Act of 2000 further mandated that the Class III and Class IV pricing formulas be reconsidered. A hearing was held in May 2000 to hear testimony on several changes proposed by industry. USDA issued an interim final decision on related amendments on December 1, 2000. This decision established, among other changes, a Class III butterfat price separate from the Class IV butterfat price. Before the new butterfat pricing rules became effective, several industry groups successfully sought an injunction in federal courts. After this injunction and receiving industry comments, USDA issue yet another recommendation on October 19, 2001. This decision conformed to the injunction by formally alerting the 2000 decision to retain common Class III and Class IV butterfat values. But the rules of this decision were not implemented until April 2003.

USDA hearings have been held since 2000 to consider changes in individual FMMOs. Most notably have been hearings to alter rather liberal pooling provisions. Final decisions have been rendered that tighten pooling requirements of handlers and prohibit the ability of milk pooled under a state order to also be pooled under a federal order. Recently, there have been requests to USDA for hearings to change the classification of some dairy products. We can expect to see from time to time additional requests for hearings to consider amendments of individual orders. But, four major issues exist for each of the 11 FMMOs, the length of time it takes to amend orders, the "higher of" Class I and Class II mover, the number of classes for manufacturing use milk and pooling provisions.

*Alterations for consideration:* Each of the major FMMO issues—time for amendments, the higher of mover, the number of classes and polling provisions should be addressed as means to improve the effectiveness of FMMOs in filling their intended purpose.

1. *Time for amendments:* It takes two or more years from the time USDA receives a request for a hearing or direction from congress to implement the rules of a final decision. Within this long time frame the industry has struggled under faulty rules, and/or by the time final rules are implemented industry changes may have occurred rendering the final rules obsolete. Part of the time problem is not following the established procedures for amending FMMOs.

   There are appropriate procedures for amending FMMOs. First, a request is made by producers, handlers or dairy cooperatives to USDA for a hearing to consider a change (amendment). USDA holds a hearing for industry testimony for and against the proposed change. USDA considers the evidence submitted at the hearing and the objectives of the 1937 Act and issues a recommended decision. Industry has the opportunity to respond to the recommended decision. USDA considers these comments and issues a final decision. A producer referendum is held to approve or reject the final decision. This was a process that worked very well up until the mid-1980s when Congress got involved in changing FMMOs.

   The Food Security Act of 1985 increased Class I differentials in most FMMOs, effective May 1, 1986. These differentials could not be altered for two years. The decision to raise the differentials was not based on a request from the industry for the need to raise differentials. There was no time for an industry reaction or input. But rather the decision was based on a political trade off to get acceptance of a Dairy Termination Program (Whole Herd Buyout). While this was a quick change in FMMOs, the action created regional tensions simply because Class I differentials were increased more in orders distant from the Upper Midwest, and at a time when the dairy industry was

still struggling with a severe milk surplus situation. The Upper Midwest charged that the relatively high Class I differentials contributed to increased milk production and the milk surplus. From this point on Congress has become much more involved in the operation of FMMOs.

The change in the federal price support program has been a major reason for more congressional involvement in FMMOs. Congressional action in 1981 moved the support level from one based on a parity formula to one set by Congress based on the level of milk surpluses and associated government cost. As this action resulted in the support level being reduced, farm level milk prices no longer were trending upward, but rather the trend line became rather flat along with highly volatile prices. This was the beginning of losing sight of the intended purpose of FMMOs in establishing minimum prices that assure fair prices to producers and an adequate supply of wholesome milk to consumers. Both industry and congressional action has shifted to how FMMOs maybe used to support farm milk prices by enhancing and/or protecting the Class I price. Such action has created friction between regions where milk is primarily used for manufacturing milk products and those regions that have relatively high Class I use. Even when USDA has recommended changes based on either hearings or direction from Congress, for example, the directive to USDA in the 1996 Farm Bill, that were consistent with the intended purpose of FMMOs, Congress overroad or modified USDA's decision. Further, the dairy industry has pursued court injunctions to stop the implementation of final USDA rule changes.

To rectify this time issue, the dairy industry needs to accept the fact that FMMOs are not designed to nor work very well as a price support program. With the average Class I utilization of all FMMOs now about 40% and trending lower, attempting to enhance producer prices via removing Class I prices from market forces and/or increasing Class I prices becomes increasingly difficult. Attempting to do so comes at the expense of regional producer equity and disorderly marketing. USDA should be allowed to recommend FMMO decisions based on sound economics, rational industry input and the intended purposes of FMMOs. Industry reaction to USDA's decisions and producer approval also needs to be based on the same logic.

2. *"Higher of" mover:* The 2000 federal order reform that replaced the BFP as the base milk price and the mover of Class I milk has partially de-coupled Class I milk prices from market forces. The BFP was the weighted average milk value for milk used in butter, milk powder and cheese with cheese carrying the largest weight. Class III (cheese) accounts for about 45% of the milk utilization of all orders and Class IV (butter and nonfat dry milk) less than 8%. With the BFP, when milk production increased (decreased) putting more milk into manufactured dairy products the BFP would decline (increase) lowering (increasing) not only the Class III price, but also the Class I price. Dairy producers in all regions would receive similar price signals to adjust milk production accordingly. But, now with using the "higher of" the advanced Class IV or Class III price as the mover of Class I, a similar price signal is no longer received by producers in relatively high Class I utilization markets as it is by producers in major Class III utilization markets.

   The "higher of" mover is an issue primarily during a period of surplus milk and depressed manufacturing use milk prices. Under depressed milk prices political pressure has been placed upon the Secretary of Agriculture in carrying out the intended purpose of the federal dairy price support program, and at the same time, minimize associated government costs. For example, during 2000 surplus milk resulted in depressed cheese prices resulting in low Class III prices. But because butter

supplies were still relatively tight, butter prices remained relatively high. At the same time a relatively high CCC purchase price for nonfat dry milk kept the Class IV price relatively high. In 2000, the Class IV price average $2.09 per hundredweight more than the Class III price and was the mover of Class I prices each month. During this time the CCC was purchasing and accumulating large quantities of surplus nonfat dry milk but purchased no butter. The decision by the Secretary of Agriculture to do a butter/powder tilt, that is, to lower the CCC purchase price on nonfat dry milk and correspondingly increase the purchase price on butter was delayed until May of 2001. Doing a butter/powder tilt during this surplus milk period would have lowered the Class IV price and the mover of Class I prices. Congress had given the Secretary of Agriculture authority to do a butter/powder tilt twice a year to effectively carry out the support program and to reduce government cost of the program. But, because of the impact on Class I prices, political pressure not to do the butter/powder tilt delayed such action until May 2001.

In summary, the "higher of" mover partially isolates Class I milk prices from market forces, results in regional inequities in producer prices and puts unnecessary political pressure on the Secretary of Agriculture in implementing the provisions of the federal price support program. During period of milk surplus, and because Class I prices are partially de-coupled from the value of milk utilized to make cheese, producers in primarily Class III use markets receive substantially lower milk prices and carry the burden of reducing milk production. One consideration to correct this inequity would be to base the butter/powder CCC purchase price adjustments on established economic criteria and thereby removing any political influence. A second consideration would change the "higher of" provision as the mover of Class I to a weighted average of the advanced Class IV or Class III price. With this change the Class I mover would more adequately reflect market conditions and remove the partial decoupling of Class I prices from these market conditions.

3. *Number of classes:* Currently there exists four use classes of milk under federal milk marketing orders: Class I, beverage use milk; Class II, soft manufactured products; Class III, hard cheese; and Class IV butter and nonfat dry milk. Component pricing formulas with fixed plant make allowances and product yields are used to calculate the monthly minimum price for both Class III and Class IV. These formulas, along with market-wide pooling, do not provide a strong incentive for butter, powder or cheese plants regulated under FMMOs to allocate milk to the highest use value for manufactured dairy products. Regardless of the price of cheese, butter or nonfat dry milk the fixed make allowances provide these manufacturing milk plants the same net returns from 100 pounds of milk. When butter and/or nonfat dry milk prices are depressed but cheese prices are relatively higher, or vice versa, there is not an economic incentive to allocate milk from those products with depressed prices to those products with higher prices. Prior to the 2000 federal order reform and the use of these component pricing formulas, butter, milk powder and cheese plants competed more aggressively for producer's milk. If the price of nonfat dry milk and butter, for example were depressed relative to cheese prices, cheese plants would attract milk away from butter/powder plants. Milk would more readily move to the highest and best use.

   Therefore, consideration should be given to merging the Class IV and Class III products into one manufacturing use class. An advanced announcement of this manufacturing use class could also be the mover of Class I and therefore, would remove the concerns with the "higher of" Class I mover and the political concerns with the butter/powder tilt.

4. *Pooling:* The 2000 federal order reform allows for rather liberal pooling provisions. Milk plants that are primarily manufacturing plants can meet pooling provisions in most orders by simply associating the milk from some of their producers via one-time actual milk shipment for Class I use. From that point on these plants may or may not ship additional milk for Class I use. These are referred to as reserve supply plants. These plants are allowed to meet these liberal pooling provision because at some point some of their Grade A milk maybe needed to fulfill a given federal order's objective to assure an adequate supply of Grade A milk for beverage use. The incentive for these reserve supply plants to associate with an order is to receive a draw from the pool the difference between the Class III or Class IV value and the weighted average value for the entire order. A cheese plant, for example can add this draw to the value of cheese milk and thereby pay producers more competitive prices than if they were not pooled. In the seven FMMOs with component pricing, this pool draw is referred to as the Producer Price Differential (PPD).

   At issue here is that while it is relatively easily for manufacturing milk plants to meet pool provisions, it is also relatively easy to de-pool. Once de-pooled it is relatively easy to get re-pooled. Such pooling and de-pooling creates a problem for fluid milk handlers and others that stayed pooled. This is because the value of the pool to be distributed to producers depends upon the quantity of associated milk and its utilization. The decision of a cheese plant, for example to pool its milk under a given order hinges upon the pool draw. This draw is usually positive, but when cheese prices move up sharply it is possible for the Class III price to actually be greater than the Class I price in some orders, particularly in those with relatively low Class I differentials. When this happens, cheese plants, rather than receiving a pool draw to add to their cheese milk, would have to pay some of their cheese value into the pool to share with Class I handlers, that is, the PPD is negative. This can happen because the Class I mover is an advanced price, announced on a Friday on or before the 23rd of the previous month. The Class III price is announced on a Friday on or before the 5th of the following month. So in periods of sharply rising cheese prices the Class I mover for a given month lags the increase in the Class III price.

   When cheese plants experience a negative PPD many de-pool. Such action complicates matters for fluid handlers and others who remain in the pool. De-pooling increases the Class I utilization resulting in a relatively larger portion of the total pool having a lower value than Class III and thereby increases the per hundredweight value of the negative PPD. Those cheese plants that de-pooled now have a competitive advantage in paying producers over those remaining in the pool.

   The seriousness of de-pooling can be illustrated in the Upper Midwest Order for August 2003 milk. The Class I differentials in the order ranges from $1.60 to $1.80 per hundredweight. Cheese prices began to rise rather sharply in mid-July. The advanced Class I mover, announced on July 18th was $10.97. It did not reflect the increase in cheese prices for the last two weeks of July. Adding the $1.80 or $1.60 differential resulted in an August Class I prices in the order from $12.77 to $12.57. The August Class III price, which reflected more of what was going on with cheese prices in July, was announced much higher at $13.80. As a result, a number of cheese plants de-pooled. With cheese plants de-pooling the Class III utilization which is usually around 75 to 77 percent fell to just 8.4 percent, Class IV utilization which is usually less than 2 percent increased to 22.6 percent and the Class I utilization which is usually in the 17 to 21 percent range jumped to 50.6 percent. While cheese plants de-pooled some nonfat dry milk plants pooled because the Class IV

price was relatively low and these plants received a pool draw. The August PPD ended up being a negative $1.58.

During August, negative PPDs were reported in all seven of the FMMOs that use component pricing. These negative differentials were: Mideast $1.20, Central $1.28, Western $1.70, Pacific Northwest $2.14, Upper Midwest $1.58, Northeast $0.68, and Southwest $0.87. For all 11 FMMOs, de-pooling resulted in 33 percent less milk being pooled in August compared to a year ago. August's Class I utilization across all FMMOs averaged 55 percent. For all of 2002, Class I utilization across all 11 FMMOs averaged less than 37 percent. The August Class III utilization was just 14 percent. For all of 2002, Class III utilization across 11 FMMOs averaged 44.4 percent.

Because of this de-pooling issue consideration should be given to the pooling provisions of FMMOs. Pooling provisions should require a greater commitment by reserve supply plants to a given FMMO. If a cheese plant, or some other manufacturing plant, wishes to become a reserve supply plant under an order and share in the pool draw when the Class I value is higher than Class III, consideration should be given to either requiring the plant to stay pooled in times when the Class I value is less than Class III and the PPD is negative, or not allowing the plant to re-pool for an extended period of time after the PPD once again becomes positive.

## Policy Considerations

When considering policy options, the first question that should be answered is "what is the problem that we are trying to address". Too often, policy is approached with a prescription before the diagnosis is made. A haphazard approach to policy may lead to unnecessary treatment at best and unintended consequences at worst. Many times, it is tempting to modify existing policy tools in an effort to fix a problem that the tool was not designed to do. An example might be to use the Food and Drug Administration to disallow the use of milk protein concentrates in cheese making. This issue is not a health issue—it is a trade issue and should be dealt with as such. Or, attempts to modify a make allowance in a Federal Order product price formula to increase farm milk prices during a low milk price cycle.

The current primary policy instruments that are in place include: Federal Milk Marketing Orders (FMMOs), the Dairy Price Support Program (DPSP), the Dairy Export Incentive Program (DEIP), and the Milk Income Loss Contracts (MILC). Federal Orders have multiple objectives (including price stability), but price enhancement and equitable distribution of prices are the primary goals. These goals are achieved through classified pricing and pooling. The Price Support Program has had price stability as a primary goal but it has been used for price enhancement during periods of time. The DEIP has price enhancement as a primary goal but has been used to help stabilize milk prices as well. And, the MILC program is a revenue enhancement/stabilizing program. The MILC program also works toward an additional goal of providing a larger percentage increase in revenue to smaller farms.

As the world works toward a more global economy, countries actively negotiate the path toward free trade. The World Trade Organization (WTO) talks are a massive undertaking to bring more than one hundred countries to agreement on such things as market access and industry subsidies. The United States is deeply involved in these negotiations and the policy movement over time is all in the same direction—more market access and less subsidy for all sectors. Of particular concern are policies that distort market prices or which impact markets for other countries. The DEIP is scheduled to decrease in both the volume of product subsidized and the dollar value of the subsidy. Over a relatively short period of time we can expect the DEIP to go away as a policy tool.

The 1996 FAIR Act had clear goals of extricating the government from expensive and trade distorting programs in agriculture. The Dairy Price Support Program was one of those programs that was scheduled to go away under that act but was subsequently saved at the relatively low level of support that exists today ($9.90 per cwt.). While Federal Orders and direct payment programs like MILC are not as immediately threatened by current WTO negotiations, they do have some internal pressures for survival. MILC has been a much more expensive program than was anticipated and in a time of national budget deficits, lawmakers will be scrutinizing expenditures when the program terminates in September of 2005. Federal Milk Marketing Orders are basically costless to the government but there are still challenges for survival of the institutions from cooperatives. Recently, the Pacific Northwest FMMO has been threatened by cooperative voting that would elect to not share the class I receipts with the rest of the pool.

## Eliminating Existing Programs

A primary question of policy impact to be answered is "What happens if we no longer have some of our current policy instruments?" A recent analysis by the Food and Agricultural Policy Research Institute (FAPRI) looks at this very issue and systematically provides a "layer-by-layer dissection" of the effect that each policy has on the industry. The following is excerpted from that analysis.

The scenarios shown in this analysis should not be interpreted as likely outcomes for dairy policy change. In many cases, these scenarios represent "end points" or "corners" of policy choices. They are meant to frame the debate for a particular policy option.

These policy alternatives are run with the FAPRI dairy model that is documented in FAPRI-UMC

TDR # 01-03. The FAPRI dairy model is a set of over 350 structural equations that attempts to capture the important economic relationships that exist in the U.S. dairy sector. The supply side of the model is handled at the state-level while the demand portion of the model is national.

FAPRI Dairy Baseline

The analysis is a forward-looking examination (2003-2012) of what the dairy industry may look like if each of the regulations that are the focus of this work is removed. The yardstick used to measure the effect of eliminating these policies is the March 2003 FAPRI baseline. A full description of the domestic baseline covering many agricultural commodities can be found in the "FAPRI 2003 U.S. Baseline Briefing Book," FAPRI-UMC Technical Data Report 04-03, March 2003.

The domestic dairy baseline is driven in part by expected feed prices and information about the general economic outlook. Equally important to the baseline for the domestic dairy industry are assumptions related to current policy. The March baseline assumes that the price support program and FMMOs remain in place for the life of the baseline. The MILC program expires September 30, 2005, as legislated in the 2002 farm bill, and is capped at a producer's first 2.4 million pounds of marketings. The baseline assumes that producers do not reorganize their operations to qualify more of their milk for the MILC program. This leads to a baseline assumption that 58.5 percent of the milk produced in the U.S. is eligible for MILC payments. The percentage of milk eligible for MILC payments varies greatly on a state-level basis. This baseline assumes full use of the DEIP for nonfat dry milk but no DEIP use in cheese or butter markets. Current import trade restrictions remain in place throughout the baseline. This baseline assumes no butter/non fat dry milk tilts will occur in support prices for these products.

An overview of the dairy baseline is shown in Table 2. This baseline projects that U.S. all milk prices remain at or below $13 per cwt. during the baseline. The baseline shows that milk prices increase at a faster pace after the MILC program ends. Milk prices are projected to grow slower than previous baselines primarily as a result of the slower growth in domestic cheese consumption projected in this baseline. Nonfat dry milk prices remain at the government purchase price throughout the baseline as government stocks of nonfat dry milk remain burdensome. Both butter and cheese

Table 2. Summary of the FAPRI March 2003 Dairy Baseline

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| Dairy Cows (thou. head) | 9,067 | 9,011 | 8,965 | 8,896 | 8,841 | 8,801 | 8,768 | 8,741 | 8,718 | 8,700 |
| Milk Yield (lbs.) | 18,884 | 19,179 | 19,462 | 19,714 | 19,991 | 20,268 | 20,534 | 20,791 | 21,043 | 21,291 |
| Milk Production (bil. lbs.) | 171.2 | 172.8 | 174.5 | 175.4 | 176.7 | 178.4 | 180.0 | 181.7 | 183.5 | 185.2 |
| All Milk Price ($/cwt.) | 12.19 | 12.24 | 12.27 | 12.52 | 12.58 | 12.71 | 12.73 | 12.81 | 12.91 | 13.00 |
| MILC Payment ($/cwt.) | 1.22 | 1.18 | 1.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Class III Price ($/cwt.) | 10.98 | 11.07 | 11.11 | 11.37 | 11.45 | 11.59 | 11.63 | 11.73 | 11.85 | 11.96 |
| Class IV Price ($/cwt.) | 10.49 | 10.50 | 10.55 | 10.85 | 10.91 | 11.06 | 11.06 | 11.12 | 11.20 | 11.26 |
| Cheese Price ($/lb.) | 1.25 | 1.25 | 1.26 | 1.28 | 1.29 | 1.30 | 1.30 | 1.31 | 1.33 | 1.34 |
| Butter Price ($/lb.) | 1.19 | 1.25 | 1.26 | 1.33 | 1.35 | 1.38 | 1.39 | 1.40 | 1.42 | 1.43 |
| Nonfat Dry Milk Price ($/lb.) | 0.84 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 |
| Per Capita Consumption (lbs.) | | | | | | | | | | |
| Cheese | 30.1 | 30.5 | 30.8 | 31.0 | 31.2 | 31.4 | 31.7 | 32.0 | 32.3 | 32.5 |
| Butter | 4.7 | 4.6 | 4.6 | 4.5 | 4.5 | 4.4 | 4.4 | 4.4 | 4.3 | 4.3 |
| Nonfat Dry Milk | 3.3 | 3.4 | 3.4 | 3.4 | 3.5 | 3.5 | 3.5 | 3.5 | 3.6 | 3.6 |
| Fluid | 207.8 | 207.9 | 207.5 | 206.4 | 205.3 | 204.3 | 203.7 | 203.2 | 202.9 | 202.5 |
| Net Removals (mil. lbs.) | | | | | | | | | | |
| Nonfat Dry Milk | 457 | 367 | 341 | 292 | 267 | 268 | 250 | 228 | 206 | 187 |
| Gov't Outlays (mil. $, fiscal year) | 2,586.4 | 1,524.4 | 1,501.3 | 579.9 | 268.0 | 271.9 | 259.9 | 244.1 | 226.5 | 210.0 |
| MILC Program | 2,205.8 | 1,200.9 | 1,188.4 | 296.6 | - | - | - | - | - | - |
| Other | 380.6 | 323.5 | 313.0 | 283.2 | 268.0 | 271.9 | 259.9 | 244.1 | 226.5 | 210.0 |

prices increase over the baseline as growth in demand for those products remains slightly ahead of the growth in supply. Government outlays for the dairy industry are expected to top $2.5 billion in fiscal year 2003 as retroactive payments under the MILC program and many of the 2003 MILC payments fall in fiscal 2003. The annual cost of the MILC program is expected to average $1.5 billion.

MILC Program

The first piece of dairy policy examined is the MILC program. To provide a broader view of the impacts of the MILC program, three separate scenarios are included. The first scenario (MILC) extends the MILC program for the life of the baseline. The second scenario (MILC+) extends the MILC program for the life of the baseline and removes the 2.4 million pound cap on producer marketings eligible for the payment. The final scenario (No MILC) is elimination of the MILC program.

It is important to recognize that the assumed participation rates used in the baseline are crucial in determining how states fare under the alternatives shown here. The actual level of participation in each state remains unclear. Although some data is beginning to surface regarding state-level MILC program payments, it is by no means final. For example, some potential participants have not signed up yet recognizing they will still be eligible for retroactive payments under the program. The assumption that 58.5 percent of milk marketed in the United States is eligible for a direct payment results from summing eligible milk in each of the major states. The early data recently available would suggest U.S. participation to date is less than assumed in the baseline. The amount of eligible milk in each state was calculated by looking at the size of operation information contained in milk production reports. This approach in determining participation is not exact. The assumption of the percent of milk eligible for a direct payment in each state is: California, 17; Wisconsin, 85; New York, 77; Pennsylvania, 90; Minnesota, 85; Idaho, 24; New Mexico, 8; Michigan, 70; Washington, 29; and Texas, 47. The baseline assumes no reduction in each states eligible milk percentage over time even though continued structural change would suggest a reduction should occur. On the other side of the equation is the notion that over time additional leakage around the 2.4 million pound cap could occur.

The three scenarios chosen to examine the MILC program provide a broad examination of the program's effects. The MILC scenario provides an examination of the longer run impact of the current program since the baseline only has the MILC program in place through September 30, 2005. The MILC+ scenario allows analysis of a program that behaves quite differently from the current MILC program since there is no cap on eligible milk. In addition, this scenario provides information on how the MILC program would affect the dairy industry if the 2.4 million pound marketings cap could be worked around through reorganization of producers' operations. The remaining scenario, NoMILC, shows how the industry would fare without the direct payment program.

The aggregate results shown in Table 3 suggest that each of these scenarios has tradeoffs that occur depending on how much of producer revenue is derived from the market versus direct payments from the government. Not surprisingly, the largest level of milk supplies occurs under the MILC+ scenario. This result occurs because the government is making direct payments on all milk marketed which gives the largest net revenue increase. In addition, the MILC+ run shows the largest level of government outlays, averaging $2.8 billion per year over the 2008 to 2012 period.

At the other end of the spectrum is the NoMILC scenario. This scenario results in the lowest level of milk production and the lowest level of government outlays. Over the 2008 to 2012 period, government outlays under this option average only $0.2 billion per year. This cost is associated with running the price support program and the DEIP. Milk production averages 200 million pounds below the baseline over the 2008 to 2012 period.

