



# Risk Management Tools for Dairy Farmers

**Dennis A. Shields**

Specialist in Agricultural Policy

June 8, 2011

**Congressional Research Service**

7-5700

[www.crs.gov](http://www.crs.gov)

R41854

**CRS Report for Congress**

*Prepared for Members and Committees of Congress*

## Summary

Managing price and income risks can be a major challenge for dairy farmers. In 2011, the farm price of milk has rebounded from lows in 2009, but the price of corn, a major feed ingredient, has reached record highs. The volatile nature of commodity markets presents opportunities for profits and losses when milk prices or feed costs change.

In dairy and in agriculture generally, farm-level risk management tools are provided through both the private and the public sectors. By using these tools, dairy producers transfer risk to either the private sector or the government through programs that offer payments when milk prices decline. Risk management tools can also be categorized as either short-run or long-run tools.

In the short run (up to about a year or so), producers can lock in what they may view as favorable prices and/or margins (the milk price minus feed cost) using forward contracts with milk buyers and feed dealers. Producers might also use brokers to establish hedges using futures or options that would lock in those favorable prices or margins. Livestock Gross Margin—Dairy (LGM-Dairy) is an insurance product administered by the U.S. Department of Agriculture's Risk Management Agency (RMA) but sold by private insurers. The short-run tools typically offer price or margin protection at whatever level the market determines. Sometimes producers can lock in favorable (high) margins, while at other times margins may be low or even negative.

Long-run risk management strategies might include diversifying the farm operation, perhaps by growing more feed (thus avoiding feed purchases at market prices) or by adding enterprises, such as a trucking operation. The intent behind such a strategy would be to generate income streams that do not fluctuate in the same way as dairy income. Another option is participation in the federal Milk Income Loss Contract (MILC) program, which makes payments to producers when milk prices drop below levels established in the 2008 farm bill (P.L. 110-246).

As Congress prepares to deliberate dairy policy in the next farm bill, policymakers might consider a number of options to address the risk management needs of individual dairy producers. These include facilitating the use of private hedging, expanding the LGM-dairy margin insurance, establishing "farm savings accounts" to encourage cash reserves, implementing a national margin insurance program, modifying the existing MILC program, and helping secure additional lines of credit for margin accounts used in hedging. Regarding both private marketing tools (e.g., hedging) and public programs, policymakers will likely consider whether the margin provided by markets (and determined essentially each day that the futures market is open) is sufficient for producers, or whether a minimum margin needs to be set through a government program. Policymakers may also consider the implications of removing "too much" risk, and the possibility that high levels of margin protection could potentially lead to excess milk production and unfavorable returns for dairy producers.

Many in the dairy industry, producers and processors alike, generally support the federal government's policies promoting the use of risk management tools by individual producers. In contrast, the industry is divided over potential changes to other, more traditional dairy policies, including the addition of a supply management program, elimination of price support, and changes to the federal milk marketing order system. For information on a broader range of current programs and options for dairy policy, see CRS Report R41141, *Previewing Dairy Policy Options for the Next Farm Bill*.

## Contents

|   |    |
|---|----|
| Introduction .....  | 1  |
| Market Volatility for Dairy Farmers.....  | 1  |
| Cost of Feed and Milk Margins .....   | 2  |
| Producer Reaction to Recent Margin Volatility .....   | 4  |
| Current Risk Management Tools .....   | 5  |
| Private Delivery: Forward Contracting .....   | 6  |
| Private Delivery: Hedging.....  | 7  |
| Hedging Outcomes During the 2009 Market Collapse .....                                      | 9  |
| Challenges with Hedging .....   | 9  |
| Private / Government Delivery: Livestock Gross Margin Insurance for Dairy (LGM-Dairy) ..... | 10 |
| Private / Government Delivery: Whole Farm Insurance.....                                    | 12 |
| Government Delivery: Milk Income Loss Contract (MILC) Program .....                         | 12 |
| Dairy Risk Management and the Next Farm Bill .....  | 13 |
| Adoption of Private Risk Management Tools.....  | 13 |
| LGM-Dairy Enhancements .....  | 14 |
| Farm Savings Accounts.....  | 15 |
| Federal Margin Insurance Program.....   | 15 |
| MILC Program Modifications .....  | 16 |
| Conclusion.....   | 16 |

## Figures

|  |    |
|--|----|
| Figure 1. Average Annual Farm Price Received by Farmers v. Federal Support Price.....            | 2  |
| Figure 2. Corn Prices Have Risen Sharply .....   | 3  |
| Figure 3. Milk Margin Fluctuations .....   | 3  |
| Figure 4. Dairy Cow Inventory Continued to Increase While Milk Margin Fell Sharply.....          | 4  |
| Figure 5. Current Risk Management Tools for Dairy Producers .....                                | 5  |
| Figure 6. Contract Prices Were Less Volatile Than Market Prices, September 2000-March 2002 ..... | 7  |
| Figure 7. Milk Price Hedging by Producers .....  | 8  |
| Figure 8. Example of Milk Price Hedging by a Producer .....                                      | 9  |
| Figure 9. Example #1 of Livestock Gross Margin—Dairy .....                                       | 11 |
| Figure 10. Example #2 of Livestock Gross Margin - Dairy .....                                    | 12 |

## Contacts

|                                  |    |
|----------------------------------|----|
| Author Contact Information ..... | 17 |
|----------------------------------|----|

## Introduction

Managing price and income risks can be a major challenge for dairy farmers. In 2011, the farm price of milk has rebounded from lows in 2009, but the price of corn, a major feed ingredient, has reached record highs. The volatile nature of commodity markets presents opportunities for profits and losses when milk prices or feed costs change. Feed accounts for around 75% of a dairy farm's operating costs.

For producers of any farm commodity, certain practices to manage risk can help limit losses of capital so the farm can continue operating. In dairy, and in agriculture generally, farm-level risk management is provided through both private and public sector tools. By using these tools, dairy producers transfer to others risk they are unwilling to carry, shifting it either to those in the private sector who profit from accepting the risk, or to the government (and taxpayers generally) through subsidized insurance products or the Milk Income Loss Contract (MILC) program.

This report describes the market risks dairy farmers face, discusses current risk management tools available to dairy producers, and provides a review of risk management options being considered for the next farm bill. Many in the dairy industry, producers and processors alike, generally support the federal government's policies promoting the use of risk management tools by individual producers. In contrast, the industry is divided over changes to other, more traditional dairy policies and programs, including the possible addition of a supply management program.

Federal dairy programs, such as price supports and federal milk marketing orders, are designed to address pricing and income issues, among other matters, for producers collectively. Even though these programs can affect dairy producer profitability, they are not included in this report because they generally address the industry as a whole and producers do not opt in or out as a means of managing their risks.<sup>1</sup> For information on a broader range of current programs and options for dairy policy, see CRS Report R41141, *Previewing Dairy Policy Options for the Next Farm Bill*.

## Market Volatility for Dairy Farmers

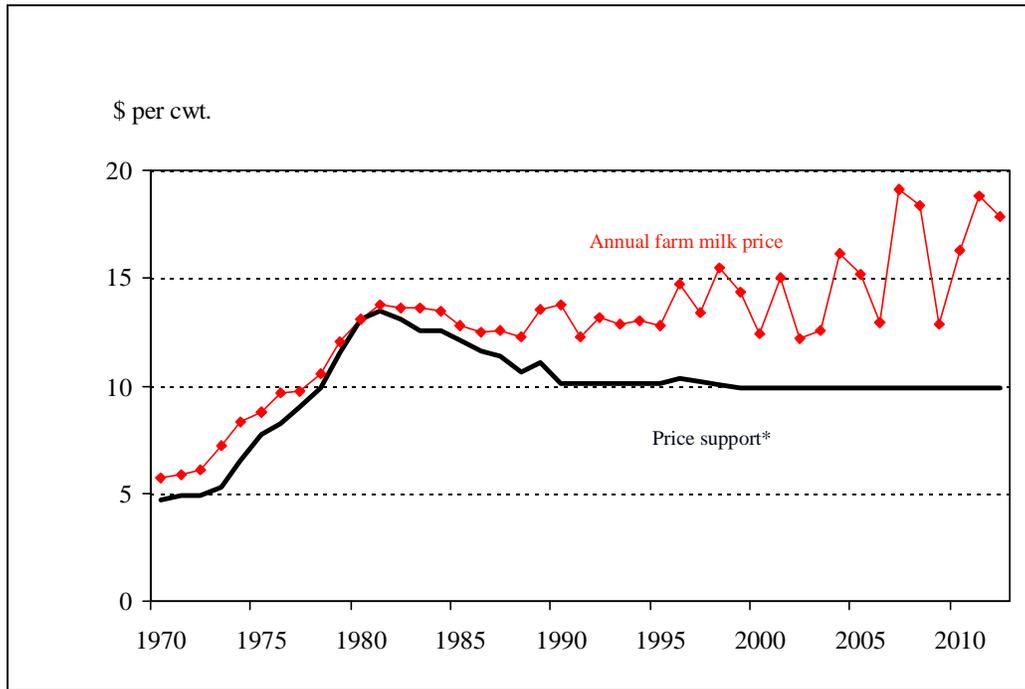
In the 1970s and early 1980s, farm milk prices, resting atop milk support prices, were mostly stable and left little price uncertainty for producers. As a result, individual producers had little need for managing price risk—the government price support program did it for them by removing large amounts of dairy products from the market. Subsequently, Congress reduced price support levels throughout the 1980s to reduce program costs. Since then, farm milk prices have remained mostly above support levels, following increases in domestic and export demand, and annual fluctuations in farm milk prices have become routine.<sup>2</sup> For example, from 2006 to 2010, milk prices moved between lows and record or near-record highs. (See **Figure 1**.) The experience for dairy producers in 2009 was severe because prices had been at a record high in 2007-2008 and then fell sharply at a time when feed costs were rising substantially above long-run averages.