In between the MILC+ and NoMILC scenarios lies the MILC scenario. The MILC scenario assumes that on a nationwide basis 58.5 percent of milk marketed is eligible for the MILC payment. Government outlays under the MILC scenario average $1.5 billion per year over the 2008 to 2012

Table 3. Summary of the Impacts of Alternative MILC Program Options on the U.S. Dairy Sector

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Milk Production (bil. lbs.) | | | | | | | | | | | | |
| **Baseline** | 171.2 | 172.8 | 174.5 | 175.4 | 176.7 | 178.4 | 180.0 | 181.7 | 183.5 | 185.2 | 174.1 | 181.8 |
| **MILC** | 171.2 | 172.8 | 174.5 | 176.2 | 177.9 | 179.7 | 181.5 | 183.2 | 185.0 | 186.7 | 174.5 | 183.2 |
| D From Base | 0.0 | 0.0 | 0.0 | 0.8 | 1.1 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 0.4 | 1.4 |
| **MILC+** | 172.0 | 173.9 | 175.8 | 177.6 | 179.4 | 181.3 | 183.2 | 184.9 | 186.6 | 188.3 | 175.8 | 184.9 |
| D From Base | 0.8 | 1.1 | 1.3 | 2.3 | 2.7 | 2.9 | 3.1 | 3.2 | 3.2 | 3.1 | 1.6 | 3.1 |
| D From MILC | 0.8 | 1.1 | 1.3 | 1.5 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 | 1.2 | 1.7 |
| **No MILC** | 170.3 | 171.7 | 173.1 | 174.7 | 176.3 | 178.1 | 179.8 | 181.6 | 183.4 | 185.2 | 173.2 | 181.6 |
| D From Base | -0.9 | -1.2 | -1.3 | -0.7 | -0.4 | -0.3 | -0.2 | -0.1 | -0.1 | -0.1 | -0.9 | -0.2 |
| D From MILC | -0.9 | -1.2 | -1.3 | -1.5 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.3 | -1.6 |
| D From MILC+ | -1.7 | -2.2 | -2.6 | -2.9 | -3.1 | -3.2 | -3.3 | -3.3 | -3.3 | -3.2 | -2.5 | -3.3 |
| All Milk Price ($/cwt.) | | | | | | | | | | | | |
| **Baseline** | 12.19 | 12.24 | 12.27 | 12.52 | 12.58 | 12.71 | 12.73 | 12.81 | 12.91 | 13.00 | 12.36 | 12.83 |
| **MILC** | 12.19 | 12.24 | 12.27 | 12.28 | 12.22 | 12.28 | 12.26 | 12.32 | 12.41 | 12.50 | 12.24 | 12.36 |
| D From Base | 0.00 | 0.00 | 0.00 | -0.24 | -0.36 | -0.43 | -0.47 | -0.50 | -0.50 | -0.50 | -0.12 | -0.48 |
| **MILC+** | 11.96 | 11.89 | 11.85 | 11.80 | 11.71 | 11.74 | 11.71 | 11.75 | 11.85 | 11.95 | 11.84 | 11.80 |
| D From Base | -0.23 | -0.35 | -0.42 | -0.72 | -0.88 | -0.97 | -1.03 | -1.06 | -1.06 | -1.05 | -0.52 | -1.04 |
| D From MILC | -0.23 | -0.35 | -0.42 | -0.48 | -0.52 | -0.54 | -0.56 | -0.56 | -0.56 | -0.55 | -0.40 | -0.56 |
| **No MILC** | 12.45 | 12.61 | 12.71 | 12.75 | 12.73 | 12.81 | 12.80 | 12.86 | 12.95 | 13.02 | 12.65 | 12.89 |
| D From Base | 0.25 | 0.37 | 0.44 | 0.23 | 0.15 | 0.10 | 0.07 | 0.04 | 0.03 | 0.02 | 0.29 | 0.05 |
| D From MILC | 0.25 | 0.37 | 0.44 | 0.48 | 0.51 | 0.53 | 0.54 | 0.54 | 0.53 | 0.52 | 0.41 | 0.53 |
| D From MILC+ | 0.49 | 0.72 | 0.86 | 0.95 | 1.02 | 1.07 | 1.09 | 1.10 | 1.10 | 1.08 | 0.81 | 1.09 |
| MILC Payment ($/cwt.) a/ | | | | | | | | | | | | |
| **Baseline** | 1.22 | 1.18 | 1.16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.71 | 0.00 |
| **MILC** | 1.22 | 1.18 | 1.16 | 1.15 | 1.17 | 1.13 | 1.13 | 1.10 | 1.05 | 1.00 | 1.18 | 1.08 |
| D From Base | 0.00 | 0.00 | 0.00 | 1.15 | 1.17 | 1.13 | 1.13 | 1.10 | 1.05 | 1.00 | 0.46 | 1.08 |
| **MILC+** | 1.32 | 1.33 | 1.34 | 1.35 | 1.39 | 1.36 | 1.37 | 1.34 | 1.29 | 1.23 | 1.35 | 1.32 |
| D From Base | 0.10 | 0.15 | 0.18 | 1.35 | 1.39 | 1.36 | 1.37 | 1.34 | 1.29 | 1.23 | 0.63 | 1.32 |
| D From MILC | 0.10 | 0.15 | 0.18 | 0.20 | 0.22 | 0.23 | 0.24 | 0.24 | 0.24 | 0.24 | 0.17 | 0.24 |
| **No MILC** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| D From Base | -1.22 | -1.18 | -1.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -0.71 | 0.00 |
| D From MILC | -1.22 | -1.18 | -1.16 | -1.15 | -1.17 | -1.13 | -1.13 | -1.10 | -1.05 | -1.00 | -1.18 | -1.08 |
| D From MILC+ | -1.32 | -1.33 | -1.34 | -1.35 | -1.39 | -1.36 | -1.37 | -1.34 | -1.29 | -1.23 | -1.35 | -1.32 |
| Net Revenue ($/cwt.) b/ | | | | | | | | | | | | |
| **Baseline** | 12.91 | 12.93 | 12.95 | 12.52 | 12.58 | 12.71 | 12.73 | 12.81 | 12.91 | 13.00 | 12.78 | 12.83 |
| **MILC** | 12.91 | 12.93 | 12.95 | 12.95 | 12.90 | 12.95 | 12.92 | 12.96 | 13.02 | 13.08 | 12.93 | 12.99 |
| D From Base | 0.00 | 0.00 | 0.00 | 0.43 | 0.32 | 0.23 | 0.19 | 0.15 | 0.11 | 0.08 | 0.15 | 0.15 |
| **MILC+** | 13.28 | 13.22 | 13.19 | 13.15 | 13.09 | 13.10 | 13.07 | 13.09 | 13.13 | 13.18 | 13.19 | 13.12 |
| D From Base | 0.37 | 0.29 | 0.24 | 0.63 | 0.51 | 0.39 | 0.34 | 0.28 | 0.22 | 0.18 | 0.41 | 0.28 |
| D From MILC | 0.37 | 0.29 | 0.24 | 0.20 | 0.19 | 0.16 | 0.15 | 0.13 | 0.11 | 0.10 | 0.26 | 0.13 |
| **No MILC** | 12.45 | 12.61 | 12.71 | 12.75 | 12.73 | 12.81 | 12.80 | 12.86 | 12.95 | 13.02 | 12.65 | 12.89 |
| D From Base | -0.46 | -0.32 | -0.24 | 0.23 | 0.15 | 0.10 | 0.07 | 0.04 | 0.03 | 0.02 | -0.13 | 0.05 |
| D From MILC | -0.46 | -0.32 | -0.24 | -0.20 | -0.17 | -0.14 | -0.13 | -0.10 | -0.08 | -0.06 | -0.28 | -0.10 |
| D From MILC+ | -0.83 | -0.61 | -0.48 | -0.40 | -0.36 | -0.30 | -0.27 | -0.23 | -0.19 | -0.16 | -0.54 | -0.23 |
| Government Outlays (mil $, fiscal year) | | | | | | | | | | | | |
| **Baseline** | 2,586 | 1,524 | 1,501 | 580 | 268 | 272 | 260 | 244 | 226 | 210 | 1,292 | 242 |
| **MILC** | 2,586 | 1,524 | 1,501 | 1,498 | 1,516 | 1,515 | 1,512 | 1,483 | 1,427 | 1,366 | 1,725 | 1,461 |
| D From Base | 0 | 0 | 0 | 919 | 1,247 | 1,243 | 1,252 | 1,239 | 1,200 | 1,156 | 433 | 1,218 |
| **MILC+** | 3,399 | 2,664 | 2,709 | 2,758 | 2,831 | 2,852 | 2,871 | 2,844 | 2,761 | 2,665 | 2,872 | 2,799 |
| D From Base | 813 | 1,140 | 1,207 | 2,178 | 2,563 | 2,580 | 2,612 | 2,600 | 2,535 | 2,455 | 1,580 | 2,556 |
| D From MILC | 813 | 1,140 | 1,207 | 1,259 | 1,316 | 1,337 | 1,359 | 1,360 | 1,335 | 1,299 | 1,147 | 1,338 |
| **No MILC** | 1,639 | 281 | 264 | 257 | 249 | 258 | 251 | 237 | 222 | 207 | 538 | 235 |
| D From Base | -947 | -1,243 | -1,237 | -323 | -19 | -14 | -9 | -7 | -5 | -3 | -754 | -8 |
| D From MILC | -947 | -1,243 | -1,237 | -1,242 | -1,266 | -1,257 | -1,261 | -1,246 | -1,205 | -1,159 | -1,187 | -1,226 |
| D From MILC+ | -1,760 | -2,383 | -2,444 | -2,501 | -2,582 | -2,594 | -2,620 | -2,606 | -2,540 | -2,458 | -2,334 | -2,564 |

**Baseline** - FAPRI March 2003 Baseline, **MILC** - Extend current MILC program through 2012, **MILC+** - Extend MILC program through 2012 and pay on all milk marketed, **No MILC** - Eliminate the current MILC program 1/1/2003

a/ - Payment rate on eligible milk

b/ - Net revenue on all milk produced

period. All milk prices average $0.50 per cwt. less under the MILC scenario than the baseline. Over the 2008 to 2012 period, total average revenue under the MILC scenario is $0.15 higher than the baseline.

Further examination of Table 3 shows that the short and long run effects of these alternative MILC program scenarios are different. In 2003, the lowest net revenue occurs under the NoMILC scenario at $11.94 per cwt. while net revenue is the highest under the MILC+ scenario at $13.32 per cwt. That is a difference of $1.38 per cwt. However, examination of the last year of the analysis shows that the net revenue difference between the highest and lowest is only $0.18 per cwt. Although the MILC+ scenario shows the highest revenue, the baseline now has the lowest level of net revenue. This reinforces the fact that in the short run, these kinds of programs can have markedly different aggregate impacts. However, once milk supplies have had time to adjust, the aggregate impacts become muted.

Perhaps more interesting than the aggregate results are the state-level impacts of the MILC program alternatives shown in Table 4. The option that is most attractive to a particular state depends entirely on that state's herd size. Small herd states prefer a MILC option that caps direct payments while large-herd states like the option that does not have a production cap on direct payments or the option of no direct payments. The first section of Table 4 presents the level of revenue for the baseline (the all milk price in the state plus any direct payment averaged across all milk marketed in the state). The remaining three sections of Table 4 provide the change in net revenue relative to the baseline. In 2012, California net revenue is highest under the MILC+ scenario and lowest under the MILC scenario while Wisconsin revenue is highest under the MILC scenario and lowest under the baseline.

The regional effect of these MILC scenarios is further illustrated in Figures 1 and 2. These graphics provide the short (2003-2007) and long (2008-2012) run effect of each MILC program scenario on Wisconsin, California, and U.S. net revenue. It is clear that California enjoys the highest revenue under the MILC+ scenario in both the short and long run. Even in the long run, however, the higher direct payments are being eroded away by lower milk prices. In the short run, Wisconsin is only slightly better off under the MILC scenario relative to the MILC+ scenario but is clearly better off in the long run under the MILC scenario relative to any of the other scenarios. At the U.S. level, the highest revenue in the short run is found in the MILC+ scenario. However, in the long run, the difference between scenarios is narrowing, although the MILC+ scenario is still showing the highest net revenue.

Figure 1. Revenue Effects of the MILC Program, 2003-2007 Average

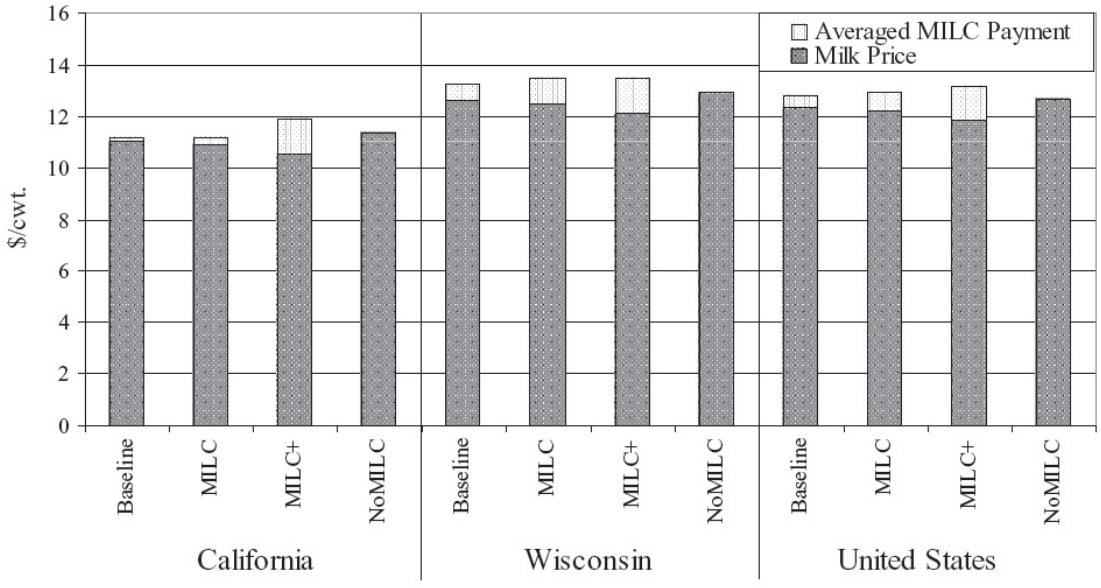
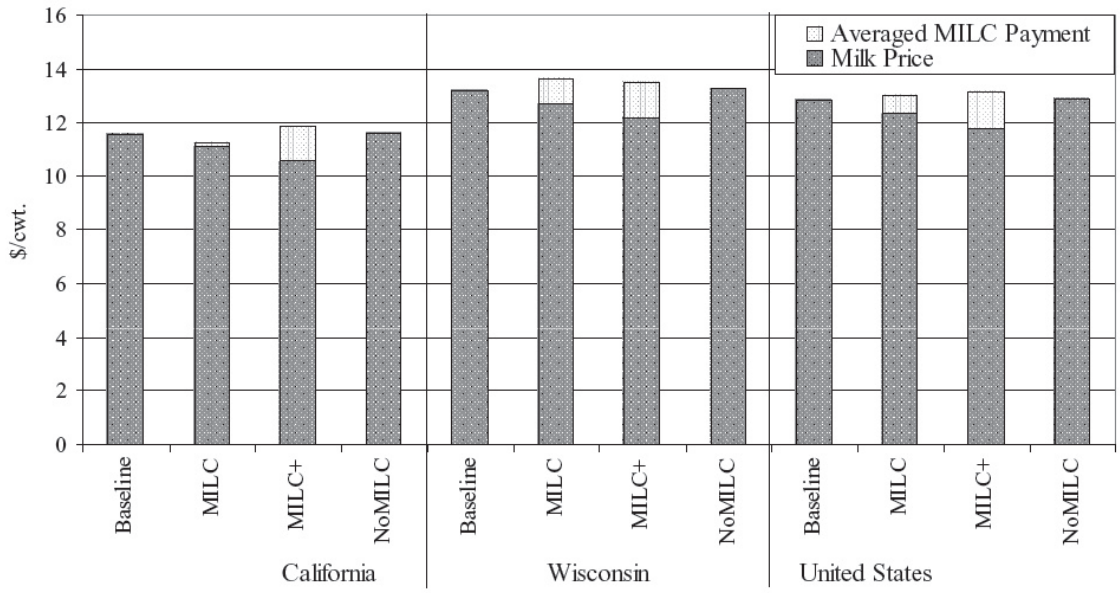


Figure 2. Revenue Effects of the MILC Program, 2008-2012 Average




It is informative to note that even when the MILC program is extended to cover all milk, the market, as measured by all milk prices, is responsible for 90 percent of revenue while the MILC direct payment makes up the remaining 10 percent. The fact that the direct payment formula returns only 40 percent of the difference between $16.94 per cwt. and the Boston class I price keeps the amount of revenue provided by the government at a much lower level than if the full difference was paid.

Price Support Program and DEIP Elimination

This section explores the effects on the dairy sector of eliminating the price support program and the DEIP. These alternatives are compared to the NoMILC scenario as this research continues to peal away each layer of federal dairy policy. The yardstick against which these scenarios are compared is important. The outlook for the dairy sector suggests that nonfat dry milk will continue to be in surplus for several years yet the government does not accumulate any stocks of other dairy products. If demand for nonfat solids would be larger than shown here or demand for butterfat weaker, this analysis would show different effects as these programs are eliminated. Similarly, the baseline assumes full use of the DEIP for nonfat dry milk, but no use in cheese or butter.

Two assumptions dealing with the world price outlook for butter and nonfat dry milk are needed to look at the scenarios in this section. World nonfat dry milk prices are assumed to be the average of the 1990 to 2000 level less $0.10 per lb. for transportation. That puts a floor on U.S. nonfat dry milk prices of $0.68 per lb. Likewise, world butter prices are assumed to equal their 1990 to 2000 average. Once the tariff is added to the world butter price, it suggests that additional butter imports would enter the United States once the U.S. butter price exceeds $1.50 per lb. These assumptions oversimplify the linkages and dynamics that exist in global dairy markets.

One final assumption is needed concerning the release of large quantities of nonfat dry milk stocks held by the government. This analysis assumes that in 2003 and 2004 300 million pounds of nonfat dry milk held by the government is eliminated with no market effect. The remaining government-held inventory is assumed to enter the market equally in 2003 and 2004. This is one of numerous ways the government could dispose of nonfat dry milk in storage.

The outcome of these scenarios is summarized in Table 5. Both of these scenarios have the largest impact on nonfat dry milk markets. Table 4 provides the level results for the NoMILC, NoMILC/CCC, and NoMILC/CCC/DEIP. The comparison to the NoMILC scenario is used so that the impact

Table 4. The Regional Impacts on Revenue of Alternative MILC Program Options

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ($/cwt.) | | | | | | |
| **Baseline (Revenue Level)** | | | | | | | | | | | | |
| California | 11.09 | 11.13 | 11.17 | 11.24 | 11.30 | 11.44 | 11.47 | 11.55 | 11.65 | 11.73 | 11.19 | 11.57 |
| Wisconsin | 13.45 | 13.50 | 13.52 | 12.80 | 12.88 | 13.02 | 13.06 | 13.16 | 13.28 | 13.38 | 13.23 | 13.18 |
| New York | 13.80 | 13.83 | 13.86 | 13.23 | 13.31 | 13.45 | 13.49 | 13.58 | 13.69 | 13.78 | 13.61 | 13.60 |
| Pennsylvania | 14.89 | 14.92 | 14.94 | 14.17 | 14.24 | 14.39 | 14.42 | 14.51 | 14.62 | 14.72 | 14.63 | 14.53 |
| Minnesota | 13.52 | 13.57 | 13.60 | 12.87 | 12.95 | 13.10 | 13.14 | 13.23 | 13.35 | 13.46 | 13.30 | 13.25 |
| Idaho | 11.74 | 11.79 | 11.83 | 11.82 | 11.90 | 12.04 | 12.08 | 12.17 | 12.28 | 12.38 | 11.82 | 12.19 |
| New Mexico | 11.92 | 11.99 | 12.03 | 12.21 | 12.29 | 12.43 | 12.47 | 12.56 | 12.68 | 12.78 | 12.09 | 12.59 |
| Michigan | 13.13 | 13.18 | 13.21 | 12.66 | 12.73 | 12.88 | 12.91 | 13.01 | 13.12 | 13.22 | 12.98 | 13.03 |
| Washington | 12.48 | 12.53 | 12.56 | 12.50 | 12.57 | 12.72 | 12.74 | 12.83 | 12.94 | 13.03 | 12.53 | 12.85 |
| Texas | 13.45 | 13.50 | 13.54 | 13.26 | 13.34 | 13.48 | 13.52 | 13.61 | 13.72 | 13.82 | 13.42 | 13.63 |
| Other States | 13.45 | 13.50 | 13.52 | 12.98 | 13.06 | 13.20 | 13.24 | 13.33 | 13.44 | 13.54 | 13.30 | 13.35 |
| **MILC (D in Revenue relative to Baseline)** | | | | | | | | | | | | |
| California | 0.00 | 0.00 | 0.00 | -0.05 | -0.17 | -0.24 | -0.28 | -0.32 | -0.33 | -0.34 | -0.04 | -0.30 |
| Wisconsin | 0.00 | 0.00 | 0.00 | 0.74 | 0.63 | 0.54 | 0.49 | 0.44 | 0.39 | 0.35 | 0.27 | 0.44 |
| New York | 0.00 | 0.00 | 0.00 | 0.64 | 0.53 | 0.43 | 0.39 | 0.34 | 0.29 | 0.25 | 0.23 | 0.34 |
| Pennsylvania | 0.00 | 0.00 | 0.00 | 0.79 | 0.68 | 0.58 | 0.53 | 0.48 | 0.42 | 0.38 | 0.29 | 0.48 |
| Minnesota | 0.00 | 0.00 | 0.00 | 0.74 | 0.63 | 0.54 | 0.49 | 0.44 | 0.39 | 0.35 | 0.27 | 0.44 |
| Idaho | 0.00 | 0.00 | 0.00 | 0.02 | -0.09 | -0.17 | -0.21 | -0.25 | -0.27 | -0.28 | -0.01 | -0.24 |
| New Mexico | 0.00 | 0.00 | 0.00 | -0.16 | -0.28 | -0.35 | -0.39 | -0.42 | -0.43 | -0.43 | -0.09 | -0.40 |
| Michigan | 0.00 | 0.00 | 0.00 | 0.56 | 0.45 | 0.36 | 0.32 | 0.27 | 0.22 | 0.19 | 0.20 | 0.27 |
| Washington | 0.00 | 0.00 | 0.00 | 0.08 | -0.04 | -0.12 | -0.17 | -0.21 | -0.23 | -0.24 | 0.01 | -0.19 |
| Texas | 0.00 | 0.00 | 0.00 | 0.29 | 0.18 | 0.10 | 0.05 | 0.01 | -0.02 | -0.04 | 0.10 | 0.02 |
| Other States | 0.00 | 0.00 | 0.00 | 0.56 | 0.45 | 0.35 | 0.31 | 0.26 | 0.22 | 0.18 | 0.20 | 0.26 |
| **MILC+ (D in Revenue relative to Baseline)** | | | | | | | | | | | | |
| California | 0.89 | 0.79 | 0.74 | 0.64 | 0.52 | 0.41 | 0.35 | 0.29 | 0.23 | 0.19 | 0.72 | 0.30 |
| Wisconsin | 0.06 | -0.01 | -0.05 | 0.65 | 0.53 | 0.41 | 0.36 | 0.30 | 0.24 | 0.20 | 0.24 | 0.30 |
| New York | 0.14 | 0.06 | 0.02 | 0.62 | 0.50 | 0.38 | 0.32 | 0.26 | 0.20 | 0.16 | 0.27 | 0.26 |
| Pennsylvania | -0.01 | -0.08 | -0.13 | 0.62 | 0.50 | 0.38 | 0.32 | 0.26 | 0.20 | 0.16 | 0.18 | 0.27 |
| Minnesota | 0.06 | -0.01 | -0.05 | 0.66 | 0.53 | 0.42 | 0.37 | 0.30 | 0.25 | 0.20 | 0.24 | 0.31 |
| Idaho | 0.79 | 0.70 | 0.64 | 0.63 | 0.50 | 0.38 | 0.33 | 0.26 | 0.21 | 0.16 | 0.65 | 0.27 |
| New Mexico | 1.00 | 0.90 | 0.84 | 0.64 | 0.51 | 0.40 | 0.34 | 0.28 | 0.22 | 0.18 | 0.78 | 0.29 |
| Michigan | 0.23 | 0.16 | 0.11 | 0.64 | 0.51 | 0.40 | 0.34 | 0.28 | 0.22 | 0.18 | 0.33 | 0.28 |
| Washington | 0.72 | 0.62 | 0.57 | 0.60 | 0.47 | 0.35 | 0.29 | 0.23 | 0.17 | 0.13 | 0.60 | 0.23 |
| Texas | 0.52 | 0.43 | 0.38 | 0.64 | 0.51 | 0.40 | 0.34 | 0.28 | 0.22 | 0.18 | 0.50 | 0.28 |
| Other States | 0.24 | 0.16 | 0.11 | 0.63 | 0.51 | 0.39 | 0.34 | 0.27 | 0.22 | 0.17 | 0.33 | 0.28 |
| **No MILC (D in Revenue relative to Baseline)** | | | | | | | | | | | | |
| California | 0.05 | 0.17 | 0.24 | 0.23 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | 0.17 | 0.05 |
| Wisconsin | -0.78 | -0.64 | -0.55 | 0.23 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.32 | 0.05 |
| New York | -0.68 | -0.53 | -0.45 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.25 | 0.06 |
| Pennsylvania | -0.84 | -0.69 | -0.60 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.35 | 0.06 |
| Minnesota | -0.78 | -0.64 | -0.55 | 0.23 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.32 | 0.05 |
| Idaho | -0.03 | 0.10 | 0.17 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | 0.13 | 0.06 |
| New Mexico | 0.16 | 0.28 | 0.35 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | 0.24 | 0.05 |
| Michigan | -0.60 | -0.46 | -0.38 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.21 | 0.05 |
| Washington | -0.08 | 0.04 | 0.12 | 0.25 | 0.16 | 0.11 | 0.07 | 0.05 | 0.03 | 0.03 | 0.10 | 0.06 |
| Texas | -0.32 | -0.18 | -0.10 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.04 | 0.05 |
| Other States | -0.59 | -0.45 | -0.37 | 0.24 | 0.15 | 0.10 | 0.07 | 0.05 | 0.03 | 0.02 | -0.20 | 0.06 |

**Baseline** - FAPRI March 2003 Baseline, **MILC** - Extend current MILC program through 2012, **MILC+** - Extend MILC program through 2012 and pay on all milk marketed, **No MILC** - Eliminate the current MILC program 1/1/2003

of eliminating the support price program and DEIP can be isolated. The NoMILC/CCC scenario ends the price support program at the beginning of 2003 while the NoMILC/CCC/DEIP eliminates the price support program and the DEIP at the start of 2003.