---

<sup>1</sup> For example, the Federal Milk Marketing Order system has certain pricing effects that can affect the milk market from month to month, but it does not provide individual producers with options for managing their business risks. Similarly, the Dairy Product Price Support Program provides general support to the overall level of farm milk prices through government purchases of dairy products. While the program puts a floor under dairy product prices during periods of extreme market lows and dairy producers in general can benefit from its presence, producers do not opt in or out of the program as a way to manage risks.

<sup>2</sup> Dairy product prices dropped to support levels during several months of 2008 and 2009.

**Figure 1. Average Annual Farm Price Received by Farmers v. Federal Support Price**  
(year-to-year variability has increased since the mid-1990s)



**Source:** CRS, using annual price data from U.S. Department of Agriculture, [http://www.nass.usda.gov/Data\\_and\\_Statistics/Quick\\_Stats\\_1.0/index.asp](http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats_1.0/index.asp); and support prices from “Understanding Dairy Markets,” University of Wisconsin, <http://future.aae.wisc.edu/>.

**Note:** Beginning in 2008, support prices were established for dairy products (not shown) rather than milk. 2011 and 2012 forecasts by USDA.

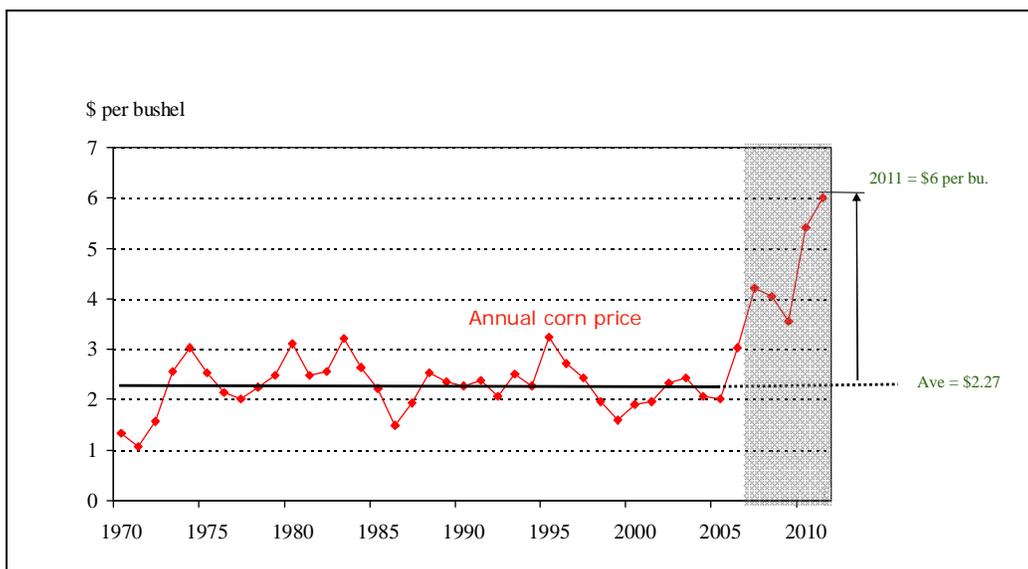
In recent years, increased demand for U.S. dairy product exports has been a factor behind the strength in milk prices. The dairy industry has made significant gains by developing export markets and positioning itself to capture future growth in the global market. The United States is now a net dairy exporter, and exports account for 10% or more of milk production. Becoming a larger player in the global dairy market has brought additional demand to the industry, but dairy producers have become more exposed to the price volatility in that market.

## Cost of Feed and Milk Margins

While the farm milk price is an important factor for the financial health of dairy farms, it is only part of the picture. Another significant factor is the cost of dairy feed, which accounts for about three-quarters of a dairy farm’s operating costs or about one-half of total costs. In 2011, dairy farmers are facing record corn prices, well above the long-run average. (See **Figure 2**.) Prices of other major feed ingredients, including soybean meal and alfalfa, have increased as well.

Many suggest that to adequately describe the current farm situation at any price level for milk or feed, a “milk margin,” or the milk price minus feed costs, should be used. The margin is the amount available to pay all other costs once the feed bill is paid. The milk margin can be calculated by subtracting a national feed cost from the national farm milk price, as reported by the U.S. Department of Agriculture (USDA) each month.