Under the NoMILC/CCC scenario, the first two years of the scenario show the largest changes as the government gets out of the stock-holding business. Although this research assumes that 300 million pounds of nonfat dry milk held by the

Table 5. Impact of the Elimination of the Price Support Program and the DEIP on the U.S. Dairy Sector

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Nonfat Dry Milk Net Removals (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 418 | 314 | 280 | 259 | 244 | 251 | 239 | 220 | 200 | 183 | 303 | 219 |
| NoMILC/CCC | -285 | -485 | 145 | 145 | 145 | 145 | 145 | 145 | 145 | 145 | -67 | 145 |
| NoMILC/CCC/DEIP | -430 | -630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -212 | 0 |
| **Nonfat Dry Milk Production (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 1,433 | 1,364 | 1,348 | 1,341 | 1,339 | 1,362 | 1,362 | 1,359 | 1,357 | 1,357 | 1,365 | 1,359 |
| NoMILC/CCC | 1,210 | 1,106 | 1,287 | 1,292 | 1,301 | 1,321 | 1,330 | 1,340 | 1,350 | 1,360 | 1,239 | 1,340 |
| NoMILC/CCC/DEIP | 1,210 | 1,106 | 1,167 | 1,170 | 1,177 | 1,193 | 1,206 | 1,215 | 1,225 | 1,236 | 1,166 | 1,215 |
| **Nonfat Dry Milk Commerical Exports (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | - | - | - | - | - | - | - | - | - | - | - | - |
| NoMILC/CCC | 193 | 264 | - | - | - | - | - | - | - | - | 91 | - |
| NoMILC/CCC/DEIP | 338 | 409 | - | - | - | - | - | - | - | - | 149 | - |
| **Butter Production (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 1,314 | 1,292 | 1,292 | 1,293 | 1,292 | 1,306 | 1,306 | 1,306 | 1,305 | 1,304 | 1,297 | 1,305 |
| NoMILC/CCC | 1,241 | 1,195 | 1,274 | 1,277 | 1,281 | 1,293 | 1,297 | 1,300 | 1,302 | 1,305 | 1,253 | 1,299 |
| NoMILC/CCC/DEIP | 1,241 | 1,195 | 1,224 | 1,226 | 1,228 | 1,238 | 1,244 | 1,246 | 1,249 | 1,251 | 1,222 | 1,245 |
| **Butter Imports (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 32 | 32 | 32 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 32 | 40 |
| NoMILC/CCC | 75 | 32 | 64 | 107 | 37 | 32 | 34 | 36 | 38 | 40 | 63 | 36 |
| NoMILC/CCC/DEIP | 64 | 107 | 82 | 82 | 84 | 90 | 86 | 88 | 90 | 92 | 84 | 89 |
| **Cheese Production (mil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 8,397 | 8,576 | 8,719 | 8,876 | 9,039 | 9,190 | 9,357 | 9,522 | 9,688 | 9,855 | 8,721 | 9,522 |
| NoMILC/CCC | 8,489 | 8,656 | 8,697 | 8,869 | 9,034 | 9,191 | 9,358 | 9,520 | 9,684 | 9,849 | 8,749 | 9,520 |
| NoMILC/CCC/DEIP | 8,489 | 8,656 | 8,748 | 8,902 | 9,061 | 9,215 | 9,376 | 9,538 | 9,700 | 9,865 | 8,771 | 9,539 |
| **Nonfat Dry Milk Price ($/lb.)** | | | | | | | | | | | | |
| NoMILC | 0.84 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.82 | 0.81 |
| NoMILC/CCC | 0.68 | 0.68 | 0.78 | 0.78 | 0.79 | 0.78 | 0.79 | 0.80 | 0.81 | 0.82 | 0.74 | 0.80 |
| NoMILC/CCC/DEIP | 0.68 | 0.68 | 0.73 | 0.74 | 0.75 | 0.75 | 0.75 | 0.76 | 0.77 | 0.78 | 0.71 | 0.76 |
| **Butter Price ($/lb.)** | | | | | | | | | | | | |
| NoMILC | 1.27 | 1.36 | 1.39 | 1.40 | 1.39 | 1.42 | 1.41 | 1.42 | 1.43 | 1.44 | 1.36 | 1.42 |
| NoMILC/CCC | 1.51 | 1.53 | 1.50 | 1.50 | 1.47 | 1.49 | 1.47 | 1.46 | 1.45 | 1.44 | 1.50 | 1.46 |
| NoMILC/CCC/DEIP | 1.51 | 1.53 | 1.53 | 1.53 | 1.51 | 1.53 | 1.52 | 1.51 | 1.50 | 1.49 | 1.52 | 1.51 |
| **Cheese Price ($/lb.)** | | | | | | | | | | | | |
| NoMILC | 1.27 | 1.28 | 1.29 | 1.30 | 1.30 | 1.31 | 1.31 | 1.32 | 1.33 | 1.34 | 1.29 | 1.32 |
| NoMILC/CCC | 1.22 | 1.23 | 1.30 | 1.31 | 1.30 | 1.31 | 1.31 | 1.32 | 1.33 | 1.34 | 1.27 | 1.32 |
| NoMILC/CCC/DEIP | 1.22 | 1.23 | 1.27 | 1.28 | 1.29 | 1.29 | 1.30 | 1.31 | 1.32 | 1.33 | 1.26 | 1.31 |
| **Class III Price ($/cwt.)** | | | | | | | | | | | | |
| NoMILC | 11.23 | 11.42 | 11.53 | 11.59 | 11.59 | 11.69 | 11.70 | 11.78 | 11.89 | 11.99 | 11.47 | 11.81 |
| NoMILC/CCC | 10.82 | 10.97 | 11.64 | 11.70 | 11.66 | 11.72 | 11.72 | 11.81 | 11.92 | 12.02 | 11.36 | 11.84 |
| NoMILC/CCC/DEIP | 10.82 | 10.97 | 11.37 | 11.48 | 11.50 | 11.58 | 11.63 | 11.72 | 11.84 | 11.95 | 11.23 | 11.74 |
| **Class IV Price ($/cwt.)** | | | | | | | | | | | | |
| NoMILC | 10.81 | 10.95 | 11.08 | 11.13 | 11.09 | 11.18 | 11.15 | 11.18 | 11.24 | 11.28 | 11.01 | 11.21 |
| NoMILC/CCC | 10.40 | 10.49 | 11.28 | 11.28 | 11.20 | 11.24 | 11.20 | 11.23 | 11.29 | 11.33 | 10.93 | 11.26 |
| NoMILC/CCC/DEIP | 10.40 | 10.49 | 10.95 | 11.03 | 11.02 | 11.09 | 11.10 | 11.14 | 11.21 | 11.26 | 10.78 | 11.16 |
| **All Milk Price ($/cwt.)** | | | | | | | | | | | | |
| NoMILC | 12.45 | 12.61 | 12.71 | 12.75 | 12.73 | 12.81 | 12.80 | 12.86 | 12.95 | 13.02 | 12.65 | 12.89 |
| NoMILC/CCC | 12.04 | 12.15 | 12.83 | 12.86 | 12.80 | 12.84 | 12.83 | 12.89 | 12.98 | 13.06 | 12.54 | 12.92 |
| NoMILC/CCC/DEIP | 12.04 | 12.15 | 12.55 | 12.64 | 12.64 | 12.70 | 12.73 | 12.80 | 12.90 | 12.98 | 12.40 | 12.82 |
| **Milk Production (bil. lbs.)** | | | | | | | | | | | | |
| NoMILC | 170.3 | 171.7 | 173.1 | 174.7 | 176.3 | 178.1 | 179.8 | 181.6 | 183.4 | 185.2 | 173.2 | 181.6 |
| NoMILC/CCC | 169.5 | 170.3 | 172.4 | 174.2 | 175.9 | 177.8 | 179.6 | 181.4 | 183.2 | 185.1 | 172.4 | 181.4 |
| NoMILC/CCC/DEIP | 169.5 | 170.3 | 171.8 | 173.4 | 175.0 | 176.7 | 178.5 | 180.3 | 182.1 | 184.0 | 172.0 | 180.3 |

**NoMILC** - Eliminate the current MILC program 1/1/2003, **NoMILC/CCC** - Eliminate the price support program 1/1/2003 in addtion to MILC elimination, **NoMILC/CCC/DEIP** - Eliminate the price support program and the DEIP 1/1/2003 in addtion to MILC elimination

government never reaches commercial markets in the first two years of the analysis, the government could choose to not let any nonfat dry milk held in government inventory reach commercial markets and that would minimize the effect of eliminating the price support program. An additional 700 million pounds of nonfat dry milk enters the market in 2003 under the NoMILC/CCC scenario. Domestic nonfat dry milk prices fall to world prices and the United States is able to commercially export 193 million pounds of nonfat dry milk. Nonfat dry milk production declines by 223 million pounds, leaving the balance of the additional nonfat dry milk to be domestically consumed.

A similar story can be told for the 2004 results. After 2004, all government inventory of nonfat dry milk is gone. That leaves a much smaller amount of nonfat dry milk that must enter domestic markets. For example, in 2008 an additional 106 million pounds of nonfat dry milk that was removed under the NoMILC scenario now ends up in commercial channels, 14% compared to the 2003 level.

The NoMILC/CCC/DEIP scenario shows similar directional results, only larger magnitudes. In the first two years of the analysis, eliminating the DEIP only causes switching of DEIP product to commercial exports. However, the NoMILC/CCC/DEIP scenario keeps nonfat dry milk prices lower in the out-years of the analysis since domestic prices are too high to allow the formerly subsidized product to move as commercially exported product.

As less milk is produced under both of the scenarios relative to the NoMILC scenario, less fat is available to churn into butter. That causes butter prices to rise to the point that additional imports enter the U.S. In 2004 under the NoMILC/CCC/DEIP scenario, an additional 75 million pounds of butter enters the U.S.

Cheese markets experience an increase in production in the early years of both scenarios as milk supplies are diverted away from nonfat dry milk and butter markets. Cheese prices are $0.05 per pound lower than the NoMILC scenario during the first two years. Once milk supplies adjust, cheese prices approach the NoMILC levels.

All milk prices are $0.40 to $0.45 per cwt lower the first two years under both scenarios. However, beginning in 2005 all milk prices return to the baseline in the NoCCC scenario as they are propped up by higher butter prices. Under the NoCCC/DEIP scenario all milk prices remain below the NoMILC scenario as nonfat dry milk and cheese prices remain below the NoMILC scenario. Milk supplies adjust down under both of these scenarios. In 2012 under the NoCCC/DEIP scenario, milk production is 1.2 billion pounds less than under the NoMILC scenario.

Federal Order Elimination

Elimination of the federal order system is a difficult task for the FAPRI dairy model or for that matter any model that is formed with data that has embedded in it the presence of the federal order system. Some of the particulars of federal order elimination are likely lost in this quantitative assessment. Hopefully, these results provide the directional impact of eliminating the federal order system.

Many assumptions were necessary to conduct this portion of the analysis. The first assumption deals with the pricing of milk used for purposes other than fluid consumption. The analysis assumes that Class II, III, and IV milk prices are gone and one market-clearing price replaces them. The alternatives that could replace the classified minimum prices are endless. This analysis assumes that the manufacturing price will be the average of the Class III and IV price formulas. This price will be used for all manufacturing uses.

This analysis looked at two alternatives for fluid milk prices under elimination of federal orders. The first scenario, NoMILC/CCC/DEIP/FMMO, assumes that fluid premiums will exist without orders and average, nationally, $0.50 per cwt. over the manufacturing price. These premiums are not the same across states but follow a pattern similar to current Class I differentials although the surface is much flatter. The second scenario, NoMILC/CCC/DEIP/FMMOi, assumes there would be no fluid premiums in the absence of federal orders.

Table 6. Summary of the Impact of Alternative Federal Milk Market Order Options on the U.S. Dairy Sector

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milk Cows (thou. head)** | | | | | | | | | | | | |
| NoMILC/CCC/DEIP | 9,003 | 8,896 | 8,831 | 8,784 | 8,744 | 8,713 | 8,688 | 8,668 | 8,652 | 8,639 | 8,851 | 8,672 |
| NoMILC/CCC/DEIP/FMMO | 8,969 | 8,828 | 8,768 | 8,724 | 8,686 | 8,655 | 8,631 | 8,611 | 8,594 | 8,581 | 8,795 | 8,614 |
| NoMILC/CCC/DEIP/FMMOi | 8,953 | 8,797 | 8,743 | 8,700 | 8,665 | 8,636 | 8,612 | 8,593 | 8,576 | 8,563 | 8,772 | 8,596 |
| **Milk Production (bil. lbs.)** | | | | | | | | | | | | |
| NoMILC/CCC/DEIP | 169.5 | 170.3 | 171.8 | 173.4 | 175.0 | 176.7 | 178.5 | 180.3 | 182.1 | 184.0 | 172.0 | 180.3 |
| NoMILC/CCC/DEIP/FMMO | 168.7 | 168.7 | 170.7 | 172.4 | 174.0 | 175.8 | 177.6 | 179.4 | 181.2 | 183.1 | 170.9 | 179.4 |
| NoMILC/CCC/DEIP/FMMOi | 168.3 | 168.1 | 170.4 | 172.0 | 173.7 | 175.5 | 177.4 | 179.2 | 181.1 | 182.9 | 170.5 | 179.2 |
| **All Milk Price ($/cwt.)** | | | | | | | | | | | | |
| NoMILC/CCC/DEIP | 12.04 | 12.15 | 12.55 | 12.64 | 12.64 | 12.70 | 12.73 | 12.80 | 12.90 | 12.98 | 12.40 | 12.82 |
| NoMILC/CCC/DEIP/FMMO | 11.57 | 11.63 | 12.53 | 12.62 | 12.60 | 12.65 | 12.69 | 12.76 | 12.87 | 12.95 | 12.19 | 12.79 |
| NoMILC/CCC/DEIP/FMMOi | 11.35 | 11.42 | 12.59 | 12.62 | 12.63 | 12.67 | 12.70 | 12.77 | 12.88 | 12.97 | 12.12 | 12.80 |
| **Fluid Milk Consumption (lbs.)** | | | | | | | | | | | | |
| NoMILC/CCC/DEIP | 208 | 208 | 207 | 206 | 205 | 204 | 204 | 203 | 203 | 203 | 207 | 203 |
| NoMILC/CCC/DEIP/FMMO | 211 | 212 | 209 | 209 | 208 | 207 | 206 | 206 | 205 | 205 | 210 | 206 |
| NoMILC/CCC/DEIP/FMMOi | 213 | 213 | 210 | 209 | 208 | 208 | 207 | 206 | 206 | 206 | 211 | 207 |

**NoMILC/CCC/DEIP** - Eliminate the MILC program, price support program and DEIP on 1/1/2003, **NoMILC/CCC/DEIP/FMMO** - In addition to the previous programs eliminated, eliminate FMMOs 1/1/2003, allow for fluid milk premiums, **NoMILC/CCC/DEIP/FMMOi** - Identical to NoFMMO except have zero fluid premiums

These scenarios are run assuming that California makes no changes to its state milk system. It is reasonable to question whether the California system could remain intact with federal order elimination, but that effort is left to other rounds of policy analysis. This assumption helps lead to the results shown in Tables 6 and 7.

Table 6 shows that the largest negative price effects on milk occur in the first few years of the analysis. Once supply adjustment occurs, milk prices return closer to levels found before federal order elimination. Fluid consumption rises 2.5 percent as federal orders are eliminated.

The result on the U.S. all milk price of these alternatives needs further discussion. The FAPRI model calculates the U.S. all milk price as a current production weighted average of the state-level all milk prices. The result of constructing the U.S. all milk price in this fashion is that if the production effect of policy changes on a low all milk price state like California is positive then the California all milk price will get a larger weight and that will have a negative effect on the U.S. all milk price. This result occurs in these scenarios.

Table 7 shows that the state-level results of these federal order elimination scenarios are not uniform across the country. It appears that states with less than 20 percent fluid utilization show higher all milk prices with the elimination of federal orders while those states with fluid utilization in excess of 35 percent clearly are better off with the federal order system in place. Again, it is important to note that no change was made to the California order system and that they are much better off under the elimination of federal orders because as dairy product prices increase all of their class prices adjust upward as well.

## Summary

The combined effect of eliminating all of the federal dairy policies examined in this paper results in less milk being produced in the United States. The short run disruption of eliminating features of dairy policy generally results in the largest decline in milk prices. Table 8 highlights that the longer run effect on milk prices or milk revenue in the case of a direct payment program is often less as milk supplies adjust to the changed policy. U.S. milk production declines by over 2 billion pounds in this analysis with the elimination of federal orders with no market generated fluid premiums, price support program, DEIP, and the MILC program.

This analysis highlights the reason regional battles have occurred as new dairy policy is debated. The impacts of eliminating the MILC program or the federal order system are not uniform across

Table 7. The Regional Impact on Milk Prices of Alternative Federal Milk Market Order Options

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ($/cwt.) | | | | | | |
| **NoMILC/CCC/DEIP (All Milk Price)** | | | | | | | | | | | | |
| California | 10.71 | 10.83 | 11.24 | 11.34 | 11.35 | 11.42 | 11.45 | 11.53 | 11.63 | 11.71 | 11.09 | 11.55 |
| Wisconsin | 12.27 | 12.41 | 12.81 | 12.92 | 12.94 | 13.01 | 13.06 | 13.15 | 13.26 | 13.36 | 12.67 | 13.17 |
| New York | 12.71 | 12.85 | 13.26 | 13.36 | 13.37 | 13.45 | 13.49 | 13.57 | 13.68 | 13.77 | 13.11 | 13.59 |
| Pennsylvania | 13.64 | 13.78 | 14.19 | 14.30 | 14.31 | 14.38 | 14.42 | 14.50 | 14.61 | 14.70 | 14.04 | 14.53 |
| Minnesota | 12.34 | 12.48 | 12.88 | 12.99 | 13.01 | 13.09 | 13.13 | 13.22 | 13.34 | 13.44 | 12.74 | 13.24 |
| Idaho | 11.30 | 11.44 | 11.85 | 11.95 | 11.97 | 12.04 | 12.08 | 12.16 | 12.27 | 12.36 | 11.70 | 12.18 |
| New Mexico | 11.68 | 11.82 | 12.23 | 12.34 | 12.35 | 12.43 | 12.47 | 12.56 | 12.67 | 12.76 | 12.09 | 12.58 |
| Michigan | 12.13 | 12.27 | 12.67 | 12.78 | 12.79 | 12.87 | 12.91 | 13.00 | 13.11 | 13.21 | 12.53 | 13.02 |
| Washington | 11.99 | 12.12 | 12.53 | 12.64 | 12.64 | 12.72 | 12.75 | 12.83 | 12.93 | 13.02 | 12.38 | 12.85 |
| Texas | 12.73 | 12.87 | 13.28 | 13.38 | 13.40 | 13.47 | 13.52 | 13.60 | 13.71 | 13.81 | 13.13 | 13.62 |
| Other States | 12.46 | 12.59 | 13.00 | 13.11 | 13.12 | 13.20 | 13.24 | 13.32 | 13.43 | 13.53 | 12.86 | 13.34 |
| **NoMILC/CCC/DEIP/FMMO (D in All Milk Price Relative to NoMILC/CCC/DEIP)** | | | | | | | | | | | | |
| California | 0.23 | 0.19 | 0.66 | 0.66 | 0.65 | 0.64 | 0.65 | 0.66 | 0.68 | 0.69 | 0.48 | 0.67 |
| Wisconsin | -0.32 | -0.40 | 0.12 | 0.11 | 0.08 | 0.07 | 0.07 | 0.06 | 0.05 | 0.04 | -0.08 | 0.05 |
| New York | -1.03 | -1.10 | -0.60 | -0.60 | -0.62 | -0.63 | -0.63 | -0.63 | -0.63 | -0.63 | -0.79 | -0.63 |
| Pennsylvania | -1.01 | -1.07 | -0.57 | -0.58 | -0.59 | -0.61 | -0.61 | -0.61 | -0.61 | -0.61 | -0.76 | -0.61 |
| Minnesota | -0.27 | -0.35 | 0.16 | 0.15 | 0.13 | 0.11 | 0.11 | 0.10 | 0.09 | 0.08 | -0.03 | 0.10 |
| Idaho | -0.17 | -0.24 | 0.27 | 0.26 | 0.24 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.07 | 0.23 |
| New Mexico | -1.02 | -1.09 | -0.58 | -0.59 | -0.61 | -0.63 | -0.62 | -0.63 | -0.63 | -0.64 | -0.78 | -0.63 |
| Michigan | -0.60 | -0.68 | -0.17 | -0.17 | -0.20 | -0.21 | -0.21 | -0.22 | -0.22 | -0.23 | -0.36 | -0.22 |
| Washington | -0.16 | -0.22 | 0.27 | 0.27 | 0.26 | 0.24 | 0.25 | 0.26 | 0.26 | 0.27 | 0.08 | 0.26 |
| Texas | -1.03 | -1.10 | -0.59 | -0.60 | -0.62 | -0.64 | -0.63 | -0.64 | -0.65 | -0.65 | -0.79 | -0.64 |
| Other States | -0.73 | -0.80 | -0.30 | -0.30 | -0.32 | -0.34 | -0.34 | -0.34 | -0.34 | -0.35 | -0.49 | -0.34 |
| **NoMILC/CCC/DEIP/FMMOi (D in All Milk Price Relative to NoMILC/CCC/DEIP)** | | | | | | | | | | | | |
| California | 0.26 | 0.23 | 0.97 | 0.91 | 0.92 | 0.90 | 0.90 | 0.91 | 0.92 | 0.93 | 0.66 | 0.91 |
| Wisconsin | -0.45 | -0.51 | 0.27 | 0.20 | 0.20 | 0.17 | 0.16 | 0.15 | 0.14 | 0.13 | -0.06 | 0.15 |
| New York | -1.38 | -1.43 | -0.66 | -0.73 | -0.72 | -0.75 | -0.75 | -0.76 | -0.76 | -0.76 | -0.98 | -0.75 |
| Pennsylvania | -1.35 | -1.40 | -0.63 | -0.70 | -0.69 | -0.72 | -0.72 | -0.73 | -0.73 | -0.73 | -0.96 | -0.73 |
| Minnesota | -0.38 | -0.44 | 0.34 | 0.27 | 0.27 | 0.24 | 0.23 | 0.22 | 0.21 | 0.20 | 0.02 | 0.22 |
| Idaho | -0.28 | -0.33 | 0.44 | 0.37 | 0.38 | 0.35 | 0.35 | 0.34 | 0.34 | 0.33 | 0.12 | 0.34 |
| New Mexico | -1.41 | -1.46 | -0.69 | -0.76 | -0.75 | -0.78 | -0.79 | -0.80 | -0.81 | -0.81 | -1.01 | -0.80 |
| Michigan | -0.83 | -0.88 | -0.11 | -0.18 | -0.17 | -0.20 | -0.21 | -0.22 | -0.22 | -0.23 | -0.43 | -0.22 |
| Washington | -0.30 | -0.34 | 0.42 | 0.35 | 0.37 | 0.34 | 0.34 | 0.34 | 0.34 | 0.35 | 0.10 | 0.34 |
| Texas | -1.52 | -1.57 | -0.80 | -0.87 | -0.86 | -0.89 | -0.90 | -0.91 | -0.91 | -0.92 | -1.12 | -0.91 |
| Other States | -1.16 | -1.21 | -0.44 | -0.51 | -0.50 | -0.53 | -0.54 | -0.55 | -0.55 | -0.56 | -0.77 | -0.54 |

**NoMILC/CCC/DEIP** - Eliminate the MILC program, price support program and DEIP on 1/1/2003, **NoMILC/CCC/DEIP/FMMO** - In addition to the previous programs eliminated, eliminate FMMOs 1/1/2003, allow for fluid milk premiums, **NoMILC/CCC/DEIP/FMMOi** - Identical to NoFMMO except have zero fluid premiums

states. It appears from this analysis that the regional dairy battles that occur in the dairy policy debate are not over.

This analysis is meant to quantify the "corners" of dairy policy alternatives. It is an attempt to show how the industry would look under these different elimination scenarios. Each of these scenarios required assumptions to be made that can lead to particular results. A different set of assumptions could generate results that look quite different. The model used to judge these policy alternatives can be called into question when such large policy changes are made. The FAPRI model is always being examined to make changes to its structure to better deal with the kinds of questions that are being asked of it. These results are meant to help frame the dairy policy debate in quantitative terms.

Table 8. Summary of the Effects of Removing Federal Dairy Policy on the U.S. Dairy Sector

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 03-07 Ave. | 08-12 Ave. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Milk Production (bil. lbs.)** | 171.2 | 172.8 | 174.5 | 175.4 | 176.7 | 178.4 | 180.0 | 181.7 | 183.5 | 185.2 | 174.1 | 181.8 |
| MILC | (0.0) | (0.0) | (0.0) | 0.8 | 1.1 | 1.3 | 1.4 | 1.5 | 1.5 | 1.5 | 0.4 | 1.4 |
| MILC+ | 0.8 | 1.1 | 1.3 | 2.3 | 2.7 | 2.9 | 3.1 | 3.2 | 3.2 | 3.1 | 1.6 | 3.1 |
| NoMILC | (0.9) | (1.2) | (1.3) | (0.7) | (0.4) | (0.3) | (0.2) | (0.1) | (0.1) | (0.1) | (0.9) | (0.2) |
| NoMILC/CCC | (1.7) | (2.6) | (2.1) | (1.2) | (0.8) | (0.6) | (0.5) | (0.3) | (0.2) | (0.1) | (1.7) | (0.4) |
| NoMILC/CCC/DEIP | (1.7) | (2.6) | (2.7) | (2.0) | (1.8) | (1.7) | (1.5) | (1.4) | (1.3) | (1.2) | (2.1) | (1.4) |
| NoMILC/CCC/DEIP/FMMO | (2.5) | (4.1) | (3.8) | (3.0) | (2.7) | (2.6) | (2.4) | (2.3) | (2.2) | (2.1) | (3.2) | (2.3) |
| NoMILC/CCC/DEIP/FMMOi | (3.0) | (4.7) | (4.1) | (3.3) | (3.0) | (2.8) | (2.7) | (2.5) | (2.4) | (2.3) | (3.6) | (2.5) |
| **All Milk Price ($/cwt.)** | 12.19 | 12.24 | 12.27 | 12.52 | 12.58 | 12.71 | 12.73 | 12.81 | 12.91 | 13.00 | 12.36 | 12.83 |
| MILC | (0.00) | (0.00) | (0.00) | (0.24) | (0.36) | (0.43) | (0.47) | (0.50) | (0.50) | (0.50) | (0.12) | (0.48) |
| MILC+ | (0.23) | (0.35) | (0.42) | (0.72) | (0.88) | (0.97) | (1.03) | (1.06) | (1.06) | (1.05) | (0.52) | (1.04) |
| NoMILC | 0.25 | 0.37 | 0.44 | 0.23 | 0.15 | 0.10 | 0.07 | 0.04 | 0.03 | 0.02 | 0.29 | 0.05 |
| NoMILC/CCC | (0.16) | (0.09) | 0.56 | 0.34 | 0.22 | 0.13 | 0.09 | 0.08 | 0.07 | 0.06 | 0.18 | 0.09 |
| NoMILC/CCC/DEIP | (0.16) | (0.09) | 0.28 | 0.12 | 0.05 | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) | 0.04 | (0.01) |
| NoMILC/CCC/DEIP/FMMO | (0.62) | (0.61) | 0.26 | 0.10 | 0.02 | (0.06) | (0.04) | (0.05) | (0.05) | (0.05) | (0.17) | (0.05) |
| NoMILC/CCC/DEIP/FMMOi | (0.85) | (0.82) | 0.32 | 0.10 | 0.05 | (0.04) | (0.03) | (0.04) | (0.04) | (0.04) | (0.24) | (0.04) |
| **MILC Payment ($/cwt.) a/** | 1.22 | 1.18 | 1.16 | - | - | - | - | - | - | - | 0.71 | - |
| MILC | 0.00 | 0.00 | 0.00 | 1.15 | 1.17 | 1.13 | 1.13 | 1.10 | 1.05 | 1.00 | 0.46 | 1.08 |
| MILC+ | 0.10 | 0.15 | 0.18 | 1.35 | 1.39 | 1.36 | 1.37 | 1.34 | 1.29 | 1.23 | 0.63 | 1.32 |
| NoMILC | (1.22) | (1.18) | (1.16) | - | - | - | - | - | - | - | (0.71) | - |
| NoMILC/CCC | (1.22) | (1.18) | (1.16) | - | - | - | - | - | - | - | (0.71) | - |
| NoMILC/CCC/DEIP | (1.22) | (1.18) | (1.16) | - | - | - | - | - | - | - | (0.71) | - |
| NoMILC/CCC/DEIP/FMMO | (1.22) | (1.18) | (1.16) | - | - | - | - | - | - | - | (0.71) | - |
| NoMILC/CCC/DEIP/FMMOi | (1.22) | (1.18) | (1.16) | - | - | - | - | - | - | - | (0.71) | - |
| **Net Milk Revenue ($/cwt.) b/** | 12.91 | 12.93 | 12.95 | 12.52 | 12.58 | 12.71 | 12.73 | 12.81 | 12.91 | 13.00 | 12.78 | 12.83 |
| MILC | (0.00) | (0.00) | (0.00) | 0.43 | 0.32 | 0.23 | 0.19 | 0.15 | 0.11 | 0.08 | 0.15 | 0.15 |
| MILC+ | 0.37 | 0.29 | 0.24 | 0.63 | 0.51 | 0.39 | 0.34 | 0.28 | 0.22 | 0.18 | 0.41 | 0.28 |
| NoMILC | (0.46) | (0.32) | (0.24) | 0.23 | 0.15 | 0.10 | 0.07 | 0.04 | 0.03 | 0.02 | (0.13) | 0.05 |
| NoMILC/CCC | (1.38) | (1.27) | (0.60) | 0.34 | 0.22 | 0.13 | 0.09 | 0.08 | 0.07 | 0.06 | (0.54) | 0.09 |
| NoMILC/CCC/DEIP | (1.38) | (1.27) | (0.89) | 0.12 | 0.05 | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) | (0.67) | (0.01) |
| NoMILC/CCC/DEIP/FMMO | (1.84) | (1.79) | (0.91) | 0.10 | 0.02 | (0.06) | (0.04) | (0.05) | (0.05) | (0.05) | (0.88) | (0.05) |
| NoMILC/CCC/DEIP/FMMOi | (2.06) | (2.00) | (0.85) | 0.10 | 0.05 | (0.04) | (0.03) | (0.04) | (0.04) | (0.04) | (0.95) | (0.04) |
| **Cheese Price ($/lb.)** | 1.25 | 1.25 | 1.26 | 1.28 | 1.29 | 1.30 | 1.30 | 1.31 | 1.33 | 1.34 | 1.27 | 1.32 |
| MILC | (0.00) | (0.00) | (0.00) | (0.02) | (0.03) | (0.03) | (0.04) | (0.04) | (0.04) | (0.04) | (0.01) | (0.04) |
| MILC+ | (0.02) | (0.03) | (0.03) | (0.06) | (0.07) | (0.08) | (0.08) | (0.09) | (0.09) | (0.09) | (0.04) | (0.08) |
| NoMILC | 0.02 | 0.03 | 0.04 | 0.02 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| NoMILC/CCC | (0.03) | (0.02) | 0.04 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 |
| NoMILC/CCC/DEIP | (0.03) | (0.02) | 0.01 | 0.00 | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.01) |
| NoMILC/CCC/DEIP/FMMO | (0.01) | (0.00) | 0.07 | 0.06 | 0.06 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.04 | 0.06 |
| NoMILC/CCC/DEIP/FMMOi | (0.01) | (0.00) | 0.10 | 0.09 | 0.08 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 | 0.05 | 0.08 |
| **Butter Price ($/lb.)** | 1.19 | 1.25 | 1.26 | 1.33 | 1.35 | 1.38 | 1.39 | 1.40 | 1.42 | 1.43 | 1.28 | 1.40 |
| MILC | (0.00) | (0.00) | (0.00) | (0.07) | (0.11) | (0.13) | (0.14) | (0.15) | (0.15) | (0.15) | (0.04) | (0.14) |
| MILC+ | (0.07) | (0.10) | (0.12) | (0.21) | (0.25) | (0.28) | (0.29) | (0.30) | (0.31) | (0.30) | (0.15) | (0.30) |
| NoMILC | 0.08 | 0.11 | 0.13 | 0.07 | 0.05 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.09 | 0.02 |
| NoMILC/CCC | 0.32 | 0.28 | 0.24 | 0.17 | 0.12 | 0.11 | 0.09 | 0.06 | 0.03 | 0.00 | 0.22 | 0.06 |
| NoMILC/CCC/DEIP | 0.32 | 0.28 | 0.27 | 0.20 | 0.16 | 0.15 | 0.14 | 0.11 | 0.09 | 0.06 | 0.24 | 0.11 |
| NoMILC/CCC/DEIP/FMMO | 0.37 | 0.27 | 0.26 | 0.20 | 0.16 | 0.14 | 0.14 | 0.11 | 0.08 | 0.06 | 0.25 | 0.10 |
| NoMILC/CCC/DEIP/FMMOi | 0.38 | 0.32 | 0.30 | 0.21 | 0.20 | 0.17 | 0.17 | 0.14 | 0.12 | 0.09 | 0.28 | 0.14 |
| **Nonfat Dry Milk Price ($/lb.)** | 0.84 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.81 | 0.82 | 0.81 |
| MILC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MILC+ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| NoMILC | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| NoMILC/CCC | (0.17) | (0.14) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.00) | 0.01 | (0.08) | (0.01) |
| NoMILC/CCC/DEIP | (0.17) | (0.14) | (0.09) | (0.08) | (0.07) | (0.07) | (0.06) | (0.05) | (0.04) | (0.03) | (0.11) | (0.05) |
| NoMILC/CCC/DEIP/FMMO | (0.16) | (0.11) | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 | 0.05 | 0.06 | (0.05) | 0.04 |
| NoMILC/CCC/DEIP/FMMOi | (0.16) | (0.13) | 0.03 | 0.03 | 0.04 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | (0.04) | 0.05 |

**Baseline** - FAPRI March 2003 Baseline, **MILC** - Extend current MILC program through 2012, **MILC+** - Extend MILC program through 2012 and pay on all milk marketed, **No MILC** - Eliminate the current MILC program 1/1/2003, **NoMILC/CCC** - Eliminate the price support program 1/1/2003 in addtion to MILC elimination, **NoMILC/CCC/DEIP** - Eliminate the price support program and the DEIP 1/1/2003 in addtion to MILC elimination, **NoMILC/CCC/DEIP/FMMO** - In addition to the previous programs eliminated, eliminate FMMOs 1/1/2003, allow for fluid milk premiums, **NoMILC/CCC/DEIP/FMMOi** - Identical to NoMILC/CCC/DEIP/FMMO except have zero fluid premiums

a/ - Payment rate on eligible milk

b/ - Net revenue on all milk produced

Summary of Regional Farm-Level Impacts of Complete Deregulation

One proposal has been to eliminate all federal dairy policy tools, including the FMMOs, DPSP, DEIP, and MILC. This section discusses the impact of such an action on the farm level – that is the dairy producer segment of the industry.

The impacts of eliminating all federal dairy policy tools were analyzed on representative dairy farms located across the United States. These impacts were developed in conjunction with the sector or industry level results developed by Brown (2003). Projected milk prices provided by Brown are imposed on representative dairy farms maintained by the Agricultural and Food Policy Center (AFPC) at Texas A&M University.

The impacts of eliminating all federal dairy policy tools are compared to the current (Baseline) situation on representative dairy farms over the 2001-2007 planning horizon. Table 9 includes information regarding the size and selected characteristics of each of the 23 dairy farms. The Baseline used in this analysis is the January 2003 FAPRI Baseline which includes the dairy price support program through 2007 and the MILC program through 2005. Appendix table 1 contains the projected state level prices for the Baseline and No Dairy Policy alternative. Under the Baseline, nine farms are characterized as in good condition, 2 in marginal, and twelve in poor (Table 10).

Eliminate All Federal Dairy Policy Tools

Table 11 contains the results of eliminating all federal dairy policy tools (MILC program, price support and DEIP programs, and federal milk marketing orders) on the representative farms. The California order is still assumed to operate even though that assumption may not prove valid. This option assumes there would be no fluid premiums in the absence of federal orders.

Table 9. Selected Characteristics of Representative Dairy Farms, 2001.

| Dairy | Cropland | Assets/Cow | Gross Receipts/ Cow | Milk Production/ Cow |
|---|---|---|---|---|
| | (Acres) | ($) | ($) | (lbs) |
| CAD1710 | 800 | 5,511 | 2,829 | 23,500 |
| NMD2000 | 400 | 2,922 | 2,879 | 21,400 |
| WAD185 | 120 | 5,303 | 3,648 | 24,600 |
| WAD900 | 605 | 4,886 | 3,347 | 25,200 |
| IDD750 | 240 | 4,645 | 3,081 | 24,000 |
| IDD2100 | 560 | 4,504 | 2,933 | 23,500 |
| TXND2400 | 260 | 3,605 | 2,651 | 20,100 |
| TXCD500 | 250 | 3,882 | 2,552 | 17,500 |
| TXCD1300 | 460 | 4,052 | 3,152 | 21,400 |
| TXED330 | 600 | 5,161 | 2,230 | 15,000 |
| TXED750 | 750 | 4,680 | 2,793 | 18,700 |
| MOD85 | 260 | 10,341 | 2,293 | 18,100 |
| MOD400 | 730 | 4,730 | 2,201 | 20,000 |
| FLND500 | 600 | 5,174 | 3,583 | 18,000 |
| FLSD1500 | 400 | 4,183 | 2,770 | 16,000 |
| WID135 | 600 | 14,741 | 3,423 | 23,500 |
| WID700 | 1,200 | 5,503 | 3,077 | 22,600 |
| NYWD800 | 1,440 | 5,506 | 3,216 | 22,900 |
| NYWD1200 | 2,160 | 5,805 | 3,176 | 22,500 |
| NYCD110 | 296 | 7,036 | 3,771 | 23,700 |
| NYCD500 | 1,100 | 5,976 | 3,340 | 23,200 |
| VTD134 | 220 | 6,343 | 3,307 | 22,000 |
| VTD350 | 700 | 7,814 | 3,372 | 23,800 |

Table 10. Baseline Overall Ranking of Financial Condition by Representative Dairy Farm.[1]

| Good | Marginal | Poor |
|---|---|---|
| CAD1710 | NMD2000 | WAD900 |
| WAD185 | WID700 | IDD750 |
| IDD2100 | | TXND2400 |
| TXCD1300 | | TXCD500 |
| TXED750 | | TXED330 |
| FLND500 | | MOD85 |
| NYCD110 | | MOD400 |
| NYCD500 | | FLSD1500 |
| VTD134 | | WID135 |
| | | NYWD800 |
| | | VTD350 |

[1] AFPC has adopted a ranking convention that allows the farms to be categorized as good, marginal, and poor based on their liquidity and solvency position. A farm is assumed to be in good financial condition when it has less than a 25 percent chance of each of a cash flow deficit and a 25 percent chance of losing real net worth. If the probabilities of these events are between 25 and 50 percent the farm is classified as marginal. A probability of greater than 50 percent places the farm in a poor financial position.

Table 11. Baseline Overall Ranking and Annual Payment a Dairy Farm Could Make and Still be As Well off as Under the Baseline for the Dairy Policy Elimination Alternative.

| | Baseline Overall Rank | No MILC/ CCC/DEIP/ FMMO ($) |
|---|---|---|
| CAD1710 | Good | 288,890 |
| NMD2000 | Marginal | -488,050 |
| WAD185 | Good | -9,420 |
| WAD900 | Poor | 29,190 |
| IDD750 | Poor | 21,550 |
| IDD2100 | Good | 84,460 |
| TXND2400 | Poor | -610,050 |
| TXCD500 | Poor | -134,470 |
| TXCD1300 | Good | -346,330 |
| TXED330 | Poor | -88,160 |
| TXED750 | Good | -184,090 |
| MOD85 | Poor | -38,350 |
| MOD400 | Poor | -134,270 |
| FLND500 | Good | -330,240 |
| FLSD1500 | Poor | -952,140 |
| WID135 | Poor | -13,180 |
| WID700 | Marginal | -18,260 |
| NYWD800 | Poor | -226,020 |
| NYWD1200 | Poor | -305,270 |
| NYCD110 | Good | -43,450 |
| NYCD500 | Good | -137,490 |
| VTD134 | Good | -48,600 |
| VTD350 | Poor | -119,460 |

Note: Positive numbers mean the dairy could payout this amount each year and still be as well off as under the Baseline while negative numbers mean the dairy would need to receive the amount each year to be as well off as under the Baseline.

Negative numbers in Table 11 indicate the dairy would need to receive extra income of the amount indicated each year to be as well off as under the Baseline. Positive numbers mean the dairy could make an annual payment equal to that amount and still be as well off as under the Baseline.

Only the California, Large Washington, and both Idaho dairies are projected to be better off without the dairy policies in place relative to the Baseline. These dairies are all located in the West and are all at least to some degree impacted by the California order. For the remaining 18 dairies that would be worse off, the states that have historically had higher Class I differentials (New York, Florida, and Texas) would be impacted most. The moderate Washington and moderate and large Wisconsin dairies are projected to realize the smallest negative effects (less than $20,000 per year).

Comparison of Milk Prices for Alternative Policy Scenarios.

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|
| California ($/cwt) | | | | | | | |
| Baseline | 13.94 | 10.93 | 10.89 | 10.94 | 10.98 | 11.23 | 11.30 |
| No Dairy Policy | 13.94 | 10.93 | 10.97 | 11.06 | 12.21 | 12.25 | 12.27 |
| Florida ($/cwt) | | | | | | | |
| Baseline | 17.80 | 15.25 | 15.13 | 15.21 | 15.25 | 15.52 | 15.60 |
| No Dairy Policy | 17.80 | 15.25 | 11.39 | 11.47 | 12.65 | 12.69 | 12.71 |
| Idaho ($/cwt) | | | | | | | |
| Baseline | 13.50 | 11.26 | 11.44 | 11.51 | 11.55 | 11.82 | 11.90 |
| No Dairy Policy | 13.50 | 11.26 | 11.02 | 11.11 | 12.28 | 12.32 | 12.34 |
| Missouri ($/cwt) | | | | | | | |
| Baseline | 14.90 | 12.22 | 12.25 | 12.32 | 12.36 | 12.63 | 12.70 |
| No Dairy Policy | 14.90 | 12.22 | 10.52 | 10.61 | 11.79 | 11.83 | 11.85 |
| New Mexico ($/cwt) | | | | | | | |
| Baseline | 14.80 | 11.75 | 11.83 | 11.90 | 11.95 | 12.21 | 12.29 |
| No Dairy Policy | 14.80 | 11.75 | 10.28 | 10.36 | 11.54 | 11.58 | 11.60 |
| New York ($/cwt) | | | | | | | |
| Baseline | 15.80 | 12.83 | 12.85 | 12.92 | 12.96 | 13.23 | 13.31 |
| No Dairy Policy | 15.80 | 12.83 | 11.33 | 11.42 | 12.60 | 12.64 | 12.66 |
| Texas ($/cwt) | | | | | | | |
| Baseline | 15.80 | 12.82 | 12.88 | 12.95 | 12.99 | 13.26 | 13.34 |
| No Dairy Policy | 15.80 | 12.82 | 11.21 | 11.30 | 12.47 | 12.52 | 12.54 |
| Vermont ($/cwt) | | | | | | | |
| Baseline | 15.80 | 12.62 | 12.64 | 12.70 | 12.74 | 13.01 | 13.09 |
| No Dairy Policy | 15.80 | 12.62 | 11.07 | 11.16 | 12.33 | 12.37 | 12.39 |
| Washington ($/cwt) | | | | | | | |
| Baseline | 15.30 | 12.09 | 12.12 | 12.18 | 12.22 | 12.50 | 12.57 |
| No Dairy Policy | 15.30 | 12.09 | 11.69 | 11.77 | 12.95 | 12.99 | 13.01 |
| Wisconsin ($/cwt) | | | | | | | |
| Baseline | 14.80 | 12.14 | 12.42 | 12.50 | 12.54 | 12.80 | 12.88 |
| No Dairy Policy | 14.80 | 12.14 | 11.82 | 11.90 | 13.08 | 13.12 | 13.14 |

**Interstate Dairy Compacts**

If the federal government were to step back from current regulations of the dairy industry, it is possible that state governments would step into the breech. Not withstanding the successful examples of individual state pricing such as California, Interstate Dairy Compacts probably offer the only hope of widespread success in state-level regulation. Part of the reason that an individual state pricing system works today is that it is flanked by federally regulated regions. California also has the benefit of a large and somewhat geographically isolated location as well as a large milk production and consumer base. These are traits that are not duplicated by most other states. The discussion here will focus on state-level regulation through some variation of compacts.

Compacts are agreements between two or more states to regulate some area of commerce. The authorization to form a compact is found in the U.S. Constitution (Article I, Sec. 10). Interstate compacts can provide for regulation of commerce between states that otherwise could be challenged under the commerce clause of the Constitution if they tried to regulate goods and services without a compact. They have been used in cases of boundary disputes, the control and use of waterways and bridges, penal jurisdiction, utility regulation and to allocate surface water supplies among the Western States. Interstate compacts must be approved in identical form by each state that is party to the agreement, and then by Congress.

Compacts can coexist with programs such as Federal Milk Marketing Orders, or conceptually they could operate as a replacement for FMMOs. We will review the experience of the Northeast Interstate Dairy Compact (Northeast Compact) and consider an expansion of the compact structure to other regions. Finally, it is a small step to consider the replacement of federally regulated pricing by this state regulated structure.

When applied to the pricing of fluid milk, compacts involve a number of broad themes that transcend their shorter-run impacts on production, marketing and consumption of milk and dairy products. These include:

- The degree to which regional autonomy in dairy policy-making is desirable given highly integrated national dairy markets. That is, given the evolution of dairy markets and policy over the last century, to what extent should different geographic regions be allowed to set policies independent of federal dairy policy to achieve regional objectives?

- The appropriate pattern and level for fluid milk prices to ensure “orderly marketing” under a classified pricing system. A key question is whether minimum regulated fluid milk prices should be based on fixed differentials (i.e., that move with underlying product prices), or whether fixed minimum fluid milk prices might be preferable. A related question, of course, is whether the level of any fixed minimum regulated fluid milk price should be set rather low with a focus on reducing fluid milk price variation, or relatively high to provide price enhancement to dairy producers.

- Whether the framers of the US constitution really intended for interstate compacts to regulate minimum prices for specific commodities, and the extent to which the existence of a compact for milk pricing opens the door to other compacts for this purpose.

- How the costs of any policy to provide additional support dairy farmers should paid for. Should consumers pay directly, or should taxpayers fund programs administered by government agencies?

- A potential issue is the extent to which compacts are regarded by US trading partners as in conflict with World Trade Organization (WTO) rules, and what influence this may have on negotiations concerning agricultural trade in general.

The Northeast Compact was ratified by Congress as part of the 1996 Farm Bill (Federal Agricultural Improvement and Reform Act) and implemented in July 1997. Although its authorization expired on

September 30, 2001, the Northeast Compact has generated significant interest as several additional states have passed or introduced legislation to either join it or start new compacts.

**Objectives of Dairy Compacts**

As a point of departure, it is useful to compare the objectives of the Northeast Compact with the objectives of Federal Milk Marketing Orders (FMMOs), because the methods used by the two are similar. There is nothing inherent in the design of FMMOs or a compact that requires them to have different purposes. The basic purpose of FMMOs is to help correct the four problems that milk producers face:1) a very perishable product, 2) a relatively concentrated market of buyers, 3) quite different demand and market service cost characteristics between fresh fluid use and manufacturing uses, and 4) a seasonally varying milk supply almost opposite of seasonal demand needs. Federal milk marketing order regulation is an attempt to balance market power in an inherently imperfect market, and thereby provide for a more "orderly" or efficient market for milk and its products. This more orderly market is seen as benefiting both producers and consumers.

One way to view the basic objective of compacts is as a regulated replacement for producer or cooperative bargaining for over-order class I premiums. Federal order prices are *minimum* prices and over-order "premiums" paid to cooperatives or paid directly to producers can be seen as providing a market-based signal when more milk is needed or costs of servicing the market are higher than what the federal order minimum prices are providing to producers. Negotiated over-order premiums have not been recently studied but a previous study in the late 1980s found that over-order prices were highly related to factors such as price alignment and transportation from alternative sources (Babb 1989). Over-order premiums paid to cooperatives and producers can also tend to increase when milk supplies decline and/or market demand increases. However, price negotiation by cooperatives may be difficult even when market needs might suggest higher prices. Thus, compacts allow higher prices to be paid than what producers or their cooperatives may be able to otherwise negotiate. A significant difference from compact regulation, however, is that premiums are typically paid by processors for the purpose of garnering a specific supply or service commitment. The Northeast Compact did not provide specific supply or service commitments to class I processors. Additionally, the question of whether there is a sound market-based rationale for regulating the higher prices is not always clear or consistent. This is why federal order policy has tended to be a "minimum price" policy relying on some room for unregulated market forces, imperfect though they may be, to determine over-order premiums.

As noted earlier, an alternative view of compacts is that they allow for an autonomous regional modification of Class I differentials from those approved by federal orders, designed to achieve additional goals valued by the region. In the case of the Northeast Compact, increased and stabilized producer prices are the mechanism to achieve regional goals in addition to "orderly marketing." The main stated objectives for increasing farm prices above federal order minimums were "to assure the continued viability of dairy farming in the northeast" and "to assure consumers of an adequate, local supply of pure and wholesome milk." Related objectives include "encouraging the vitality of the northeast economy" and "preserving open spaces." The major departure from FMMO policy objectives is that the Northeast Compact focused on price enhancement with the objective of protecting *local* milk supplies, producers, and rural communities.

An additional concern raised in hearings convened by the Northeast Dairy Compact Commission was that the volatility of farm and wholesale prices may have resulted in higher retail prices over time than would otherwise have been the case. Under this argument, stabilization of farm and wholesale prices through minimum price regulation would result in lower retail prices, to the benefit of consumers. Thus, decreases in consumer prices (or, alternatively, in gross marketing margins) have also been a stated objective of minimum price regulation under the Northeast Compact.

Finally, it is perhaps obvious but still worth noting that compacts were initially regarded as a

mechanism to achieve the objective of increasing dairy farm incomes through higher milk prices. The emphasis on compacts began in the early 1990s after efforts at cooperative bargaining and individual state regulation had limited success in increasing farm prices. The objective of higher dairy farm incomes is related to the objectives of farm and regional economic viability, but also can be considered an end in itself. Given the methods used by dairy compacts, increasing dairy farm income is the objective most likely to be achieved among those discussed above.

FMMOs and compacts are both intended to be in the public interest (i.e., they are intended to have benefits for consumers as well as producers). The design of FMMOs assumes that efficient and fair prices for producers will lead to similarly fair prices for consumers. The designers of the Northeast Compact placed a higher importance on farm price enhancement per se whereas the designers of Federal Orders attach more importance to farm prices reflecting changing supply and demand conditions.