**Figure 2. Corn Prices Have Risen Sharply**

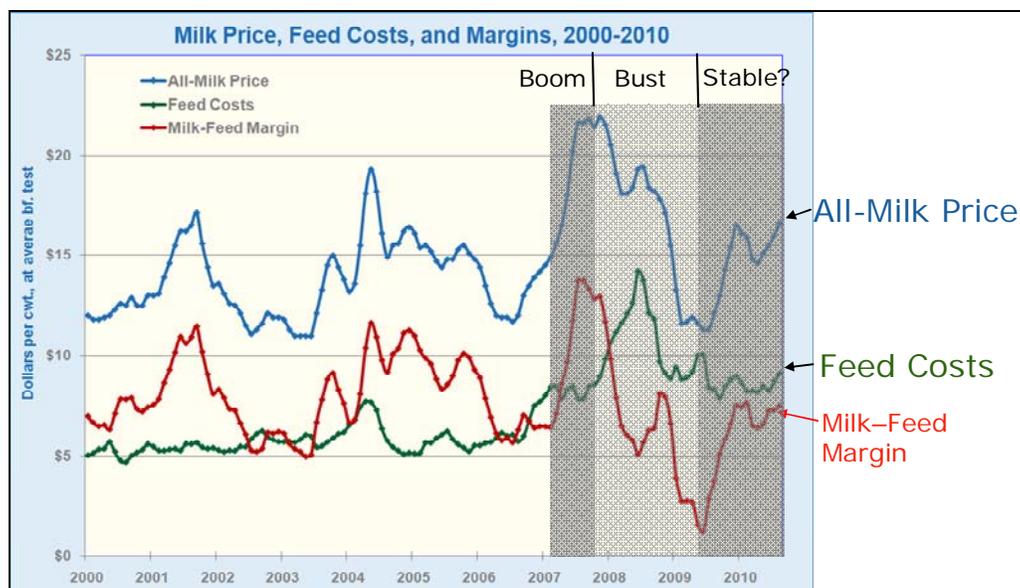


**Source:** CRS, using annual data from U.S. Department of Agriculture, [http://www.nass.usda.gov/Data\\_and\\_Statistics/Quick\\_Stats\\_1.0/index.asp](http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats_1.0/index.asp).

**Notes:** Market year average farm price of corn; 2011 forecast.

**Figure 3. Milk Margin Fluctuations**

(margin = farm price of milk in \$/cwt. minus feed price in \$/cwt)



**Source:** Adapted from chart by National Milk Producers Federation.

**Note:** Feed cost is calculated using the price of corn, soybean meal, and alfalfa hay.

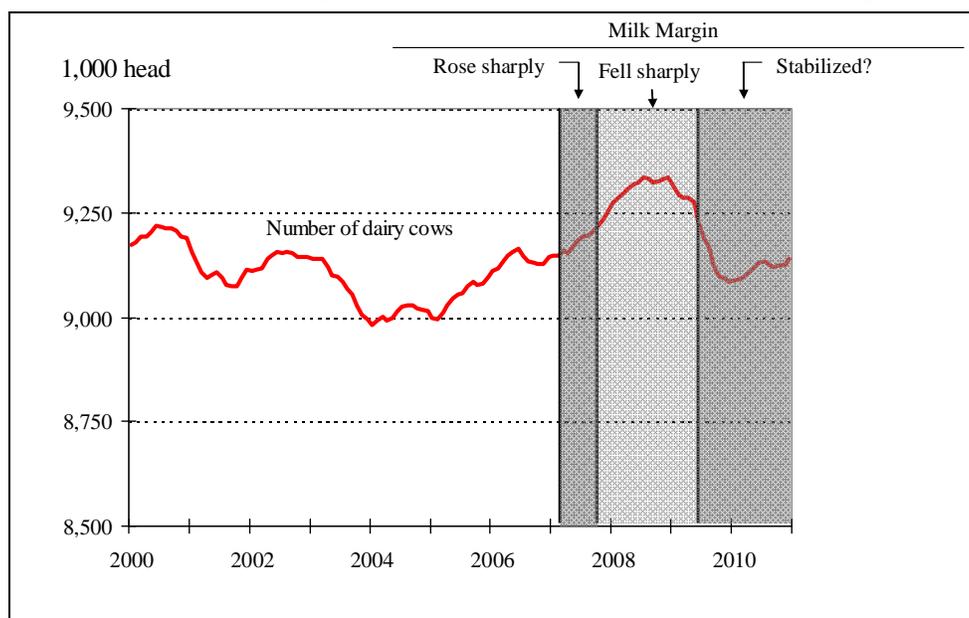
Using National Milk Producers Federation (NMPF) calculations (based on USDA data), the milk margin on a monthly basis typically moves between \$5 and \$10 per hundred pounds (cwt) of milk. Once outside this band, the margin typically reverses course. In **Figure 3**, three periods are identified. The recent boom period for milk prices (blue line) was fairly short-lived in 2007 and early 2008 and was followed by a steep and prolonged decline through mid-2009. Meanwhile,

feed costs (green line) spiked dramatically in 2008. The combined movements of milk prices and feed costs eventually drove the milk margin to below \$3 per cwt in 2009, and producers culled their herds. In the latter part of 2009 and into 2010, domestic and international demand for milk and dairy products improved and producers continued cutting back their herds. Milk prices rose and the milk margin returned to \$7-\$8 per cwt, which is near the longer-run average.