**Methods Used by Dairy Compacts**

Compacts have the authority to operate similarly to Federal Milk Marketing Orders (FMMOs) in that they can set minimum milk prices to be paid by processors of milk based on use (i.e. classified pricing) and pool the proceeds to determine minimum prices to be paid to producers. They are different in that, thus far, they have only priced class I (beverage) milk when the compact price exceeds the FMMO class I price while FMMO establish prices for all four primary use classifications for milk (class I, class II, class III, and class IV). Compacts may be given the authority to extend pricing to other classes should federal orders be eliminated.

In the case of the Northeast Compact, regulations were formulated by a commission of 3 to 5 representatives from each state within the compact. The representatives included at least one producer and one consumer representative as appointed by the governor of the state. The compact commission had hearings and votes on proposed changes in regulations and administrative issues. Voting was based on a one-state, one-vote rule. Pricing decisions were made by a two-thirds vote. Changes were then subject to a producer referendum. Funding for the administration of the Northeast Compact came from assessments on Class I milk sales.

The Northeast Compact set the minimum compact class I price. The difference between the compact class I price and the federal order class I price was called the compact class I "over-order obligation" to be paid by processors of beverage milk sold within the compact area. The Northeast Compact class I price was set at $16.94/cwt at Boston, Massachusetts, and did not changed during the period of minimum price regulation. Figure 2 shows federal order class I price and the compact over-order obligation. The Northeast Compact class I over-order obligation falls when the federal order class I price increases. The compact ceases to collect money entirely when the FMMO class I prices equals or exceeds the minimum compact class I price. The compact price in this case sets a floor but not a ceiling and therefore does not completely stabilize prices. The average compact over-order obligation for Class I milk was $1.27/cwt ($0.109/gallon) during July 1997 through August 2001, including 14 out of 50 months during this period when the over-order obligation was zero.

In order to operate, compacts need the authority to regulate the prices paid by processors who ship milk into the compact area. This keeps processors with lower raw milk costs from undercutting a higher regulated price. The Northeast Compact accomplished this by a "partial pooling" regulation which meant that they collected the difference between the Compact class I price and the FMMO class I price on in-compact area sales from the plants located outside the compact area. The milk was "pooled" and the compact over-order producer price returned to the outside processor for distribution to their producers. Because it is likely that this processor has a lower percentage of sales into the compact area, the compact producer premium pro-rated over the processor's milk supply usually generated a premium much lower than the compact over-order producer price paid to other producers shipping to fully regulated compact plants. For class I processors located in

the Northeast Compact area, their sales outside of the compact area were exempt from payment of the compact over-order class I prices for these sales. This presumably allows them to have regulatory treatment on par with the non-compact milk they compete with. It also in effect recognized the inflexibility of state boundaries for setting regulatory areas as compared to federal order use of milk distribution routes (regardless of state boundaries) when determining regulatory marketing areas. However, unlike the pro-rated premiums received by the partially regulated plants and paid to their producers, the fully regulated plants received the full compact over-order producer price on these outside sales to pay their producers.

Dairy compacts have a number of potential impacts on dairy markets, both within the compact regulated area and outside it. Thus, it is useful to consider impacts both within the compact region ("intra-regional") and impacts on other regions ("inter-regional") impacts. These are summarized in the following sections. In most cases, although the direction of an impact is clear, the size and importance of the impact is a question that can only be answered by data-based (empirical) research. Thus, although the impacts below are likely outcomes of minimum price regulation under compacts, the economic and social importance of these impacts will depend on the specific geographic extent and specific provisions of compact legislation, as well as on other economic factors (such as supply and demand characteristics.)

**Intra-regional Impacts of Dairy Compacts**

Dairy compacts, like FMMOs, regulate the minimum price that first handlers (fluid milk processors) must pay for Class I milk (i.e., milk used for fluid products). When compacts set a minimum price higher than would exist under federal orders alone, the following impacts are likely within the compact area, relative to the situation with only FMMO regulation.

The regulated minimum average price to dairy producers in the compact area increases. This price is the weighted average price based on the minimum prices for all classes (uses) of milk under Federal Orders and compact regulation, where the weights are the amount of milk used in each class. Although the regulated *minimum* price increases, the change in the actual price received by farmers depends on how voluntary price 'premiums' (i.e., amounts paid over the FMMO minimum price) are affected by the compact. As noted earlier, voluntary 'over-order premiums' typically are paid based on regional milk market conditions and the amount and quality of milk sold by individual producers. The Northeast Compact can be viewed as having established a mandatory minimum over-order premium when the class I price set by the FMMO is below $16.94 /cwt. Anecdotal evidence suggests that establishment of mandatory over-order premiums under the Northeast Compact resulted in a decrease in voluntary premiums paid by handlers. To the extent this is true, the increase in the actual price received by farmers was less than the amount directly implied by the compact over-order premium; however, it seems safe to surmise that the Northeast Compact has resulted in a higher actual mailbox price to farmers than would have prevailed in the absence of the Compact.

Higher weighted average prices received by dairy producers result in increases in regional milk production. A study of the impacts of the Northeast Compact on milk supply in New England concluded that over-order premiums increased milk production about 1% during the Compact's first year (Nicholson et al., 2001). This amounted to about three-quarters of the increase in regional milk production during that year, although the impacts on milk production varied by state. As noted earlier, this impact can be addressed by policies to control increases in supply. Supply control programs can be controversial between producers, can add complexity to the policy environment, and their effectiveness depends on the specific provisions of the program.

Producer prices will tend to be more stable, because the compact specifies a minimum price for the portion of farm milk sales that go to fluid uses. This reduces (downside) price risk for dairy producers. However, prices can still rise above the regulated minimum, and non-class I prices are quite volatile and make up about half of the net farm price. Thus, farm prices will not be completely

stabilized by specifying a minimum class I price. The coefficient of variation for the regulated minimum average price from July 1997 to April 2001 was 9%. In contrast, the same statistic for the FMMO blend price was 12%. This shows that while volatility has been dampened somewhat, a significant portion of price variation remains.

Although all producers receive the same per unit increase in price, producers who sell larger quantities of milk receive larger increases in total revenues than producers who sell smaller quantities. Thus, larger producers gain a greater total monetary benefit from compact minimum price regulation than do smaller producers. This has the potential to accelerate structural changes leading to larger farm sizes, although this issue has not been examined in detail to date. As with other programs that provide benefits based on the volume of milk produced, benefits are not targeted towards farms with particular characteristics (such as small farms, those in greatest financial need, or those determined to have more scenic value).

If higher minimum prices are expected to persist, this tends to increase the prices of assets (land, cows, etc.) used in dairy production. This process is called *capitalizing* the value of the benefit received from the Compact. Capitalizing the benefits may: a) make it more difficult for new farmers to enter dairying, and b) encourage those who plan to exit the industry at some future time to do so earlier, while their assets can be sold at a higher value. Thus, capitalization may provide incentives for dairy producers to exit the industry, even while maintaining total production, contrary to the stated objectives of the Northeast Compact.

Increased prices paid to farmers by fluid milk processors are passed along to retailers. Contracts between fluid milk processors and retailers usually contain a clause permitting adjustments of the price charged to retailers by processors due to underlying changes in the minimum regulated price of milk. Retailers pass along some amount of this increase to consumers, so consumers pay more for milk, all else being equal. If wholesalers or retailers do not pass along the full amount of the increased costs of milk, the additional money paid to farmers under a compact comes from a combination of consumers, fluid milk processors and retailers. Two studies of the impacts of the Northeast Compact on retail prices have indicated that consumer prices rose during the first year as a result of minimum price regulation. Lass et al. (2001) found that average retail price increases to consumers in Boston and Hartford were about equal to the increase in costs of fluid milk to processors, about 6 to 7 cents /gal during the first 18 months of Northeast Compact price regulation. In contrast, Cotterill and Franklin (2001) argued that price increases by major supermarket chains were in excess of compact-related cost increases. Although these studies differ in their methods and estimates of price impacts, both indicate that the additional money received by farmers was paid primarily by New England consumers. Thus, these studies do not support the argument that consumers will benefit from lower prices under a compact.

Higher retail prices decrease the amount of fluid milk products sold. However, the percentage decrease in sales is less than the percentage increase in price, because the demand for fluid milk is inelastic. As a result, the total dollar value of retail fluid milk sales will increase. Because more milk is produced, but less is needed for fluid products, more milk is available for use in the manufacture of dairy products such as butter, cheese and milk powder. As a result of this increase in supply, prices for milk used in manufacturing fall. This tends to offset some of the increase in the weighted average price due to the increase in the minimum class I price. Nicholson et al. (2001) estimated a decrease in the blend price for the New England order of about $.05 /cwt during the first year of the Northeast Compact due to increased milk production and pooling on the order, relative to what would have occurred in the absence of the Northeast Compact. Lower manufacturing milk prices within and outside of the compact area may also result in lower retail prices for manufactured dairy products, from which consumers would benefit. The size of the reduction in prices depends on the geographic size of the compact area and the degree to which weighted average producer prices are increased and milk production stimulated.

Retail prices may be more stable (less variable)

under the compact, because class I prices cannot fall below the regulated minimum. Price stability can benefit consumers—a study on national fluid milk prices (Emerick, 1994) indicated that retail prices tended to be a somewhat higher (7%) when farm prices were highly variable compared to when they were more stable. There has been previous research that has shown price "asymmetry" between the farm and retail price levels where farm milk price increases are more fully and quickly reflected at the retail level than farm milk decreases. Compact proponents have argued that price stability will (or should) tend to reduce retail price levels by eliminating this "ratchet" effect. This issue is far from resolved and more analysis is needed. However, it is doubtful that the positive effects of class I price stability on retail prices (if there are any) would be significant enough to offset the higher average class I costs to processors under a compact pricing scenario. Thus, if price stability is achieved by establishing minimum prices above previous levels, the resulting increase in consumer prices will offset—partly or fully—the consumer benefit of more stable prices.

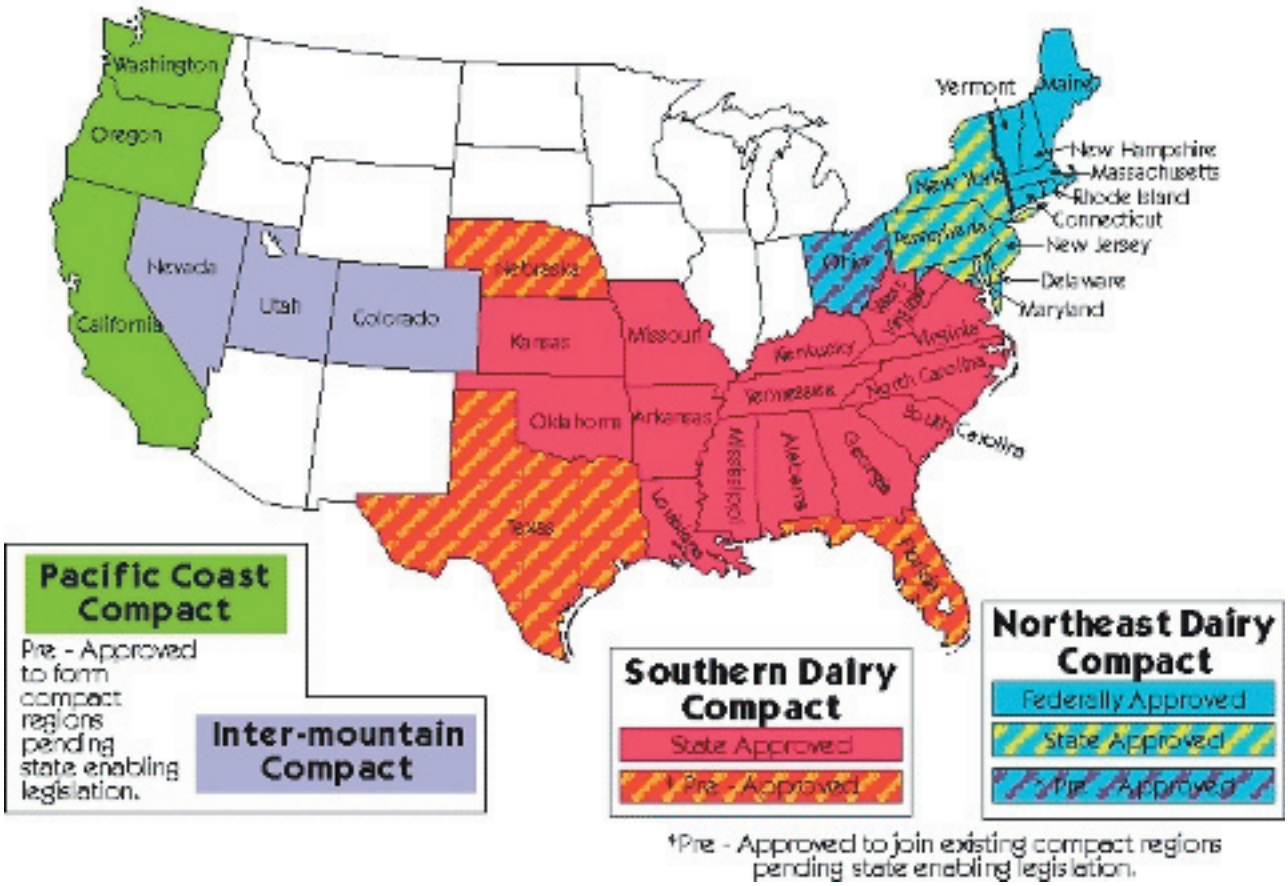
The issue of maintaining a local milk supply to minimize transportation costs and enhance the "freshness" and shelf-life of milk has been used by compact proponents as a justification to gain consumer support. Given modern methods of cooling milk at the farm, modern transportation methods, and increased use of sterile environmental packaging systems in plants, the economic feasibility of moving milk in bulk tankers or packaged form over hundreds and sometimes thousands of miles has never been greater. Packaged milk is now achieving a three-week shelf-life and UHT (ultra-high temperature) fluid products have a shelf-life of several months. If the local cost of production in a compact area is greater than that in the nearest source of available supply plus transportation, it will make economic sense for the consumers of the milk that it be produced in other lower cost regions. A recent study (Pratt et al., 1998) showed that regional differences between class I prices appear to be in most cases adequately (in some cases more than adequately) provided for by current class I location differentials already in place under Federal Orders. In terms of milk production in the Northeast Compact area itself, while some states in the compact, such as Massachusetts and Connecticut, have declined, Vermont production has grown. Overall, the New England region shows a relatively stable milk supply situation over the last 20 years.

Processor impacts will likely vary by product and procurement characteristics. Fluid processors have typically been concerned about reductions in sales if raw milk prices increase. There may be advantages to some processors in achieving more uniform raw product costs if compact over-order pricing replaces market premiums. The compact price may attract additional milk supplies from outside the region, making milk more available. However, with the Northeast Compact there are no specific shipping requirements so cooperatives or manufacturing handlers within the compact area do not have any added incentives to supply milk to class I processors. The beneficiaries of compact price regulation are more clearly the manufacturers (e.g. cheese, butter, nonfat dry milk) in the state order or compact area. To the extent that higher pooled producer returns are provided to their milk producers (not just to the producers shipping to class I processors), the increased stimulation of local milk production would likely lower their milk premiums being paid, and generally make milk more available.

**Inter-regional Impacts of Dairy Compacts**

Historically, the FMMO system has paid a fair amount of attention to the regional alignment of class I milk prices among milk marketing areas to minimize uneconomic movements of milk. Inter-regional effects occur with compacts for two reasons. First, the higher class I minimum prices under the compact provide incentives to ship additional milk into the compact area in order to receive a higher price. Second, the increase in regional milk supply can lower prices for products that have national (rather than regional) markets, such as cheese, butter, and powder. Relative to the class I price that would exist, a higher class I minimum required by a compact would result in the following impacts.

There will be incentives to increase shipments of milk into the compact area. As noted above with




†Pre - Approved to join existing compact regions pending state enabling legislation.

the increase in regional milk supply, increased shipments will offset somewhat the increase in the weighted average price that results from increasing the class I price. Nicholson and Wackernagel (2000) found evidence that the number of producers pooled in the New England order, the amount of milk pooled from New York, and diversions or transfers of milk pooled on the order all increased during the first year of minimum price regulation under the Northeast compact. Increased shipments into a compact area can in part be addressed by tightening restrictions on the amount of milk that can receive the minimum price. However, this does involve additional regulatory complexity.

An increase in milk produced in the compact region will tend to reduce the price of milk used for manufacturing not just in the compact region, but over a much larger area—even nationally. Thus, regions outside the compact area see a decrease in the weighted average price. However, the magnitude of these potential impacts is an important empirical question not yet fully addressed by existing research. The available studies support the notion of price decreases for producers in non-compact regions. A GAO report (2001) estimated that the expansion of the Northeast Compact to include five additional states would result in a farm price decrease in non-compact areas of about $0.03 for a 1999 base year. With the establishment of a southern compact in addition, estimated farm price decreases outside compact areas were larger, about $0.18/cwt. Bailey (2000) estimated that farm price in regions outside the three compact areas defined for his study would see price declines of between $0.04 and $0.14/cwt depending on the level of the compact minimum price and the degree to which voluntary over-order premiums were replaced by the compact premium.

The potential impact on manufacturing milk supplies is why concern has been expressed that the use of compacts for price enhancement may also be seen as trade-distorting under WTO rules. Recent analyses (FAPRI, 2001) have suggested that the impact of an expanded Northeast Compact and the addition of a Southeast Compact would result in an increase in “Amber Box” support calculations of about $475 million in a year like 2000. However, this calculation does not take into account decreases in milk prices and milk production in

non-compact regions of the country. Curiously, the US will incur this increase in measured support even though GAO (2001) indicates that the overall effect of compact expansion is to reduce total milk production and average US farm milk prices.

Once a compact exists, producers in other states with sufficiently high class I utilization have incentives to join, because: a) they will receive higher weighted average prices, and b) they avoid the lower prices that result from remaining outside the compact area. In general, the larger the compact area becomes, the smaller the benefit from a) and the greater the impact of lower weighted average prices outside the compact area. Near the geographic border of a compact area, processors and cooperatives in non-compact bordering states can face problems in losing producers who want to market milk through handlers with access to the compact pool, or face paying premiums to keep them. Such premiums will probably not be equal for all the competing handlers (or producers) in the bordering milkshed.

**Alternative Compact-Related Policy Options**

Compacts could be permanently re-authorized, and their geographic coverage greatly expanded from the New England states. There are a number of possible geographic combinations, and the language of bills introduced in Congress proposed authorization of four regional compacts (see chart), which together total more than 60 percent of the total US milk supply. The impacts of compact expansion will depend on whether the structure of the compact agreements involves regional (i.e., compact-area specific) or national pooling of the compact premiums. If compact premiums are only paid to producers who ship milk into compact areas, both the intra- and inter-regional impacts described above apply, but would be much larger than under the status quo. With national pooling, all producers would share in the additional revenue generated by increases in minimum Class I prices in the compact-regulated areas. Sharing the compact premiums among all producers would reduce the increase in milk production in the compact areas compared to regional pooling. However, the net impact on price for producers not in compact areas would depend on how much manufacturing milk prices decrease in response to increased milk supplies compared to premium received from national pooling of the compact premium. Geographic expansion of compacts also provides the greatest incentive for US trading partners to examine whether US dairy policy is consistent with existing agreements under the WTO.

The interest in compacts to price milk has grown out of the limited effectiveness of efforts by individual states and dairy cooperatives to establish milk prices higher than those set by federal dairy programs. Compacts require more “upfront” time to pass enabling legislation in each state and in Congress, but once in place, appear to operate on a faster administrative timetable than federal orders in making changes to regulations. Ultimately, however, the compact borders are subject to the individual state legislative (and congressional) approval and state lines rarely mesh well with the reality of fluid product distribution and milk procurement areas, when setting the geographic boundaries of regulation.

If producer groups and policymakers see compacts as replacements for federal orders, it must be kept in mind that compacts probably cannot coordinate prices between and or even within compact areas as effectively as current federal orders. In a broader sense, moving from a national system of prices to a patchwork of state and regional pricing programs will likely lead to greater regulatory instability, and consequently, market instability. Compacts are much more likely to be susceptible to the parochial interests of the participating states, with far less of the countervailing influence of distant states, whereas truly federal regulation must find balances towards an agreeable national interest. Thus, it is far harder to imagine a federal scenario that would favor, exclusively, one small region, as did the Northeast Compact. Not only will development of a national dairy policy be made more difficult, but if industry support and political focus shift from federal orders to compacts, it is possible that neither will survive in the long run.

Regulatory developments in the dairy industry remind policy experts of a concept referred to as regulatory cycles. Back in the 1930s, state milk

control began as a reaction to disorderly marketing conditions and unequal pricing conditions between processors and producers. However, over time, fewer states had the ability to control prices as industry evolved, and federal orders replaced most state orders by the 1960s. The current interest in dairy compacts appears to be a swing in the cycle towards state regulation, in reaction to producer dissatisfaction with current federal dairy policy. Considering that state regulation has largely been replaced due to the dairy industry becoming, more regional, national and even now international in scope, it may be wise to reflect on past lessons learned.

## Dairy Cooperatives as a Replacement for Federal Programs

Dairy cooperatives in the United States have a long history. The first dairy cooperative was a creamery organized in 1810 in Goshen, Connecticut. So for more than 190 years dairy cooperatives have had a role in the marketing of farm level milk. Dairy cooperatives' primary objective is to enhance returns to their dairy farmer members. Until enabling legislation provided for federal milk marketing orders in the 1930's, many dairy cooperatives struggled with attempts to enhance milk prices to their members. But today the structure and involvement of dairy cooperatives in the dairy industry is much different. The question is, can today's dairy cooperatives replace the role and benefits of federal milk marketing orders and the federal dairy price support program?

Dairy cooperatives prior to federal orders

Dairy cooperatives have been involved in a number of activities from the procurement of raw milk to the marketing of consumer products. In the early 1880's dairy cooperatives were making butter and cheese. By the early 1900's, many were engaged in bargaining activities. Initially they attempted to bargain with milk handlers for a *flat price* for all milk, regardless of use. However, the pressure of reserve supplies, normal to the fluid milk industry in the spring, led to a breakdown of the flat price plan. Some handlers refused to take this excess milk from producers at the flat price because it had a lower value when converted to manufactured products.

In an effort to promote stability in the markets, cooperatives next developed a *classified price system*. By 1920, this system was in effect in a number of markets. A higher price was negotiated for milk used for fluid (beverage) milk than for milk used to make manufactured dairy products. Dairy cooperatives would pool receipts from these two use classes and their dairy producers would receive a weighted average price. But the cooperative-sponsored price plans were not entirely successful. Success depended upon participation by all groups in the market. But, there were advantages to some milk handlers in remaining outside of the voluntary pricing arrangements. Handlers with a large proportion of fluid milk sales were in a position to offer dairy farmers a price above the weighted average price that cooperatives could pay to their members. These handlers benefited because their price for milk in fluid uses, while higher than the weighted average price, it was lower than the fluid milk prices paid under the cooperative's classified price plan. When the economic depression of the 1930s struck, these voluntary pricing plans collapsed under price competition from non-cooperators.

Dairy cooperatives as well as milk processors sought federal legislation to assist with more orderly marketing. The Agricultural Marketing Agreement Act of 1937 provided a framework for long-run price and marketing stability. The Act provided the opportunity to establish federal milk marketing orders. Federal orders were beneficial to dairy cooperatives in bargaining with handlers for higher milk prices. The federal orders established minimum pay prices for milk under a classified pricing system. Cooperatives then were in a position to negotiate from these minimums over order premiums for their members. But, for the same reasons, as with the voluntary classified pricing plan, the ability of dairy cooperatives to negotiate over order premiums was still limited. The incentive for some handlers to stay outside the negotiated over order premium, but to pay a select group of producers a premium directly still existed. But, the enforced classified pricing system provided dairy producers greater price enhancement than the ability of cooperatives to negotiate over order premiums.

Changing Scope of Dairy Cooperative Activity

The number of dairy cooperatives has been declining ever since 1940, but their market share of farm milk marketings continues to increase (Table 12). The decline in the number of dairy cooperatives accelerated during the 1960s. By 1960, dairy cooperatives recognized the need for centralized management of milk supplies and disposition of surplus milk. As markets grew larger and the number of buyers smaller, cooperatives increasingly found themselves in potentially toe-to-toe competition with other cooperatives and

increasingly vulnerable to undercutting prices, service charges, delivery requirements and other matters. While maintaining their separate identities, cooperatives began to form federations in an attempt to obtain higher prices for their members and to realize cost savings from improved organized movement of milk. The federations served as a marketing agency in common with Capper Volstead anti-trust protection. But by the mid-sixties, federal milk marketing orders began to reflect the increased need for more stable price alignment among markets. The federated cooperative structure hampered bargaining efforts and equity among farmers. As a result, by 1970, many cooperatives of the major federated organizations had merged into four large regional centralized full-service cooperatives: Associated Milk Producers, Inc., Mid-America Dairymen, Inc., Associated Dairymen, Inc., and Milk Marketing, Inc.

Table 12: Number of dairy cooperatives and market share, 1940-2000

| Year | Number of Dairy Cooperatives | Farm-level Share of Farm Marketings (%) |
|---|---|---|
| 1940-41 | 2,374 | 48 |
| 1960-61 | 1,609 | 61 |
| 1980 | 435 | 77 |
| 2001 | 204 | 83 |

Source: USDA, RB-Cooperative Service

Mergers and consolidations of dairy cooperative slowed in the 1970s and 1980s, but once again intensified during the 1990s. From 1992 to 2000, 84 dairy cooperatives went out of existence[1]. Thirty-six of these were due to dissolution, another 36 by merger with another dairy cooperative, 8 were acquired by another dairy firm, and 4 simply phased out their dairy operation. The major share of the reduced number of cooperatives were either pure bargaining cooperatives or non-diversified manufacturing and processing cooperatives. The four large regional cooperatives no longer exist. Associated Milk Producers Inc. was split three ways with two regions, the Upper Midwest Region and the Southern Region becoming parts of other regional cooperatives and the North Central Region remaining as an independent cooperative.

In 1998, the Southern Region of Associated Milk Producers Inc., and three of the other four regionals, Mid-America Dairymen, Inc., Milk Marketing Inc., and Associated Dairymen, Inc., along with others consolidated into Dairy Farmers of America (DFA). In 2001, DFA was truly national in scope, handling about 21 percent of the nation's milk supply from 15,133 dairy farmer members across 45 states. In 1999, the Upper Midwest region was acquired by Wisconsin Dairies, which then changed its name to Foremost Farms USA. Foremost Farms USA handles about 3 percent of the nation's milk supply. Land O'Lakes, Inc. (LOL) also became national in scope through the merger of Atlantic Dairy Cooperative in the Northeast and Dairymen's Cooperative Creamery in California. LOL now has 4,812 farmer members and handles more than 7 percent of the nation's milk supply. By 2001, the top 50 of the 204 dairy cooperatives accounted for almost 90 percent of farm level milk handled by cooperatives and nearly 80 percent of the nation's milk marketed by farmers. The top 4 dairy cooperatives account for 46 percent of the milk handled by cooperatives and 40 percent of the nation's milk marketings.

In addition to mergers, dairy cooperatives are increasingly entering into various forms of strategic alliances. Some of these alliances are among dairy cooperatives and others with investor-owned firms. Recent examples of strategic alliances among dairy cooperatives include LOL and Alto Dairy Cooperative in a joint venture in marketing commodity cheese, and a joint venture between DFA and LOL to own and operate a Minnesota cheese plant. Strategic alliances with investor owned firms include Michigan Milk Producers Inc. joint venture with Leprino Foods to make and market mozzarella cheese. In 2000, LOL sold its fluid milk operation to Dean Foods but has an alliance with Dean Foods by retaining the ownership of LOL brand names and LOL being a preferred supplier of raw milk. In 2000, LOL formed a joint venture with Mitsui, a Japanese firm, to build a large cheese plant in California. DFA has made several non-

controlling equity investments in investor-owned dairy companies, both fluid bottling plants and value-added dairy manufacturing plants. These investments are made in exchange for a share of the profits and the right to be the preferred supplier of raw milk. These examples of strategic alliances are a means for dairy cooperatives to add value to members' milk via gaining access to value added dairy products and dairy product market channels. Most dairy cooperatives do not have the equity capital to enter such activities on their own. It is expected that dairy cooperatives will continue to pursue additional strategic alliances.

While dairy cooperatives handle about 83 percent of farm milk marketings, many do not process raw milk into dairy products, but rather market the milk in raw form to various fluid and manufacturing dairy companies. Some dairy cooperatives are preferred suppliers of raw milk under strategic alliances. A 1997 USDA[2] found that 61 percent of the cooperative total milk volume was sold as raw milk and the other 39 percent was manufactured in plants operated by cooperatives. Of the 213 dairy cooperatives that existed in 2000, 157 were still pure bargaining cooperatives. Only 56 operated manufacturing or processing milk plants.

Dairy cooperatives hold a major share of manufactured dairy product markets[3]. During the five-year period, 1992 to 1997, cooperative's share of butter decreased from 65 percent to 61 percent, dry milk products from 81 percent to 76 percent, natural cheeses from 43 percent to 40 percent, and packaged fluid milk product from 16 to 14 percent. Cooperative's share of cottage cheese stayed near 10 percent while its share of ice cream sales declined from 10 percent to 6 percent. In 1997, dairy cooperatives marketed 11 percent of the nation's ice cream mix, 4 percent of yogurt, 65 percent of bulk condensed milk, and 48 percent of dry whey products.

While dairy cooperatives have a significant share of manufactured dairy products, most are marketed as commodities in bulk form to food service firms. Dairy cooperatives also provide private label products for other firms. Yet, some have established nationally recognized brands, most notably is Land O'Lakes butter. Again, the new emphasis on strategic alliances with dairy companies is another means to capture some of the rewards from value-added dairy products rather than relying on the low-margin commodity business.

One possibility for dairy cooperatives to enhance producer returns is to organize marketing agencies-in-common. While marketing agencies-in-common existed since the early 1920's, we have seen increased activity within the past two years in organizing new marketing agencies-in-common. These agencies are negotiating over order premiums primarily on Class I milk, but also on Class II and, in some cases, on Class III milk. Recently new or expanded marketing agencies-in-common have been organized in the South, Southeast, North, Northeast and Northwest, and in the states such as California and Michigan. Some of these agencies, in addition to negotiating with handlers for over order premiums, make centralized decisions on managing supply, coordinating milk dispatching, pooling revenue from milk sales, and coordinating supplemental milk purchase decisions.

Recently, Dairy Farmers of America, along with Dairylea and others, have organized Dairy Marketing Services. Dairy Marketing Services handles the fluid milk marketings of these organizations in major markets. The objective is to be the preferred supplier of raw Grade A milk to fluid bottlers, such as Dean Foods

Dairy Cooperatives Without Federal Milk Marketing Orders

The classified pricing and pooling provisions of federal milk marketing orders enhance dairy producer income. While dairy cooperatives first introduced the concept of classified rather than flat pricing in the 1920's, they had limited success in maintaining the pricing system. So a major question is, are dairy cooperatives now structured to maintain a classified pricing system without federal milk marketing orders?

Without federal milk marketing orders its seems quite clear that a classified pricing system would not resemble the system that exists with orders.

And surely, if some type of classified system existed, the milk receipts would not be pooled, as now, among all dairy producers in a given market. Without federal milk marketing orders fluid milk bottlers would still pay more for Grade A milk than manufacturing plants in order to draw the necessary milk supplies for beverage use, but they would pay no more than what is necessary. There would be no fixed Class I differentials. Premiums paid by bottlers could be much lower for markets having relatively high Class I differentials, such as in the South, Southeast, Central and Northeast regions. But the premiums paid by bottlers in predominately manufactured use markets, such as the Upper Midwest and Northwest regions, may not be that much lower than existing Class I differentials. Even with current federal order provisions, manufacturing plants in these markets are reluctant to give-up milk to bottlers, especially during the summer months when milk production is at its seasonal low and butter and cheese needs to be made in order to meet the strong seasonal demands by their customers during Thanksgiving and Christmas. In addition, especially with cheese plants, fixed processing cost per unit increases substantially if plants are not operated close to capacity. In fact, some cheese plants choose not to pool milk under a federal milk marketing order because of pool plant requirements to deliver milk for Class I use during this tighter supply/demand period.

So, bottlers would need to pay a premium to procure necessary Grade A milk supplies but, on the average, these premiums would be less than existing Class I differentials. The premiums paid may vary seasonally, especially in major manufacturing milk use regions. These premiums paid would not be pooled, as now, among all producers selling milk to participating handlers in the market. On the average, producer pay prices would be lower without federal orders. But, some producers may actually receive higher pay prices, particularly in primarily manufacturing milk use regions. Bottlers would likely procure milk from larger producers and producers closer to their bottling plant. Major dairy manufacturing and processing plants would do the same. Smaller and more distant producers would be bypassed. Since any premiums paid would only be shared with a more select group of producers, these producers could actually receive higher pay prices than under existing marketwide pooling of receipts.

Producers in states with state milk pricing orders may also experience lower pay prices. For example, without the existence of federal milk marketing orders in neighboring states, California would likely need to adjust their class prices, especially their class 1 price, downward. However, the existing requirement that beverage milk products sold in the California market must meet higher than minimum federal standards for total solids composition may provide California with protection from lower priced beverage milk products bottled outside the market.

In summary, without federal milk marketing orders:

- Dairy cooperatives would be under pressure to pay producers competitive prices, especially meeting the pay prices of bottlers. Producer loyalty to cooperatives would not hold cooperative membership. Even today with federal milk marketing orders, larger producers are lured away from cooperatives with higher pay prices. Larger producers having a tanker load of milk may even have some market power to negotiate a higher pay price with a milk buyer, both fluid bottlers and dairy product manufacturers. As expected, the increase use of membrane technology on the farm will enable large producers to greatly expand their marketing opportunities and seek distant buyers of milk for manufacturing. Larger producers in the Southwest already are using ultra-filtration to market milk to cheese plants in the Upper Midwest.

- Dairy cooperatives would find themselves in a very vulnerable position as they attempt to serve the marketing needs of all their members, both small and large members. Further, dairy cooperatives provide market-wide services such as supply and demand balancing functions that benefit all producers. Unless, some how dairy cooperatives can cover the costs of serving all producers and provide market-wide services, they will struggle with competitive pay prices and holding membership.

- Nevertheless, since dairy cooperatives market more than 80 percent of producer milk and operate significant manufacturing plants, not all producers will have the opportunity to find a market for their milk with an investor-owned buyer. But, dairy cooperatives' market share will likely decline from the existing 80 percent.

As previously noted, dairy cooperatives are expanding the concept of marketing agencies-in-common. The question then is, can some of these cooperatives coordinate their marketing efforts to negotiate higher milk prices from both fluid bottlers and manufacturing milk plants? While cooperatives are fewer in number, larger in milk volume and serve larger marketing areas and have organized some marketing agencies-in-common that cover several states, dairy cooperatives still struggle with negotiating relatively high premiums. There is no evidence that the structural changes in dairy cooperatives and additional marketing agencies-in-common have enabled them to negotiate higher over-order premiums. The simple average over-order premium for 33 city markets, as reported by AMS, ranged from a low of $0.98 per hundredweight for 1998 to a high of $1.28 per hundredweight for 2000, and averaged $1.138 per hundredweight for the years 1997 through 2001. These over-order premiums varied substantially among the 33 cites. For 2001, the highest premiums were found in both relatively high Class I markets---$2.24 for Miami and $2.10 for Pittsburgh---and in relatively high manufacturing use markets---$1.78 for Chicago. The premiums in these relatively high Class I markets covered full supply arrangements and various services to bottlers. While Grade A milk supplies are plentiful for Class I needs in relatively high manufacturing use markets, some bottlers are willing to pay dairy cooperatives premiums simply because cheese plants operated by cooperatives and investor owned firms are reluctant to give up milk for fluid use and operate their cheese plants at less than capacity. The lowest premiums were in markets with ample or growing Grade A milk supplies for Class I needs and limited manufacturing plants---$0.15 for Phoenix, $0.26 for Salt Lake City, and $0.34 for Dallas.

Nevertheless, there may be some markets where dairy cooperatives are successful in negotiating higher milk prices. This will occur if the bottler values services provided by the cooperative such as full supply arrangements, balancing functions, assurance of high quality milk of preferred milk composition or the like. These bottlers will continue to experience seasonal milk production, seasonal bottled milk sales and disruptions in sales due to holidays and etc. and therefore, may value the services provided by dairy cooperatives. But, these bottlers, as some do now, may still wish to procure a portion of their Grade A milk needs directly from larger producers and purchase the remainder from the cooperative. By doing so, the bottler limits the ability of cooperatives to negotiate substantially higher pay prices. But it needs to be noted that many bottlers currently prefer to procure their Grade A milk supply from dairy cooperatives rather than dealing directly with dairy producers. Further, today's technology allows the movement of both raw milk and packaged fluid milk products relatively long distances, and as a result, negotiated cooperative premiums in any given market could easily be eroded.

Finally, a cooperative that has an open membership and provides balancing and other marketwide services is going to continue to face a major "Free Rider" problems and would have difficulty in obtaining sufficient premiums to pay their producers competitive pay prices. The possibility that larger producers would be lured away by competitors with higher pay prices will continue to exist.

It is possible that some large producers may organize a closed membership cooperative for the purpose of combining their negotiating power, transportation and other marketing costs. An example of this already exists with 39 dairy producers, who in the New Mexico area are members of Select Milk Producers. In 2001, Select Milk Producers was the 17th largest dairy cooperatives with 1.86 billion pounds of milk annually. This cooperative uses on-farm ultra-filtration technology for the purpose of seeking more distant buyers of milk for cheese making and other manufactured dairy products.

Dairy Cooperatives Without a Federal Price Support Program

The federal price support program supports milk prices to all dairy farmers nationally. While dairy cooperatives market about 83 percent of farm level milk, that leaves a substantial amount of milk outside of dairy cooperative control. Even with the 83 percent market share, about 60 percent is sold to milk buyers as raw milk and just 40 percent is processed within dairy cooperative milk plants. Further, with cooperatives making only about 60 percent of the butter, 40 percent of hard cheese, and 75 percent of nonfat dry milk, it would be difficult during period of low milk prices for the cooperatives to hold off the market and store enough volume of these products to hold up prices. Even if they did, the cost of doing so would be great making it very difficult for dairy cooperatives to pay their members a milk price competitive with prices paid by other milk buyers. Again, the *free rider* problem would be significant.

Even with the existing relatively low price support level, dairy cooperatives have not been able to provide much price stability nor prevent milk prices from falling below support. Without the support program, price volatility would be even greater. But the recent implemented CWT program (Cooperatives Working Together) by National Milk Producers Federation (NMPF) is an example of dairy cooperatives providing a voluntary milk supply control program to enhance farm milk prices. The objective of CWT is to remove from the market over a 12-month period 1.2 billion pounds of milk (less than 1% of the nation's milk marketings) with an estimated $0.36 per hundredweight increase in the average milk prices. This is to be accomplished via slaughtering entire herds of milk cows, paying dairy farmers to reduce their milk marketings from 10 to 50 percent, and providing a dairy product export assistance program. Bids expressed as so much per hundredweight of milk production were taken from dairy farmers to participate in either the herd slaughter program or the reduced milk marketings program. The cost of these programs is financed with a 5 cents per hundredweight check-off from all participating dairy farmers.

Can voluntary supply management programs such as NMPF's CWT program be successful in maintaining higher milk prices to dairy farmers? In the short run yes. Reducing milk marketings will enhance prices. But, as with any voluntary program, those dairy farmers not in the program not only receive the full benefit of improved prices at no cost to them (the Free Rider Problem), some may actually increase their milk marketings. So, over time it becomes more difficult for dairy cooperatives to entice their members to voluntarily reduce their milk marketings and bear the full cost of managing the nation's milk supply. The carrot needs to be great enough to encourage voluntary participation. History of voluntary federal milk supply programs shows that the carrot may need to be relatively large. For example, participation was light in some regions of the country under the Milk Diversion Program that operated for 15 months (January 1, 1984 – March 31, 1985) and paid dairy farmers who volunteered to reduce milk marketings from 5 to 30% $10 per hundredweight for the reduced marketings. The Dairy Termination Program that operated from April 1, 1986 to September 30, 1987 accepted bids from farmers to slaughter or export all female dairy animals and to remain out of dairying for at least five years. The target was to reduce milk marketings by 8.7 percent. This target was achieved but only after accepting bids as high as $22.50 per hundredweight and an average bid of $14.88 per hundredweight.

Constraints Faced by Dairy Cooperatives

Marketing and bargaining activities of agricultural cooperatives were constrained by early antitrust legislation. The cooperatives often found themselves in violation of the Sherman Act of 1890. Their attempts to bargain for higher prices for farmers were viewed as restraint of trade. But relief came with the passage of the Capper Volstead Act in 1922. Essentially the Act allows producers of agricultural commodities to organize for the purpose of bargaining, processing and marketing of commodities provided that 1) it is for the mutual benefit of producers, 2) no member has more than one vote and/or dividends on invested capital is limited to 8 percent annually, and 3) that at least 51 percent of the business volume be with members. While this is a powerful Act providing the opportunity for increase market power of

farmers who organize, it also constrains today's cooperatives in the following ways:

- The Capper Volstead Act grants cooperatives limited exemption from antitrust laws. Cooperatives still cannot use predatory business practices or use their power to unduly enhance prices.
- At one time members of a dairy cooperative were quite homogeneous in that they all milked about the same number cows. The principle of one member one vote was fine. But today, dairy cooperatives have members ranging from those with a few milk cows to those with 1,000 or more milk cows. These larger dairy farmers desire a greater share in the governance of the cooperative, one that is more in proportion to their patronage of the cooperative. In order to hold these larger dairy farmers as members, dairy cooperatives very likely need to change their voting policy. These larger members are not only current members, but will be the future members of the cooperative.
- Cooperatives, including dairy cooperatives, have primarily secured their equity capital from members. Most dairy cooperatives do not require any major up-front capital investment for new members to join the cooperative. The majority of equity capital provided by members of a dairy cooperative is acquired through retained net profits (allocated equity). Since members include both cash patronage refunds and allocated equity as taxable income, there is an obligation on the part of the dairy cooperative to return allocated equities in cash to members (or past members) within a reasonable number of years. So dairy cooperatives, unlike C-Corporations, have the burden of returning equity capital to past patronage and replacing it with equity capital from new patronage from members. With this method of financing, most dairy cooperatives struggle with the necessary equity capital to grow the business and to add value to members' milk via new technology, further processing, etc. Some have turned to non-member sources of equity capital such as selling preferred stock. But, the 8 percent annual limit on dividends on stock restricts a cooperative's ability to competitively attract outside investment. To get around this limitation, some cooperatives have organized Limited Liability Companies (LLC's). But such action may limit their antitrust protection.

## Crop Policy Impacts on the Dairy Industry and Potential Dairy Policy Alternatives

United States farm policy has largely focused on crop agriculture. Since the 1930s farm programs have included non-recourse loan programs with their attendant stocks, target price/deficiency payments, non-recourse marketing loans, payment-in-kind, export subsidies, acreage reduction programs, and since 2002, counter-cyclical payments and direct payments.

Dairy policy maintains three main components: the dairy price support program (DPSP), dairy export incentive program (DEIP), and the federal milk marketing order (FMMO) system. While the dairy sector has had its own set of programs it has not been unaffected by the crop commodity programs.

This paper discusses crop commodity programs and their effect on the dairy industry. It focuses on supply management experiences in crop agriculture and dairy, current crop programs, alternatives and consequences of applying crop programs to the dairy industry, and estimated impacts of FMMO elimination on the industry.

Supply Management Programs

Supply management programs had a long history in crop agriculture programs. Under the name of acreage reduction programs (ARP) producers had to "set aside" a percentage of their base acres in order to participate in target prices and deficiency payments and loan benefits. ARP rates were set each year by the Secretary of Agriculture after taking into consideration estimated stocks-to-use ratios. Acreage set aside rates ranged from 0 to over 30 percent. By reducing supply, ARPs increased prices and reduced government program outlays both for the target price/deficiency payments and non-recourse loan benefits.

The ARP was a voluntary program, in that producers did not have to participate in the program. The carrot portion was that if a producer participated by reducing production then they received the benefits of any deficiency payments and loan benefits. Mandatory programs have generally not existed as policy makers and producers have favored voluntary programs. Some have argued that programs like the ARP really were not voluntary because the benefits of program participation were too great to be ignored.

Mandatory supply controls have, arguably, only existed in the marketing quotas of tobacco and peanuts (the quota peanut program ended with the 2002 farm bill), and various fruit marketing orders.

Supply management in the form of the ARPs were ended in the 1996 farm bill. The general view was that supply controls reduced the competitiveness of the U.S. in world markets. The argument was that reducing production and raising prices reduced market share and exports. Many agribusinesses argued that reduced volumes resulted in lower profits. Larger producers argued that fluctuating set aside rates resulted in economic inefficiencies in equipment complements and fixed costs.
The arguments against the ARP prevailed in the 1996 farm bill debate and they were eliminated. While arguments in favor of supply controls continue to surface, so far, they have failed to generate much support.

Supply Management in Dairy

The basic goal of supply management in dairy has been to control market supply to achieve price goals and avoid government-held surpluses. While a number of voluntary supply management programs have been enacted, mandatory programs have not been adopted. Other countries, such as European Union members and Canada, have implemented mandatory supply controls in the form of quotas. These have never been seriously considered in the U.S. and will not be discussed further in this paper. The remainder of this section discusses various voluntary supply management programs in the dairy industry.

Successful voluntary supply management programs have to strike the proper balance between the carrot, or the incentive to participate, and the consequences of not participating. In fact, the economic incentive for participating has to be great enough that many will view that program as

mandatory because the economic incentive to participate is so great.

Voluntary supply management in dairy was first authorized in the 1982 Omnibus Reconciliation Act of 1982. Producers could receive a refund of a second $0.50 per cwt assessment if they reduced milk marketings by a specified amount below their base production level. This program was effective for the 1982 through 1985 fiscal years. A key issue in any supply management program that seeks to reduce or constrain milk production is the establishment of a base production level. Production cuts, then, are relative to some base level. Penalties to "over base" production can then be developed. Whether or not some production can increase over time is also an issue that has to be addressed in any management plan.

Another assessment refund was authorized in the 1990 Omnibus Budget Reconciliation Act. The Act provided assessments on all milk marketed during 1991. But producers could get a refund of the assessment if they did not increase their milk marketings over the year earlier.

Milk diversion programs have been used to pay producers to reduce or not increase milk marketings relative to a base level of marketings. The 1984-85 Milk Diversion Program offered direct payments to producers who agreed to reduce their marketings below an established base level.

Both the assessment refunds and the milk diversion programs were temporary. While many producers held back or reduced production, after the program ended, production increased rapidly. Any results proved to be short-lived. These programs have had different regional impacts depending on production costs, the relationship between fixed and variable costs, and caused some regional shortages of milk. To the extent that smaller producers participated, it is reasonable to assume that this hastened structural change in the industry.

The Dairy Termination Program, authorized in the 1985 farm bill, took cows and dairies out of production. Farmers were paid for voluntarily agreed to quit producing for 5 years. Farmers [1]submitted bids on what the government would have to pay to buy them out. Cattle bought out were to be sent to slaughter. Milk production rebounded, thus most of the benefits of the program accrued to those who were bought out. Beef cattle producers have fought buyout programs since this time because of the negative impacts of increased beef slaughter and production on cattle prices over the short term slaughter period.

The ongoing Cooperatives Working Together (CWT) program is the latest voluntary supply management program. However, this program is fundamentally different than previous supply management programs. This effort is privately financed by the industry through assessments per hundredweight collected by participating cooperatives. Two portions of the plan have been enacted: a production reduction program and a herd retirement program. Producers can agree to reduce production over the October 2003 to September 2004 period. Producers can also retire their herds in return for a payment per hundredweight on their cows. In both programs, producers submit bids for the amount of money it would take to entice them to reduce production.

Voluntary supply management programs have a couple of advantages. One is that they place few restrictions on producers. They can choose whether or not to participate. A second potential advantage is that they have been temporary. That has prevented program benefits from being capitalized into the value of the productive asset – either the cows or the facility. A potential disadvantage is that they may cause geographic milk shortages. Milk production may shift for reasons contrary to underlying economic forces.

The dairy price support program is not usually considered a supply management program. However, in order to support prices, stocks must be purchased and held, essentially managing supplies. The program sets a support price for dairy products (cheese, butter, and non-fat dry milk powder) at prices that maintain a milk price at the support level of $9.90 per cwt. [1/]

The act of pulling those products off the market is also supply management. The reduction in the

supply of products on the market leads to higher prices, but also leads to the question of what to do with the stocks. The experience with stock piles is that burdensome levels of stocks weigh on the market and thus limit future price increases. Releasing stocks has been unpopular, unless tightly controlled, because the release pressures prices downward.

Counter-Cyclical Payments to Dairy Farmers

Counter-cyclical programs are those where the benefits, or program payments, are made when prices or revenues are low and payments are not made when prices or revenues are high. Over the years there have been several counter-cyclical payment programs utilized to support dairy farmer incomes. The most notable counter-cyclical payment program is the Milk Income Loss Contract (MILC) program. Whether the other two programs are viewed by the industry as counter-cyclical payment programs is open to debate, however, the Dairy Export Incentive Program (DEIP) and ad hoc disaster payments are two other types of support programs that tend to be emphasized when prices are low and much less when prices are high. However, most would probably only label the MILC program as being truly counter-cyclical.

MILC is designed to support dairy producer incomes during times of low milk prices. MILC program payments are triggered when the Boston Class I price falls below $16.94 per hundredweight, which is effectively a target price. Producers then receive 45 percent of the difference between the target price and the Boston class I price. Producer payments are limited to 2.4 million pounds per year. The MILC program is set to expire September 2005, however it is unclear whether it may be extended or replaced with a different type of program.

U.S. crop policies could serve as a guide for alternatives to the MILC program. The following is a short description of counter-cyclical programs that have been used to support crop producer incomes over the past 30 years. Each of these have significantly influenced dairy economics at the producer level, and in addition, could potentially be adopted for use in supporting dairy producer incomes.

Target Price/Deficiency Payments Program (1973-1995)

The U.S. began using a counter-cyclical farm program to support feed grains in 1973. This program utilized legislatively established target prices to represent the targeted level of income per unit (in most cases bushels) that the government would like commodity producers to achieve. The program also utilized non-recourse loan rates that functioned largely as a price floor. Loan rates operated similar to, but not exactly like the price support used in dairy. Payments in the target price program were called deficiency payments and represented the target price minus the higher of the loan rate or market price multiplied times the payment quantity. The payment quantity was equal to the individual producer's crop base acres multiplied by the payment yield. These acreage bases were determined by historical producer plantings. The payment quantity should not be considered to be equal to the quantity produced. In later years payments were limited to 85 percent of base acres to limit government costs and to make farm programs more market oriented. However, the total quantity produced was eligible for the non-recourse loan program.

The market price in this situation is the marketing year weighted average price as reported by USDA/NASS and is not the individual producer price received for the commodity. In response to low prices and over-supply, an annual set-aside or acreage reduction program (ARP) was initiated to reduce the payment quantity that producers received benefits on. The annual ARP rates were announced prior to planting and normally ranged between 0 and 15 percent for feed grains depending upon the anticipated supply-demand situation.