## Producer Reaction to Recent Margin Volatility

During the period of rapidly rising margins in 2007, producers added cows to their herds. This continued well into 2008, even though margins were deteriorating (**Figure 4**). The number of dairy cows eventually fell, which helped bring supplies in line with demand. The delayed supply response has prompted some industry observers to note that dairy farmers, like other business people, often reinvest profits from boom years back into the operation in order to minimize their tax liability. If continuous investment occurs industry-wide, it has the potential to build capacity and supplies even during cyclical market downturns.

**Figure 4. Dairy Cow Inventory Continued to Increase While Milk Margin Fell Sharply**



**Source:** CRS, using annual data from U.S. Department of Agriculture, [http://www.nass.usda.gov/Data\\_and\\_Statistics/Quick\\_Stats\\_1.0/index.asp](http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats_1.0/index.asp).

To deal with recent market and income volatility, more producers have reportedly adopted risk strategies. Some may have become interested in risk management for the first time, while others may have dabbled in it before and become true believers in actively managing their business risk. Producers who have long managed their market risks typically view market volatility as a potential profit opportunity and employ strategies to avoid the catastrophic events often attributed to low milk prices. These farmers say that volatility has led to profits in the up years and made them better managers in the down years. In contrast, other producers continue to call for the government to mitigate market volatility in some way.<sup>3</sup>

<sup>3</sup> These producer comments were made at the “Living on a Roller Coaster” workshop for dairy economists and policy (continued...)

## Current Risk Management Tools

Risk management tools for individual dairy producers can be categorized as either short-run or long-run tools. They can be also categorized by who delivers the tool—either private parties or the federal government. (See **Figure 5**.)

In the short run (up to about a year or so), producers can lock in what they may view as favorable (or at least acceptable) prices and/or margins using forward contracts with milk buyers and feed dealers. They might also use brokers to establish hedges using futures or options that lock in favorable prices or margins. As a third option, producers might maintain cash reserves to get through the low price periods. In the government category, Congress occasionally grants emergency government assistance to producers that could be considered short-run risk management because, over the years, some producers have apparently considered the possibility of assistance to be sufficient risk protection. Finally, government insurance products administered by USDA’s Risk Management Agency but delivered by private insurers are available to manage short-run risks.

**Figure 5. Current Risk Management Tools for Dairy Producers**

|  | Risk Management Tool  |  |
|--|---|--|
| Delivery:  | Short run   | Long run   |
| Private (market-determined level of risk protection) | <ul style="list-style-type: none"> <li>• Forward contract milk and/or feed</li> <li>• Hedge milk/feed with futures or options through broker</li> <li>• Maintain cash reserves</li> </ul> | <ul style="list-style-type: none"> <li>• Diversify operation (e.g., other enterprises, produce more feed)</li> <li>• Pursue off-farm income</li> </ul> |
| Private / Government                                 | <ul style="list-style-type: none"> <li>• Livestock Gross Margin (LGM) – Dairy</li> <li>• Whole farm insurance (AGR-Lite)</li> </ul>   | Not applicable   |
| Government (statutory level of risk protection)      | <ul style="list-style-type: none"> <li>• Occasional emergency assistance (e.g., \$350 million in Oct 2009 for direct payments and purchase of dairy products)</li> </ul>                  | <ul style="list-style-type: none"> <li>• Milk Income Loss Contract (MILC) Program</li> </ul>   |

**Sources:** CRS; Scott Brown, “Difference Between Futures, Options, LGM, MILC, and Margin Insurance,” presentation at a conference for dairy economists and policy analysts, Chicago, IL, May 5, 2011, <http://dairy.wisc.edu/Workshops/Chicago11/Presentations/Brown.PDF>.

**Note:** Other federal dairy programs, such as price support and federal milk marketing orders, are designed to address pricing and income issues, among other matters, for producers collectively. Even though these programs can affect dairy producer profitability, they are not included here because they generally address the industry as a whole and producers do not opt in or out as a means of managing their risks.

(...continued)

analysts, May 5-6, 2011, Chicago, Illinois, <http://dairy.wisc.edu/Workshops/Chicago11/>. Also, for information on potential government policies to reduce milk price volatility, see CRS Report R41141, *Previewing Dairy Policy Options for the Next Farm Bill*.

Long-run risk management strategies might include diversifying the farm operation, perhaps by growing more feed (thus avoiding market purchases) or by adding other enterprises, such as a trucking operation. The goal of such moves would be to generate revenue streams that do not fluctuate in the same way as dairy revenues. Pursuing off-farm income is another way to reduce variability in farm household income by simply reducing dairy returns as a share of the overall household income. But given the labor requirements of dairy operations, this is usually considered a less viable option than for other types of farms.