The program was counter-cyclical because as prices declined, deficiency payments increased, and vice versa.

*What impact has this program had on the dairy industry?*

The consensus among agricultural economists is that the U.S. crop program has encouraged surplus production. This is evidenced in the progressively higher ARP rates that were initiated throughout the 1980s. The result for the dairy industry has been a fairly stable supply of relatively cheap feed – except when there was a major drought. This, among other factors, has contributed to the rapid movement from dairies that are at least somewhat self-supporting in terms of feed needs to dry lot dairies that grow very little of their feed requirements.

*How this type of policy might work in dairy?*

There are a number of ways this type of program could be implemented in dairy. The target price/deficiency payment program could be implemented as it was done in crops over the 1973 to 1995 period with a few variations, leaving the price support program to function as it does now, or eliminate it.

The primary difference between how the policies would work for crops and dairy is that crop deficiency payments are paid annually and dairy deficiency payments could be paid on some other basis – most likely monthly. With any of these alternatives, the quantity eligible for payment (referred to as the payment quantity) would need to be determined. For example, a base number of cows could be established along with a base milk production per cow. Or another alternative would set a covered total production level for the relevant period.

Target price/deficiency payments with Price Supports

In this situation, the target price would be set at some administratively determined level (presumably above the price support) and deficiency payments would be paid on the difference between the target price and the higher of the market price or price support.

There is a danger in using the combination of a target price/deficiency program and support price. Because the deficiency payment encourages increased production, market prices decline. If the subsidy is large enough then price falls to the support price and government begins purchasing stocks. This situation is akin to that of 2002 and 2003. The MILC program encouraged production at a time of increasing production and low prices as producers responded to earlier record high milk prices. The already low prices and building government stocks of non fat dry milk powder were exacerbated by the MILC payments.

Target price/deficiency payments with no Price Supports

This variation was actually proposed by the Reagan administration during the 1985 farm bill debate. This alternative would work much the same as the previous alternative with the exception that deficiency payments would be paid on the difference between the target price and market price.

This alternative eliminates the problem of building stocks because the market clears. Prices, and income, would also be more variable because of elimination of the price floor provided by the price support program.

Non-recourse Marketing Loan Program (1993 to present)

In 1993, the non-recourse loan program for feed grains was converted to a non-recourse marketing loan program (a non-recourse marketing loan program was implemented for cotton and rice in the 1985 farm bill). The change effectively removed the floor from commodity prices by allowing producers to receive the loan for their commodity and repay at the posted county price. The posted county price is, effectively, a proxy for the local market price. The difference is called a marketing loan gain, or loan deficiency payment, and is counter-cyclical in nature. Marketing loan gains are counter-cyclical because with the price floor removed, prices adjust to market clearing levels and the gain, or payment, increases with lower prices and decrease with higher prices. In this way it acts much like the target price/deficiency payment program with no price support described above.

*What impact has this program had on the dairy industry?*

The change to a non-recourse marketing loan program has let commodity prices fall to market clearing levels that has resulted in lower feed prices for dairy operations. It has also led to more variable prices because prices are able to decline to levels not previously reached because of the support price. Prior to the change, the government obtained significant quantities of commodities forfeited as full repayment for loans taken out at the loan rate. These quantities were effectively held off the commercial market thereby increasing commodity prices and therefore feed costs for dairymen.

*How this type of policy might work in dairy?*

This program could be utilized in dairy just as it has been used in crops. In effect, the price support would effectively become a target price and market prices would be free to adjust to supply and demand conditions with counter-cyclical payments making up the difference.

Counter-cyclical Payment Program (2002 to present)

The 2002 farm bill re-initiated a counter-cyclical payment program that was eliminated in the 1996 farm bill in favor of decoupled payments made to producers regardless of production or price. The new program uses target prices and non-recourse marketing loans as the basic tools much like the previous target price/deficiency payment program. However, there are a few distinct differences. First, the decoupled payments were retained and are called direct payments (DP). The counter-cyclical payment (CCP) is calculated as the target price minus the direct payment (DP) rate minus the higher of the non-recourse loan rate or season average market price. CCPs per unit of production reach a maximum when the season average price is below the non-recourse loan rate. Second, CCPs are decoupled from current producer production but not current prices. This means that the CCPs received by producers are based on the number of payment acres (previously referred to as base acres) of program crops. Eligibility for payments does not depend on the producer growing the specific covered crop on their payment acres or any other crop to receive payments. Producers receive DPs and CCPs on their payment acres whether or not they grow that crop. For example, a producer with corn payment acres does not have to grow corn to receive the corn DP and CCP (if any) on those payment acres. Payment yields work as they did under the target price/deficiency payment program prior to 1996.

*What impact has this program had on the dairy industry?*

The 2002 farm bill was signed May 13th, 2002. Therefore, there has only been a little over a year experience with this program. However, the limited experience gained to date would suggest that CCPs will have a positive effect on production – albeit less than the target price/deficiency payment program. The reduced impact is largely a result of the CCP being decoupled from production. Most observers agree that the dairy industry will continue to benefit from low feed grain prices throughout the life of the 2002 farm bill. However, the marketing loan program, together with the decoupled payment, making production decisions more market oriented, has allowed for more price volatility than in the past.

*How this type of policy might work in dairy?*

The CCP could be initiated in dairy much like the target price/deficiency payment program could be enacted. The price support program could remain or be eliminated, however, as before if the price support program is maintained, stocks will likely build and continue to hang over the market. The true novelty of this approach for the dairy industry comes from the decoupling from production. Dairymen who have established their production bases could cease or reduce milk production for any period of time and still receive payments (if there are any) on their production bases.

One of the shortcomings of past supply management programs in dairy was that there was an incentive to increase base production. In fact, in program crops, the term was coined “race

for base" meaning that producers would stay out of the program to increase acres that could later be counted as base acres when they joined the program. One of the features of the 2002 farm bill is that base acres are fixed for the life of the farm bill, as they were in the 1996 farm bill. Producers were allowed, however, to update their base acres to average planted acres over the 1998-2001 period or keep their old base payment acres. Some producers will see this as an incentive to increase production in hopes of increasing base under later legislation. However, payment, or base, level could be fixed at some past level. Payments then would be decoupled from current production. As in crops, payments from some type of marketing loan program could be paid on all production while decoupled payments could be made on some fixed level of production.

## Non-dairy and general policy important to dairy

As discussed elsewhere in this paper, there is a large body of policy specific to dairymen. There is also a body of tax and policy legislation that is either general to agriculture or to individual business which has an impact on dairymen's decisions. This section will review the status and impact of some of these important to the dairy producers' financial well-being.

The FARRM savings account

As part of the 1997 Taxpayer Relief Act congress re-authorized income averaging for farmers and ranchers. This allows producers to spread above average income over the previous three years. If those were lower income years, averaging can maintain a more level taxable income versus being bumped into a higher tax bracket. Various studies have shown that maintaining a level taxable income versus wide swings in taxable income reduces the total tax burden over time.

Farm and Ranch Risk Management (FARRM) accounts are not a new idea. They were first proposed in 1996 shortly after passage of the 1996 farm bill. There have been several proposals since then that have yet to pass congress. Canada has had similar legislation in force since 1991 and Australia has had Farm Management Deposit accounts since 1999.

These accounts, as proposed, would operate similar to the Medical Savings Account (MSA) authorized in 1997 and IRA accounts.

Other experiences – Canada – old and new

The Net Income Stabilization Account (NISA), a type of risk management account, has been one component of Canada's farm safety net. Like proposals for tax-deferred risk management accounts in the United States, NISA is a farm-level risk management savings program. NISA, however, matched farmer deposits dollar for dollar with government contributions. It also added a 3-percent interest rate subsidy on farmer contributions. Farmers made deposits with after-tax income, but government contributions and interest earnings were tax-deferred. They deposited annually the smaller of C$5,000 or 2 percent of eligible farm sales. This limited the government match to C$5,000 per farmer. Farmers could also make additional nonmatched contributions of up to 20 percent of sales. Account balances could not exceed 150 percent of the farm's 5-year average sales. Withdrawals were allowed only when farm income fell below established thresholds.

Evidence from NISA suggests that most farmers deposited only enough money to earn the maximum matching government contribution. This suggests that the matching contribution is relatively more important than the interest rate subsidy and that similar saving behavior could be achieved by only partially matching the deposit. Observations also suggest that some farmers do not withdraw as much money as expected during low-income years. This indicates that many farmers prefer to manage income variability by other means rather than stop receiving government benefits on accumulated balances.

Currently Canada is transitioning from NISA to CAISP or the Canadian agricultural Income Stabilization Program. CAISP is part of a larger acronym APF or the Agricultural Policy Framework, the overall umbrella for Canadian Ag Policy.

The goal of the new Canadian Agricultural Income Stabilization program is to provide a permanent disaster program which farmers can rely on, instead of the ad hoc programs that were available in the past; offer more stability by protecting both small and large drops in income; provide equitable treatment to all farmers, across all commodities and in all provinces; better direct funds to where the need is; and provide a streamlined set of user-friendly programs that work well together.

Payments under the new program would be paid out when a farmer's claim-year margin falls below his or her reference margin. But instead of making a deposit based on eligible net sales and waiting for funds to build up over several years, the farmer would annually select a level of protection, ensure

the appropriate deposit was on account, and in so doing would immediately secure entitlement to substantial government benefits that would be paid out when he or she experienced a decline. And as the producer's loss deepened, the government would assume a greater share of the cost to replace those losses.

The claim year margin is the margin that is measured against the reference margin to determine if there has been a margin decline. The reference margin is a 5-year average of the producer's margin history and is used to calculate options and benefits under the new program.

To ensure the effectiveness of the new program, a minimum protection option has been established. This option would guarantee that for any losses up to 40 per cent of the reference margin, the producer would be fully covered. And in the event of a margin decline to zero, the producer would be returned to 70 per cent of the reference margin. The cost of this minimum risk protection would be a refundable deposit equal to 14 per cent of the producer's reference margin.

Beyond the minimum option, producers could choose any amount of protection they liked, up to a maximum. Maximum protection could be accessed with a deposit of 22 per cent of the reference margin, and would provide either full or close to full protection in even the most severe loss situations.

Pay-outs would be calculated in a way that ensures the producer always receives the greatest possible government benefit. To calculate the government contribution, one would first determine how much of the producer's loss was in the "disaster" range — that is, the bottom 70 per cent of the margin — and that amount would be cost-shared at the most advantageous rate of 20 per cent producer, 80 per cent government. Working up, the next 15 per cent of the margin decline would be cost-shared 30 per cent producer to 70 per cent government, and the rest would be cost-shared 50-50, until the producer's deposit was exhausted, or the producer reached 100 per cent of margin, leaving some money on deposit for the following year.

In essence the CAISP program is a quasi "income insurance" program underwritten by the Canadian government. The deposit would be comparable to the premium for the insurance except that any unused portion remains available. Depending on whether a producer experiences a margin decline, the producer will either draw on deposited funds to receive a payment from government, or leave the funds on account to secure protection the following year. At the beginning of each production year, the deposit can be adjusted if the producer chooses a different level of protection. A "discount deposit" option is available during the first two years of a producer's participation in the program, as well as for the two years immediately following a severe income decline. This option allows producers to secure protection by placing just one-third of their deposit on account. It ensures all farmers have immediate access to protection, with no need for a long account build-up period.

Other experiences – Australia's Farm Management Deposits Program

Farm Management Deposits replaced the Commonwealth Government's Income Equalization Deposit and Farm Management Bond schemes in April 1999.

To be eligible for Farm Management Deposits one needs to be an individual primary producer with an off-farm taxable income of no more than AU$50,000 when the farm management deposit of AU$1,000 or more is made and have a sum total of all farm management deposits not exceeding AU$300,000 at any time in any year of income. If a producer is using more than one farm management deposit, they must all be with the same financial institution and the producer must hold the farm management deposit for a minimum period of 12 months in order to gain the taxation benefits of the scheme. Under the program, farmers receive an income tax deduction for deposits but are taxed when the funds are withdrawn.

The term 'primary producer' includes people in farming, fishing and forestry sectors. While companies, partnerships and trusts are not eligible, producers operating under these arrangements could be eligible for the scheme, if as individuals

they are recognized by the Australian Taxation Office as 'primary producers'.

Since its introduction in 1999, the numbers of farmers and average deposits have grown. However, despite marginal income tax rates approaching 50 percent, only about 15 percent of all farmers currently participate in the Farm Management Deposits Program.

Mechanics of proposed U.S. accounts

The risk management or tax deferred savings accounts would allow producers to build cash reserves in years of higher income that could then be withdrawn in years of lower income to stabilize the financial situation and reduce risk.

There are several important issues about the functioning of these accounts. Those are the amount producers would be allowed to deposit in any given year, whether the government would match any funds deposited, and the source of the matching funds, whether there would be a time limit on maintaining funds in an account, whether there would be a market trigger or other mechanism to initiate fund withdrawals, and disposition of the fund if the operator dies or otherwise quits farming.

Some proposed alternatives

Farm and Ranch Risk Management (FARRM) accounts first were proposed during the 1996 farm bill debate. They have resurfaced in 1998, 1999, 2000, 2002 and 2003. Under recent FARRM account proposals, farmers could take a Federal income tax deduction for FARRM deposits of no more than 20 percent of *eligible farm income* - taxable net farm income from IRS Form 1040, Schedule F, plus net capital gains from sale of business assets including livestock but not land. Deposits would be made into interest-bearing accounts at approved financial institutions, and interest earnings would be distributed and taxable to the farmer annually. Withdrawals from principal would be at the farmer's discretion (no price or income triggers for withdrawal), and taxable in the year withdrawn. Meaningful income triggers would be difficult to determine given the nature of taxable farm income and the fact that price levels do not necessarily correlate with farm level yield or income variability.

Deposits could stay in the account for up to 5 years, with new amounts added on a first-in first-out basis. Deposits not withdrawn after 5 years would incur a 10-percent penalty. FARRM funds would have to be withdrawn if the account holder were disqualified from participating by not farming for 2 consecutive years. Deposits and withdrawals would not affect self-employment taxes.

Farmers are free to make withdrawals whenever they choose. Taxpayers have no assurances that farmer withdrawals will actually be used as the farmer's safety net during bad years. Indeed the Canadian experience with the NISA program indicates some farmers do not use the account to offset low income. Because FARRM uses tax deferral incentives, high tax bracket farmers receive greater benefits and incentives to save. Earlier proposals have not limited annual contributions or account balances. Deposits based on net income are more limiting than gross income. Over two-thirds of sole proprietors either report a farm loss or have no federal income tax liability, and could neither participate nor benefit from FARRM accounts. While government tax deferral costs on FARRM accounts become more stable after the first five years during which primary account balances are established, livestock and weather cycles often last longer.

The Individual Risk Management Account (IRMA) concept originated from an Alabama Farmers Federation study committee. IRMA accounts are voluntary and contain a combination of deferred tax and government matching deposit incentives. Similar to FARRM accounts, IRMA deposits are deductible from pretax income. Deposits and interest are taxable after withdrawal. A farmer who wishes to participate deposits a minimum of 2 percent of Schedule F gross farm income each year into an IRMA account. The federal government matches the farmer's 2 percent deposit with another 2 percent deposit, using dollars that would have been used to subsidize the farmer's crop insurance. IRMA farmers receive

CAT coverage, but additional crop insurance purchased must be non-subsidized.

Also similar to NISA, farmers can maintain maximum IRMA balances of no more than 150 percent of the farmer's three-year average Schedule F Gross Farm Income. The IRMA plan contains a specific withdrawal trigger that only allows farmers to make withdrawals if their current year Schedule F Gross Income Falls below 80 percent of the average for the previous three years. The withdrawal can only bring the income up to the 80 percent level.

Based on the magnitude of the IRMA incentives to save, farmer participation rates and safety net accumulation rates are likely to be greater than under FARRM accounts but less than under a NISA styled program. Similar to FARRM, IRMA provides greater savings incentives in the form of tax deferral for farmers in higher tax brackets. The annual minimum matchable deposit requirements may cause cash flow problems for some farmers, particularly those previously not purchasing crop insurance. Encouraging farmers to substitute IRMA for subsidized crop insurance could expose farmers to increased risk, particularly if the farmer's accumulated balances are not sufficient to cover a financial loss. Government costs for subsidized insurance may rise as low risk farmers exit crop insurance programs in favor of IRMA.

Farm Program Payment Reserve (FPPR) Accounts would divert to farmer savings accounts farm program payments to build safety net reserves for individual farmers. If deficiency or other payments are diverted to FPPR accounts in good years, they are available for use in bad times. If such FPPR accounts had been in effect with the passage of the 1996 Act, AMTA payments in high-income years would have accumulated so that each farmer receiving program payments would have had a safety net of reserve balances during the lower income years that followed. For illustrative purposes, suppose a new FPPR proposal emerges and specifies that 50 percent of future designated farm program payments be deposited by the Farm Service Agency into a FPPR account in the farmer's name. In effect, such a proposal would convert part of the specified payments into a counter-cyclical payment program.

Similar to NISA, FPPR balances could be capped at 150 percent of the farmer's five-year average Schedule F gross farm income. Farm program payments would revert directly to the farmer when the FPPR account maximum is reached. Withdrawals could be triggered when current year gross farm income (Schedule F) falls below the farmer's average for the previous five years. A farmer would be eligible to withdraw up to the difference between the current year's gross farm income and the five-year average. If Congress designates livestock and specialty crops producers to receive government deposits, they, too, would benefit from FPPR accounts in low income years. However, if deposits are restricted only to program payment recipients, the benefits would be restricted only to farmers producing program crops. No new funding is required if FPPR deposits come from existing outlays. Government costs for FPPR accounts would be relatively stable if a portion of existing outlays for updated program payments are used for FPPR deposits. The part of the farm program payment diverted to a FPPR would no longer be available to bid up land prices during good years. Instead, this portion of a farmer's program payment becomes part of individual farm safety net balances that are then available in poor income years. Unlike FARRM accounts, FPPR accounts have withdrawal triggers to assure taxpayers that deposits are withdrawn by farmers in low-income years. Unlike voluntary savings programs, FPPR accounts assure taxpayers that all farmers receiving designated farm program payments will have some reserves. As farmer FPPR participation increases, safety net reserves grow to reach effective levels and dependence on ad hoc disaster programs declines.

Risk management account eligibility would be limited to individual taxpayers - sole proprietors, partners in farm partnerships, and shareholders in Subchapter S farm corporations - who report positive net farm income and owe Federal income tax. The program should be relatively easy to administer through the use of existing income tax forms, with reporting requirements similar to those of individual retirement accounts (IRA's). Contributions and distributions from the accounts

could be verified by matching income tax returns with records from banks or other financial institutions where the accounts are held.

The Economic Research Service's assessment of risk management accounts has ascertained that the benefits may not accrue equally to all farmers. One of the suppositions is with the account being an income tax deferral mechanism it will make deposits attractive to producers in higher income years. Eligible farm income has been defined as taxable net farm income as reported on form 1040, schedule F and net capital gains from the sale of business assets and livestock, but not land. While the far majority of farms are sole proprietorships which would be eligible to utilize

Table 13 Eligibility and size of FARRM accounts vary considerably by farm type

| | Small family farms | | | | | Large family farms | All farm proprietors |
|---|---|---|---|---|---|---|---|
| | | | | Primary occupation | | | |
| | Limited resource | Retirement | Lifestyle / other | Farm sales ($1000) <$100 | $100-250 | | |
| Number of farmers | 218,383 | 261,926 | 1,167,321 | 336,498 | 151,970 | 82,865 | 2,218,964 |
| Percent with… | | | | | | | |
| …schedule F farm profit | 51 | 26 | 20 | 51 | 76 | 77 | 34 |
| …taxable household income | 17 | 78 | 90 | 69 | 69 | 79 | 76 |
| Estimated percent eligible for FARRM accounts | 10 | 24 | 20 | 40 | 61 | 69 | 27 |
| Average potential FARRM deposit for those eligible ($) | 760 | 2,900 | 1,600 | 3,700 | 4,800 | 10,800 | 3,500 |

Note: Actual participation and deposit amounts are affected by individual behavior and would be less than eligibility and potential deposit amounts indicated.

Source: Compiled by USDA-ERS from 1996 Internal Revenue Service data and simulations of FARRM Accounts.

the risk management account, over two-thirds of these operations either report a farm loss or have no federal income tax liability. Thus they could not take part in or benefit from the accounts.

Further, using 1994 Internal Revenue Service (IRS) data, USDA's Economic Research Service (ERS) estimated that 916,000 farmers would be eligible to contribute as much as $2.8 billion to risk management accounts each year. Farm sole proprietors account for over two-thirds of eligible participants and three-fourths of potential contributions. But about half of eligible farm sole proprietors would be limited to contributing less than $1,000. Thus, each year only about one of every six sole proprietors could contribute more than $1,000. Contributions for farm partners would also be small, averaging below $2,000, but subchapter S shareholders' contributions could average $4,355.

If positive net farm income sets the bar for contributing, the benefit of risk management accounts would accrue to operations where farming is 50% or more of income. That is only about one-third of sole proprietorships. With 5 of 6 sole proprietorships able to deposit less than $1,000 a year many farmers are unlikely to accumulate account balances of sufficient size to help during years when farm income falls. The five year limitation on holding funds in the accounts further reduces the likelihood of many farms being able to accumulate balances sufficient to reduce low income stress.

While 1994 was a low income year the same study looked at two higher income years, 1990 and 1996. ERS concluded that eligible participants and total contribution amounts were unlikely to change very much. Even though there was an increase in total taxable income from farming, the number of farmers with taxable income actually decreased by nearly 30,000. Since then the child credit, education credits, reduction in tax brackets and capital gains and other measures passed under presidents Clinton and Bush have further reduced the number of farmers who would be eligible to make contributions.

The first series of legislation introduced for risk management accounts did not limit annual or accumulated contributions. Later proposals have capped contributions at either $40,000 annually or 20% of net farm income and limited the accumulation period to 5 to 10 years without a penalty. That would target the benefits toward low and middle income farmers. ERS estimated that restricting eligibility to individuals with less than $100,000 in adjusted gross income would cut total account contributions by about 1/3$^{rd}$, reduce treasury exposure from deferred taxes by about half, and only reduce the number of eligible farmers by around 10%.

Potential benefits

The risk management account program in order to be efficient would need to meet two goals. First, benefits of the program to producers would need to offset program costs and provide a viable risk management alternative for producers. The main "cost" associated with the program is in the form of deferred taxes. Benefits of the program would be in improved financial stability for producers and a reduced need for farm program subsidies and emergency assistance programs. Meeting these goals would mean that the risk management accounts create new savings rather than transferring other accounts to the risk management accounts or replacing other risk management practices such as insurance. These new savings would likely have to come from reduced living draws or from diverting funds that would have been invested in the business. Research on IRA accounts, which are similar in many respects to the proposed risk management accounts, provide evidence that asset shifting is much more likely to occur than new saving. Risk management accounts could encourage asset shifting even more as the account remains liquid (funds can be withdrawn at any time) and the funds are not locked in for long periods of time. Under present proposals, deposits made by April 15 would apply to the preceding tax year so deposits for a short time period could provide a tax deferral of up to a year.

The tax deferral aspect of risk management accounts may provide an additional benefit by deferring self-employment taxes. Since off-farm

employment is a factor for over half of all farms, self-employment taxes can be a significant part of total farm tax liability. Another benefit would be the ability to draw from the account and make use of deductions or exemptions in the tax code that would otherwise be lost if there were no tax owed.

Introducing legislation to implement risk management type accounts has been an annual event in the US congress. However, as a stand-alone piece of legislation it is unlikely to be passed. While not un-popular, the idea hasn't gathered enough support by itself to make it through congress. The most likely means of passage would be if the account legislation were part of a larger, popular package that would pass congress and be signed into law.

U.S. account proposals have never quite made it through the congressional maze, with the exception of one bill that was part of a larger legislation package in the 1990's that was vetoed for other reasons by President Clinton.

Currently proposed legislation

Two bills introduced early in 2003 – Senate bill S.665 and House bill H.R. 927 - propose FARRM accounts. The accounts as proposed are very similar to what has been outlined above with a 20% of net farm income deposit limit and a 5 year time frame before withdrawals would have to commence. At this juncture it appears unlikely that either bill will have much chance to be enacted unless it is made part of other legislation that has broad bi-partisan support in both houses.

Dairy and risk management accounts

All of the above discussion is in regard to risk management accounts applied to farming in general. Are there any significant differences for dairies? In late 2001 during discussions on the then proposed farm bill a risk management program geared toward dairy was brought up. This dairy farm savings account would have been an alternative to a proposed dairy subsidy program. In broad outline, the plan would have set aside $1.9 billion of which $500 million would have gone into dairy farm savings accounts as initial and un-matched payments. The initial payments would have been based on the amount of milk a dairy produced between 1998 and 2000. The remaining $1.4 Billion was to be used over future years to match dairy farmer deposits to those accounts. The proposal was never actually introduced in congress.

Price instability is perhaps the most difficult and volatile part of dairying today. Most production problems can be dealt with before they severely affect milk production. A production swing of 2% or 3% gets noticed and the reasons for it hunted down right away. A price swing of 10%, 20% or 30% can occur, the reasons may or may not be obvious to the dairyman, but dealing with the situation may range from muddling through to a long term marketing strategy. Futures contracts, put options and forward price contracts are alternatives many producers utilize. However, many do not feel comfortable with these techniques or the alternative doesn't fit their situation very well and they simply hunker down and hope for sunnier financial weather in the next forecast. A risk management account could benefit many of these operations by providing a technique to manage risk that is more under their control and is closer to something they are familiar with, savings and IRA type accounts.