Finally, the Milk Income Loss Contract (MILC) program makes payments when milk prices drop below certain levels. MILC is considered a long-run tool because the target levels are in statute for multiple years over the life of the 2008 farm bill (P.L. 110-246). This is in contrast to the short-run private tools listed above, which offer price or margin protection at whatever levels the milk and feed markets determine for a specific time period, generally one year or so into the future. Sometimes producers can lock in favorable (high) margins, while at other times margins may be low or even negative.

These tools are described in more detail below.<sup>4</sup>

## Private Delivery: Forward Contracting

Forward contracting gives dairy farmers an opportunity to lock in a milk price before delivery in the future, generally for several months and possibly for up to two years in advance. Producers sign forward contracts with their cooperative or milk buyer to sell in the future at a price determined when the contract is made.<sup>5</sup> Prices are based on the futures market at the Chicago Mercantile Exchange (CME). Dairy farmers pay fees for this service (e.g., administrative costs or brokerage fees).

This method of risk management can work well for producers with 100 or fewer cows, because the milk volume produced is insufficient to hedge directly on the futures exchange. Producers also do not need to post “margin money,” as when hedging with futures (see “Private Delivery: Hedging” below), where money must be posted when prices move in a direction against a trader’s position. With a basic forward contract, the producer has no downside price risk, but no upside potential either. Other types of forward contracts offer upside potential.

In 2002, USDA reported results from a pilot program on forward contracting that demonstrated the price-smoothing effect of contracts.<sup>6</sup> In **Figure 6**, note that the dark blue line, which is the

---

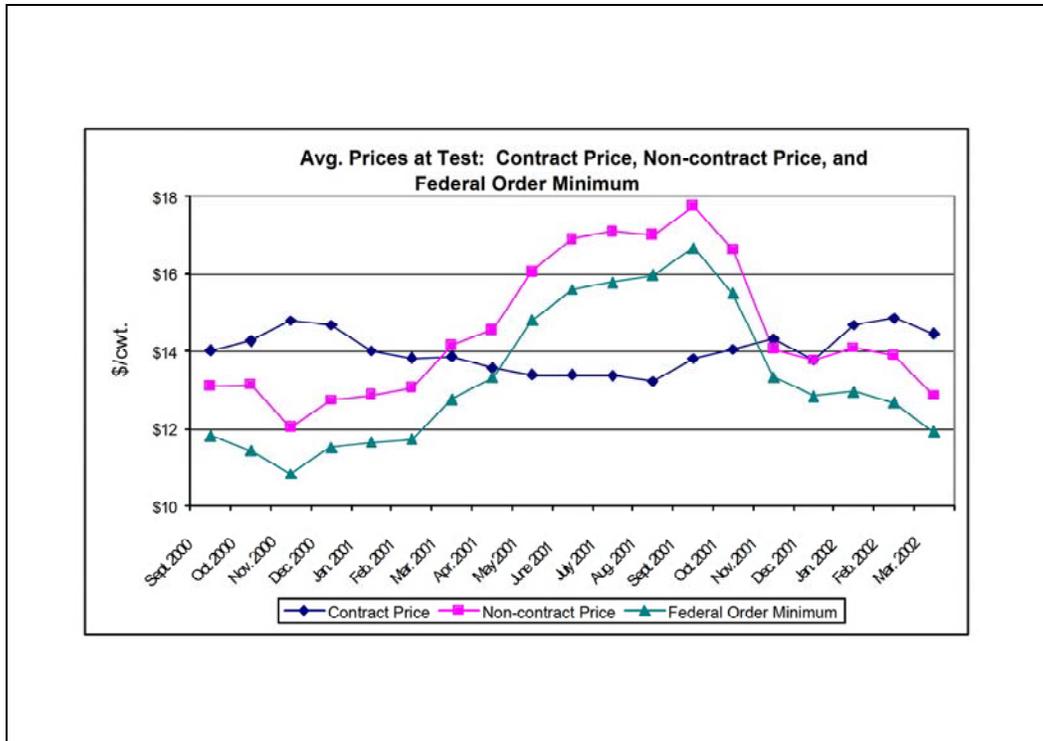
<sup>4</sup> Additional information is available in Scott Brown, “Difference Between Futures, Options, LGM, MILC, and Margin Insurance,” presentation at a conference for dairy economists and policy analysts, Chicago, IL, May 5, 2011, <http://dairy.wisc.edu/Workshops/Chicago11/Presentations/Brown.PDF>; and Ken Bailey and James Dunn, *Comparison of the Dairy Livestock Gross Margin Program and Standard Risk Management Approaches*, The Pennsylvania State University, University Park, PA, January 2010, <http://dairyoutlook.aers.psu.edu/reports/ComparisonoftheLGMProgram.pdf>.

<sup>5</sup> Prior to implementation of the 2008 farm bill (P.L. 110-246), handlers were required to pay at least the minimum prices established by the federal milk marketing orders each month, which dampened participation. Under the 2008 farm bill, dairy farmers can enter into forward contracts with handlers for milk purchased for manufacturing uses without following the minimum pricing rules.