## Capital Gains taxes

The saying "cash poor but land rich" in agriculture often leads to a dilemma when major assets need to be sold or ownership transferred. Most producers know of cases when the farm was sold to pay for an estate or divorce or other circumstances. Capital gains can occur when assets are sold if the sale price is greater than the original purchase price.

Overview

If you have a taxable gain or a deductible loss from a transaction, it may be either a capital gain or loss or an ordinary gain or loss, depending on the circumstances. Generally, a sale or trade of a capital asset results in a capital gain or loss. A sale or trade of a non-capital asset generally results in ordinary gain or loss. Depending on the

circumstances, a gain or loss on a sale or trade of property used in a trade or business may be treated as either capital or ordinary, as explained in IRS Publication 544. In some situations, part of your gain or loss may be a capital gain or loss, and part may be an ordinary gain or loss.

If you sold or traded investment property, you must determine your holding period for the property. Your holding period determines whether any capital gain or loss was a short-term or a long-term capital gain or loss. If you hold investment property *more than 1 year,* any capital gain or loss is a *long-term* capital gain or loss. If you hold the property *1 year or less,* any capital gain or loss is a *short-term* capital gain or loss.

To determine how long you held the investment property, begin counting on the date after the day you acquired the property. The day you disposed of the property is part of your holding period.

If the total of your capital gains is more than the total of your capital losses, the difference is taxable. However, part of your gain (but not more than your net capital gain) may be taxed at a lower rate than the rate of tax on your ordinary income.

If the total of your capital losses is more than the total of your capital gains, the difference is deductible. But there are limits on how much loss you can deduct and when you can deduct it.

Current rate structure

Capital gains rates have been modified by the 2001 and again by the 2003 tax law changes. For short term gains the rates are the same as on ordinary income. Long term gains enjoy a more favorable rate for qualifying property. On dairies most purchased assets, machinery, replacement stock, or vehicles may qualify. Rates depend upon three things, your income or, in other words, the tax bracket you occupy, how long you had the investment or asset and what type of asset it is - investment, collectible or real estate.

The rate structure for capital gains taxes is:

Table 14 Maximum Capital Gain Rates

| IF your net capital gain is from... | For property disposed of before May 6, 2003 your maximum capital gain rate is... | For property disposed of after May 5, 2003 your maximum capital gain rate is... |
|---|---|---|
| Collectibles gain | 28% | 28% |
| Gain on qualified small business stock equal to the section 1202exclusion | 28% | 28% |
| Un-recaptured section 1250 gain | 25% | 25% |
| Other gain,1and the regular tax rate that would apply is 27% or higher | 20% | 15% |
| Other gain,1and the regular tax rate that would apply is lower than 27% | 8%2or 10% | 8%2 or 5%3 |

1"Other gain" means any gain that is not collectibles gain, gain on qualified small business stock, or unrecaptured section 1250 gain.

2The rate is 8% only for qualified 5-year gain.

3 Rate becomes zero (0) for tax years beginning after 2007

Sunset provisions

The provisions in the "Jobs and growth tax relief reconciliation act of 2003" extend the changes to capital gains only through 2008, and the provisions are rescinded for taxable years beginning after December 31, 2008.

## USDA – RMA income insurance for livestock

Overview

USDA's Risk Management agency (RMA) currently has several pilot programs for livestock price risk insurance. These are:

- the Adjusted Gross Revenue (AGR) and AGR-Lite programs which cover an entire farm's gross revenue, including that from commercial livestock;
- a Livestock Gross Margin (LGM) program for swine;
- a Livestock Risk Protection (LRP) program for swine;
- a Livestock Risk Protection (LRP) program for fed cattle and feeder cattle;
- because these are pilot programs the products are only available in certain states and counties.

How current livestock programs work

The AGR or Adjusted Gross Revenue (AGR) product provides protection against low revenue due to unavoidable natural disasters and market fluctuations that occur during the insurance year. Covered farm revenue consists of income from agricultural commodities, including incidental amounts of income – no more than 35% of the total - from animals and animal products and aquaculture reared in a controlled environment. Animal/animal product income is representative of the value of crop production fed to animals.

AGR uses historical IRS form 1040F information as the basis for the level of guaranteed revenue during the period covered by the insurance. AGR provides coverage for multiple commodities under one insurance policy and uses farm revenue as the common denominator across all commodities produced on the farm.

In addition to the IRS 1040F information, applicants for AGR complete an annual farm report for the coming year listing commodities to be produced, anticipated yields and prices and current inventories of the same commodities. Producers can choose from several coverage and premium levels.

Loss is based on the difference between the approved AGR in the annual farm report filed when coverage was purchased times the coverage level

Table 15 AGR program available coverage

| | | |
|---|---|---|
| 65% coverage level | 75% or 90% payment rate | For the 75-percent payment rate, any number of commodities can be produced; for the 90-percent payment rate, a minimum of two commodities must be produced, with each contributing a certain percentage of revenue. |
| 75% coverage level | 75% or 90% payment rate | For the 75-percent payment rate, any number of commodities can be produced; for the 90-percent payment rate, a minimum of two commodities must be produced, with each contributing a certain percentage of revenue. |
| 80% coverage level | 75% or 90% payment rate | For 75-percent and 90-percent payment rate, a minimum of four commodities must be produced, with each contributing a certain percentage of revenue. |

and actual AGR as filed in the producers 1040F for the coverage year. The loss revenue figure is then multiplied by the payment rate selected to determine the indemnity due.

To participate in the AGR program the farmer must be a US citizen or resident and file a farm (1040F) tax return. Policy liability is presently restricted to no more than $6.5 million and the producer must have been farming for 7 years unless otherwise approved by the insurance provider.

AGR is intended to be utilized in conjunction with traditional FCIC products when available and more than 50% of farm income is from insurable commodities. Thus benefit coordination with multi-peril crop insurance, crop revenue coverage, income protection and revenue assistance and AGR as appropriate needs to be established. Producers will have a reduced AGR premium when it is used with other crop insurance plans.

At present, because this is a pilot program participation is restricted to production in pilot counties (and some contiguous non-pilot counties) in 18 states[1]. More information is available through the appropriate regional Risk Management Agency office.

AGR-Lite is similar but allows for 100% of revenue to be from livestock. Major program differences include:

- Producers may not purchase AGR if they purchase AGR-Lite.

- Producers have the option, but are not required, to purchase other crop insurance plans provided by the Act.

- There is no limitation on the percentage of animal receipts. Therefore, animal receipts may constitute up to 100% of the farm sales. However, since RMA has a legislatively limited annual allocation for animal and animal product expenses, insurance may be denied if the allocation for animals and animal products becomes exhausted.

- The AGR-Lite program is available in all Pennsylvania counties except Philadelphia.

- If the producer purchases either the 75% or 80% levels of coverage, the historical information required to complete the Agricultural Commodity Profile Reports must be provided for the most recent 2 years used to calculate the AGR-Lite history.

In general the “Lite” program is otherwise operated the same as the regular AGR program.

Livestock Gross Margin Insurance Policy provides protection against the loss of gross margin (market value of livestock minus feed costs) on Swine. The indemnity at the end of the six-month insurance period is the difference, if positive, between the Expected Gross Margin and the Actual Gross Margin. The Livestock Gross Margin Insurance Policy uses futures prices to determine the Expected Gross Margin and the Actual Gross Margin. The price the producer receives at the local market is not used in these calculations.

LGM is a pilot program and currently is only available in 99 Iowa counties.

LGM is different from traditional options in that LGM is a bundled option that covers both hog price and feed costs. The mix of hog price and feed costs are set using an optimal feeding ration developed through Iowa State University. This bundle of options effectively insures the producer’s gross margin, hog price minus feed costs, over the insurance period. Also, LGM cannot be exercised.

The LGM works as a bundle of options that pay the difference, if positive, between the value at purchase of the options and the value at the end of a certain time period. So, the LGM would pay the difference, if positive, between the gross margin guarantee and the actual gross margin, as defined in the policy provisions, at the end of the insurance period. The LGM does not insure against death loss or any other loss or damage to the producer’s hogs.

The prices for the LGM are based on simple averages of futures contract daily settlement prices and are not based on the prices the producer receives at the market. The feed equations for the LGM are based on an optimal feeding ration developed through Iowa State University. The two marketing periods are the spring (February through July) and fall (August through January) that coincide with the December and June quarterly USDA Hogs and Pigs reports. This is to allow the market to utilize information in those reports before establishing the expected prices.

Some definition of terms used in LGR is in order.

The *Gross Margin Guarantee* for each coverage period is calculated by multiplying the Expected Total Gross Margin for the applicable Insurance Period, times the Coverage Level Percent. If our example Producer wants a 90% coverage level on 10 head of Swine, his Expected Gross Margin Per Swine is $55.13, then the Gross Margin Guarantee would be $496 (90% x $55.13 x 10 = $496).

*Actual Total Gross Margin* - The target marketing's for each month of an insurance period multiplied by the actual gross margin per swine for each month of that insurance period and summed.

*Target Marketing's* are a determination made by the insured as to the maximum number of slaughter ready barrows and gilts that the producer will market (sell) in each month during the Insurance Period. The Target Marketing's must be less than or equal to that Producer's applicable Approved Target Marketing's as certified by the producer.

*Actual Gross Margin Per Swine* is the actual swine price for the month swine are marketed times 0.74 (carcass conversion factor), times the assumed weight of the swine at marketing of 260 pounds, or as stated in the Special Provisions, minus the actual cost of feed three months prior to that month.

The *Actual Swine Price* for months coinciding with the CME lean hog contracts is the simple average of the final daily settlement prices in the last three trading days prior to the contract expiration date for the CME lean hog futures contract for that month expressed in dollars per hundredweight. For other months the actual swine price is the simple average the final daily settlement prices in the last three trading days prior to the contract expiration date of the lean hogs futures contracts that expire in the immediately surrounding months.

The *Actual Cost of Feed for Farrow to Finish Operations* for each month equals 12.95 times the Actual Corn Price for that month plus 184.89 pounds divided by 2000 pounds times the Actual Soybean Meal Price for that month. The ration is based on a formulae provided by Iowa State University.

The *Actual Corn Price* for the months of January, March, May, July, September, November and December is the average of the final daily settlement prices in the last three trading days prior to contract expiration for the CBOT corn futures contract for that month expressed in dollars per bushel. For months that do not have a corn futures contract the settlement prices of surrounding months are used with a weighted average formulae.

The *Actual Soybean Meal Price* for the months of January, March, May, July, August, September, October and December is the simple average of the final daily settlement prices in the last three trading days prior to the contract expiration date for the CBOT soybean meal futures contract for that month expressed in dollars per ton. For other months the actual soybean meal price is the simple average of the final daily settlement prices in the last three trading days prior to the contract expiration date of the soybean meal futures contracts that expire in the immediately surrounding months.

The *Expected Total Gross Margin* is the sum of the Target Marketing's times the Expected Gross Margin per Swine for each month of an Insurance Period.

The *Expected Gross Margin Per Swine* is the *Expected Swine Price* for the month the swine are marketed times 0.74 to convert to a live weight basis, times the assumed weight of the Swine

at marketing (2.6 cwt.), minus the Expected Cost of Feed three months prior to that month. For example, the Expected Gross Margin per Swine for April is the Expected Swine Price for April less the Expected Cost of Feed for January.

The *Expected Swine Price* for the spring Insurance Period (February, April, May, June, and July),is the simple average of the final daily settlement prices in the last three trading days prior to January 15th for the CME lean hog futures contract for that month expressed in dollars per hundredweight. For the fall Insurance Period, (August, October, December, and February) the Expected Swine Price is the simple average of the final daily settlement prices in the last three trading days prior to July 15th for the CME lean hog futures contract for that month expressed in dollars per hundredweight. For other months the Expected Swine Price is the average of the expected prices for the two immediately surrounding months. The Expected Swine Price is multiplied by 0.74 to convert to a live weight basis

The *Expected Cost of Feed for Farrow to Finish Operations* for each month equals 12.95 times the Expected Corn Price for that month plus 184.89 pounds divided by 2000 pounds per ton times the Expected Soybean Meal Price for that month.

The *Expected Corn Price* for the months of March and May for the spring insurance period each year is the simple average of the final daily settlement prices in the last three trading days prior to January 14 for the CBOT corn futures contract for that month expressed in dollars per bushel. For the months of July and September for the fall insurance period each year, the expected corn price is the simple average of the final daily settlement prices in the last three trading days prior to July 14 for the CBOT corn futures contract for that month expressed in dollars per bushel. For all other months the expected corn price is an average of the final daily settlement prices in the last three trading days prior to January 14 for the spring insurance period and July 14 for the fall insurance period for the corn futures contracts with expiration in surrounding months.

The *Expected Soybean Meal Price* for each of the months of January, March and May for the spring insurance period is the simple average of the final daily settlement prices in the last three trading days prior to January 14 for the CBOT soybean meal futures contract for that month expressed in dollars per ton. For each of the months of July, August, September and October for the fall insurance period, the expected soybean meal price is the simple average of the final daily settlement prices in the last three trading days prior to July 14 for the CBOT soybean meal futures contract for that month expressed in dollars per ton. For other months the expected soybean meal price is the simple average of the final daily settlement prices in the last three trading days prior to January 14 for the spring insurance period and July 14 for the fall insurance period for the soybean meal futures contracts with expiration in the two immediately surrounding months.

Indemnification would occur after the producer submits a marketing report and supporting sales receipts. The indemnity paid would be equal to the difference between the *Gross Margin Guarantee* and the *Actual Total Gross Margin* for the period.

In essence the LGM program is insuring a return over feed costs.

Livestock Risk Protection (LRP) insurance is a single peril price risk product. Eligible producers can purchase a contract with specific price coverage to protect against declining prices. The LRP was initiated in 2001 for swine and subsequently expanded to fed and feeder cattle. As a pilot program covered states are limited at this time.

Like the LGM program discussed above, LRP utilizes commodity markets to establish coverage and determine premiums. Coverage is flexible in that an LRP contract can be purchased on any business day can cover from 1 head to the maximum allowed under each program and has variable ending dates. The LRP programs utilize pricing from the CME and use the CME to manage the program risk. The CME feeder cattle price index is used to determine the indemnity level. Thus while producers can protect against price risk, there is still the potential for basis risk. Those

producers who are familiar with their local basis may be more successful in using the contracts.

Presently the feeder cattle LRP contract allows for coverage on up to 2,000 head per year with a limit of 1,000 head per contract endorsement. Coverage levels range from 70 to 95 percent, the difference representing the deductible. For producers with smaller numbers of cattle the LRP contract offers an opportunity for price protection not available when their production is under the 50,000 lbs. or 67 head in the CME feeder contract.

The length of each policy endorsement available for feeder cattle ranges from 21 to 52 weeks. The feeder cattle that the producer expects to have and to market must be within a range of 6.5 to 9.0 cwt at the end of the insurance period. Coverage is available for steer feeder cattle, not for heifers, except for cattle identified as predominantly dairy or Brahma breed. This is in order to more closely meet the CME contract specifications.

A producer wishing to use the feeder cattle LRP would select a coverage price – similar to a minimum sale price – which would be based on the coverage level (70% to 95%) desired for their expected ending value on the cattle. At the end of the holding period if the CME feeder cattle index is higher then the coverage price no indemnity is owing. However, if the index is under the coverage price an indemnity payment equal to the difference between the index and the coverage price will be paid.

Basis, defined here as the difference between the CME index price and the actual local cash price received, is very important to managing price risk. The LRP does not address basis so it is important for producers to understand their local basis when determining the coverage price.

The fed cattle LRP works in the same manner as the feeder cattle LRP except it used the AMS 5-market weighted average price for the ending value.

How dairy price and revenue protection insurance could work

The three approaches to income protection outlined above could also be extended to cover dairy. In fact the AGR and AGR-Lite programs would work as they are presently being pilot tested. Using the average Class III price of $11.90 and the standard deviation of $1.57/cwt. as determined in the Wisconsin ARMS program material, the $6.5 million limit on liability would cover a $1.57 negative price fall on about 4 million cwt. of production.

For a 100 cow dairy producing 21,000 lbs. per cow the risk of a $1.57/cwt. negative price change would be $32,970 for a year or $2,748 in a given month.

For a 500 cow dairy with the same situation the risk would be $164,850 for a year or $13,738 in a given month.

The LGM program detailed above is essentially a protection on returns over feed costs. For dairies, feed is typically 50% to 55% of operating costs. Thus an insurance program that would protect against adverse changes in either feed or milk prices should be of benefit. USDA-NASS currently publishes a milk-feed ratio indicating the pounds of 16% Mixed Dairy Feed equal to a pound of whole milk. The US all milk price and US prices for corn, alfalfa hay and soybeans are used in the ratio.

Following the current LGM program, a standardized dairy ration could be developed which could be priced from CBOT and/or AMS reports for feed ingredients. The appropriate CME Class III or Class IV futures could be used, depending on the primary market in the producers' area, to estimate the milk price. This would allow for protecting the dairyman's margin whether milk prices decline, feed costs rise or both circumstances occur.

A similar approach could be taken with the LRP program outlined above. Using the appropriate CME Class III or Class IV contracts, a minimum or floor price could be established. If the market falls and a producer's monthly average price is below the coverage level the difference would be

made up from the risk protection program. As with the LRP program currently in place, knowledge of one's local basis would be critical to proper price protection.

Potential benefits

Since CME milk contracts are offered for each month obtaining either total or selected month protection would be easily offered.

Pilot tests are being conducted on beef and swine LRP contracts, swine AGM contacts and all livestock for AGR contracts. Adoption to dairy would entail proper specification of the contract to match dairy requirements and a pilot testing phase to determine suitability.

Comparison of Risk Management Accounts

Table 16 illustrates how a 130 cow dairy might fare under the three proposed alternative risk management accounts. These are the Farm And Ranch Risk Management (FARRM) account, the Individual Risk Management Account (IRMA), and the Farm Program Payment Reserve (FPPR) program.

The top part of the table shows cash income and expenses for the period 1997 to 2007. Historical costs of production are based on the Economic Research Service US cost of production figures. Projections from 2002 forward use USDA and FAPRI projections for costs and US all milk prices with some adjustment by the author. During the time frame the all milk price averages $13.47 with high of $15.51 and a low of $11.60 per cwt. The following three sections indicate the performance of each proposed account over the time period.

The FARRM account assumptions followed the general parameters in recent proposed legislation to authorize this type of account. A dairyman could deposit up to 20% of net cash farm income, as determined by his IRS 1040 Schedule F return, in any year and there is no cap on the balance in the account. There is no formal trigger for withdrawals; rather those are at the dairymen's discretion. A 10% penalty would be assessed on amounts held in the account for more than 5 years so it is assumed that a "first in, first out" strategy is used on withdrawals. Further, withdrawals can only bring income up to the 5 year average. For this model it was assumed that a 10% decrease in income compared to the past year would trigger a withdrawal. In the 11 year period the FARRM account balance averaged $15,093. Deposits were made in 8 of 11 years and averaged $8,250 while withdrawals were made in 5 of the years and averaged $8,821.

The IRMA account allows for a minimum deposit of 2% of the gross farm income, as determined by the dairyman's IRS 1040 Schedule F return, but more could be deposited. That amount is matched

Table 16. Comparison Summary

| 1997 to 2007 Average for | | Years activity Occurred |
|---|---|---|
| Gross Farm Income | $ 368,843 | |
| Feed Costs | $ 170,782 | |
| Non- Feed Cash costs | $ 97,437 | |
| Total Variable Cash Costs | $ 268,219 | |
| Fixed Cash Costs | $ 44,503 | |
| Total Variable & Fixed Cash Cos | $ 312,722 | |
| Net Return above Cash Costs | $ 56,121 | |
| | | |
| FARRM Account | | |
| 150% of NCFI | $ 84,181 | |
| FARRM Acct balance | $ 15,093 | |
| Deposits | $ 8,250 | |
| Withdrawals | $ 8,821 | |
| Deposits | $ 8,250 | |
| Withdrawals | $ 8,821 | |
| Deposits | $ 8,250 | |
| Withdrawals | $ 8,821 | |
| Deposits | $ 8,250 | 8 |
| Withdrawals | $ 8,821 | 5 |
| | | |
| IRMA Account | | |
| 150% of GFI | $ 553,264 | |
| 80% of GFI | $ 283,750 | |
| IRMA Account balance | $ 90,206 | |
| Farmer deposit | $ 4,247 | 6 |
| Matching deposit | $ 4,247 | 6 |
| Withdrawals | $0 | 0 |
| | | |
| FPPR Account | | |
| 150% of GFI | $ 517,049 | |
| 150% of GFI | $ 517,049 | |
| 0 | $ - | |
| FPPR Account balance | $ 95,032 | |
| USDA deposit | $ 15,753 | 11 |
| Withdrawals | $ 9,216 | 5 |

by USDA from farm program or price support funds. The balance is capped at 150% of the 3 year average of gross income on the Schedule F. Funds can only be withdrawn if the current year Schedule F gross farm income is 80% or less of the 3 year average. Withdrawals can only bring farm income up to the 80% level. It was assumed that if gross farm income dropped by 2% or more the dairyman would not make a deposit. In 6 of 11 years deposits were made and matched by USDA. The average deposit was $8,494 with half by the dairyman and half by USDA. Income reduction did not go lower than 80% in any year in the model so no withdrawals were made. The lowest year was a 10.1% decrease. Four years had reduced income compared to the 3 year average. A different trigger level might prove more functional.

The FPPR account is funded by deposits of USDA program and price support appropriations. The account balance is capped at 150% of the 5 year average of gross farm income from the IRS 1040 Schedule F. Withdrawals are triggered any year the current Schedule F gross farm income is below the previous 5 year average. The withdrawal is limited to bringing the current year gross farm income up to the 5 year average. For purposes of this model amount paid was based on the dairy Market Loss Assistance-III program of $0.6468/cwt. up to 39,000 cwt. With USDA making the deposits those occurred each of the 11 years. The average deposit was $15,753. Withdrawals were made in 5 of the 11 years and averaged $9,216.

**Table 17 - Comparison of 3 Proposed Alternative programs with a 130 cow herd**

| Item | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total, gross value of production** | $326,133 | $377,419 | $365,730 | $337,174 | $406,507 | $332,334 | $332,155 | $414,407 | $359,907 | $354,282 | $451,222 |
| Cash expenses: | | | | | | | | | | | |
| **Feed costs** | 184,231 | 167,816 | 157,798 | 153,562 | 159,345 | 167,753 | 170,910 | 178,496 | 170,226 | 181,442 | 187,025 |
| **Other Costs; Non-feed** | 89,264 | 90,053 | 94,032 | 91,096 | 93,010 | 96,091 | 99,594 | 100,300 | 102,725 | 106,094 | 109,545 |
| **Total: variable cash expenses** | $273,496 | $257,869 | $251,829 | $244,658 | $252,356 | $263,844 | $270,504 | $278,796 | $272,950 | $287,535 | $296,570 |
| **Total, fixed cash expenses** | 38,382 | 43,127 | 43,666 | 43,053 | 41,092 | 41,444 | 39,712 | 43,793 | 50,266 | 52,575 | 52,421 |
| **Total, variable & fixed cash expenses** | $311,877 | $300,997 | $295,495 | $287,710 | $293,448 | $305,288 | $310,216 | $322,590 | $323,216 | $340,110 | $348,991 |
| **Value of production less cash expenses** | $ 14,256 | $ 76,422 | $ 70,235 | $ 49,463 | $113,059 | $ 27,046 | $ 21,938 | $ 91,817 | $ 36,690 | $ 14,172 | $102,231 |
| **Full ownership (economic) costs:** | 86,194 | 84,914 | 88,487 | 120,909 | 126,195 | 130,195 | 136,532 | 144,055 | 150,897 | 157,437 | 163,647 |
| **Total cash and economic costs listed** | $398,071 | $385,910 | $383,982 | $408,620 | $419,643 | $435,483 | $446,748 | $466,645 | $474,114 | $497,547 | $512,638 |
| **Value of production less total costs listed** | (71,938) | (8,491) | (18,252) | (71,446) | (13,135) | (103,149) | (114,594) | (52,238) | (114,207) | (143,265) | (61,416) |
| Farm And Ranch Risk Management Account Estimate (FARRM) | | | | | | | | | | | |
| 5 Year Average Income | $39,971 | $46,641 | $53,266 | $54,946 | $64,687 | $67,245 | $56,348 | $60,665 | $58,110 | $38,333 | $53,370 |
| 150% of 5 year average | $21,384 | $114,633 | $105,352 | $74,195 | $169,589 | $40,569 | $32,908 | $137,726 | $55,035 | $21,259 | $153,347 |
| Change from previous year (decimal) | -0.778 | 4.361 | -0.081 | -0.296 | 1.286 | -0.761 | -0.189 | 3.185 | -0.600 | -0.614 | 6.213 |
| Change from rolling average (decimal) | -0.643 | 0.639 | 0.319 | -0.100 | 0.748 | -0.598 | -0.611 | 0.514 | -0.369 | -0.630 | 0.916 |
| FARRM Account Balance 1/ | $1,004 | $16,289 | $30,336 | $24,853 | $47,465 | $7,265 | $0 | $18,363 | $0 | $0 | $20,446 |
| Annual Deposit | $0 | $15,284 | $14,047 | $0 | $22,612 | $0 | $0 | $18,363 | $0 | $0 | $20,446 |
| Withdrawals | $25,715 | $0 | $0 | $5,483 | $0 | $40,199 | $7,265 | $0 | $18,363 | $0 | $0 |

1/ FARRM assumptions: Up to 20% of net cash income can be deposited. No cap on deposits. No formal trigger on withdrawals or amounts. 10% penalty on amounts over 5 years old. Assume that a 10% decrease in income will trigger withdrawals up to the 5 year average for net income.