<sup>6</sup> Agricultural Marketing Service, U.S. Department of Agriculture, “A Study of the Dairy Forward Pricing Pilot Program and Its Effect on Prices Paid Producers for Milk,” October 31, 2002, <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004563>. For data from 2000 to 2004, see <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004562&acct=dgeninfo>.

average contract price, is relatively stable (ranging from \$13 to \$15 per cwt), while the market price (in pink) fluctuates (from \$12 to \$18 per cwt). Across the 18-month period, the average contract price was lower than the average market price, thus illustrating that lower risk (lower volatility) is associated with lower return and higher risk is associated with higher returns. Individual producers may see benefits to following either approach, depending on their business management strategies.

**Figure 6. Contract Prices Were Less Volatile Than Market Prices, September 2000-March 2002**



**Source:** Agricultural Marketing Service, U.S. Department of Agriculture, “A Study of the Dairy Forward Pricing Pilot Program and Its Effect on Prices Paid Producers for Milk,” October 31, 2002, <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004563>.

Producers can also contract their feed requirements with local grain elevators or producers, with prices typically set relative to futures prices. With the grain seller handling the risk-related activities, this approach can work especially well for smaller producers.

### Private Delivery: Hedging

Rather than forward contracting, producers can hedge risks directly and protect against the prospect of declining prices by selling a milk futures contract on the CME in advance of when the milk is produced and sold. If prices in the future in fact decline, the farmer will realize a profit on the trade when the original contract is eventually liquidated (i.e., when the farmer buys another contract of the same kind to offset the first contract), because the futures contract in effect conveys the right to sell at the old (higher) price. The farmer adds any profit generated from this set of transactions to the actual value of milk he or she sells.

If the futures price rises instead of falls, the farmer will realize a loss in the futures market. However, these losses can be offset by gains in the value of milk the farmer is selling, because the cash market and futures market tend to move in the same direction. By using such a strategy (called “hedging”), farmers can “lock in” a predetermined price for the milk they produce. A similar strategy can be employed to lock in favorable prices of key feed inputs, such as corn and soybean meal. When milk and feed hedges are used together, a dairy producer can lock in a milk margin (milk price minus feed cost).

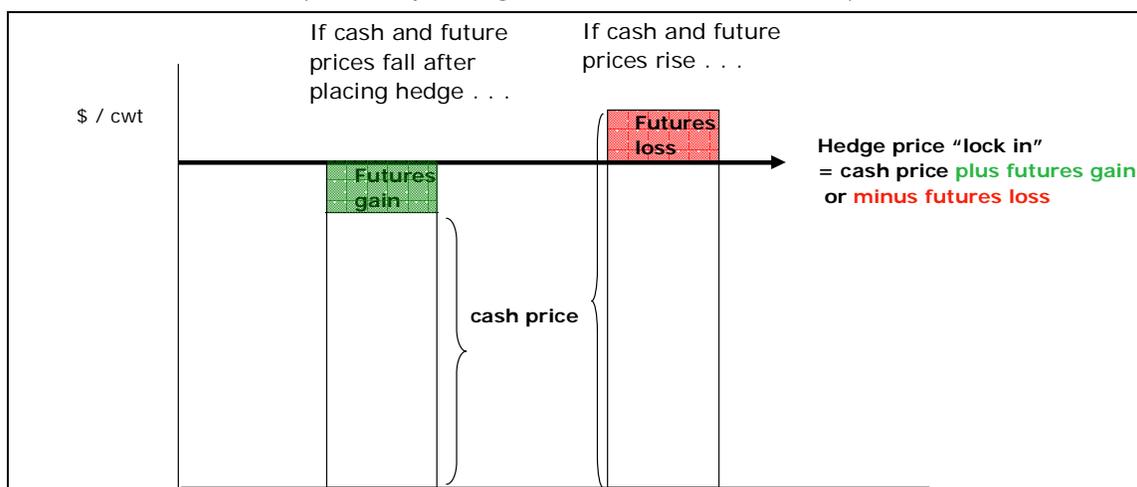
A graphical depiction of a hedge to protect against a decline in milk prices appears in **Figure 7**. If the farmer wants to lock in a price represented by the black arrow, he would sell a futures contract. If overall prices decline, he would see a lower actual cash price for milk but would realize a gain in the futures market (shown in green) when the original position is offset by purchasing a futures contract. As a result, the net price would be the hedge price shown as the arrow. If overall prices were to rise, the producer would realize a much higher cash price, but the loss in the futures market (shown in red) would reduce the net price back to the hedge price (dark arrow). A numerical example of producer hedging is provided in **Figure 8**.

A producer can execute hedges through a broker who will set up a margin account. The margin account is used to pay for any daily losses incurred if the market moves opposite to the producer’s position in the futures market. (Producers, who typically lock in a selling price, incur futures losses when market prices rise.) The producer also receives marketing advice, including strategies for tailoring hedging to the producer’s operation and risk preferences. Direct hedging works best for farms with at least 100 cows (which produce about 200,000 pounds of milk per month, roughly the same amount as a single futures contract).

**Figure 7** suggests that hedging with futures is equivalent to giving up possible windfall gains from rising prices in exchange for insurance against downside price risk. Producers who wish to retain some of the upside potential may hedge by purchasing an option contract, which conveys the right, *but not the obligation*, to sell at a predetermined price. By using options, producers avoid the need for a margin account. However, because options buyers must pay a premium to the seller, options can be more expensive in terms of price protection per quantity of milk.

**Figure 7. Milk Price Hedging by Producers**

(same net price regardless of final market outcome)



Source: CRS.

**Figure 8. Example of Milk Price Hedging by a Producer**

| Timeline   | Prices in \$ per hundredweight (cwt)  | Action in futures market  | Action in cash market                               | Net price to producer = farm price plus gain/loss in futures                         |
|--|---|---|---|--|
| May 2008<br>Producer decides to hedge milk to be produced in November 2008 | Nov Class III futures = \$18.20 + \$1.30 basis*<br><b>Hedge price = \$19.50</b> | Producer sells a contract for \$18.20 at a cost of \$0.05 /cwt                              | Not applicable                                      | Not applicable   |
| Nov 2008<br><i>Scenario #1 for falling prices</i>                          | Announced Class III price = \$16.20   | Producer purchases a contract for \$16.20 and realizes a gain of \$2.00 (\$18.20 - \$16.20) | Producer's farm price = \$17.50 (\$16.20 + \$1.30*) | \$17.50<br>+ futures gain of \$2.00<br>- fee of \$0.05<br><b>Net price = \$19.45</b> |
| Nov 2008<br><i>Scenario #2 for rising prices</i>                           | Announced Class III price = \$20.00   | Producer purchases a contract for \$18.20 and realizes a loss of \$1.80 (\$18.20 - \$20.00) | Producer's farm price = \$21.30 (\$20.00 + \$1.30*) | \$21.30<br>- future loss of \$1.80<br>- fee of \$0.05<br><b>Net price = \$19.45</b>  |

**Source:** CRS, adapted from "Futures and Options Trade in Milk and Dairy Products," Univ. of Wisconsin, <http://learningstore.uwex.edu/Assets/pdfs/A3732.pdf>.

**Note:** \*Basis is the farm price (price received by the producer) minus the futures price. The example assumes that the expected and actual basis is the same.

## Hedging Outcomes During the 2009 Market Collapse

Hedging can be effectively used to mitigate market risks for dairy producers. At a House Agriculture Committee hearing in 2009, witnesses pointed out how, even in the depths of the 2009 dairy crisis, producers who had taken defensive action were rewarded with returns far exceeding the market.

If milk producers had entered into forward contracts or hedged their milk sales in the fall [2008], and in some cases earlier this year [2009], this price protection may not have guaranteed profits, but the losses might have been in the range of one dollar per hundredweight instead of five or six dollars per hundredweight.—Donald DeJong, Northland Farms<sup>7</sup>

We have clients today who are receiving \$17 or \$18 per hundredweight for milk hedged last summer; some will be in the \$15 to \$16 range for the second half of this year based on marketing decisions made in February and March. This compares to base prices of \$10 per hundredweight that their neighbors are receiving.—Phil Plourd, Blimling and Associates<sup>8</sup>

## Challenges with Hedging

These testimonials highlight potential benefits of individual producer hedging, but producers also face several challenges when hedging. First, producers need access to a hedge line of credit,

<sup>7</sup> Testimony by Donald DeJong, Northland Farms, July 21, 2009, House Committee on Agriculture hearing, <http://agriculture.house.gov/testimony/111/h072109/DdeJongpdf.pdf>.

<sup>8</sup> Testimony by Phil Plourd, Blimling and Associates, July 21, 2009, House Committee on Agriculture hearing, <http://agriculture.house.gov/testimony/111/h072109/Plourd.pdf>.

which is used to make payments to the “margin” account when the market moves counter to the producer’s position. Importantly, the line of credit and its use essentially require faith by both the producer and the banker that hedging strategies, if properly executed, will eventually pay off when the milk is sold later, even though a large negative margin account balance might be generated when market prices go against the futures position.

Second, for a hedge to be effective, the difference between the farm price and the futures prices (called the “basis”) needs to be fairly consistent. Market observers have commented that the basis for dairy producers is sometimes inconsistent and more difficult to determine than for other commodities because of the nature of milk pricing under milk marketing orders.

The cost of margin protection is another issue. Per-unit costs might discourage a producer from implementing a hedging strategy because, when margins are low, the cost of executing a risk strategy may wipe out potential profits, and some producers might not be comfortable with locking in a zero profit. Similarly, producers must overcome fear of leaving money on the table, which happens when hedging, or of locking in a loss when an even larger loss might force them out of business.

The preceding discussion on forward contracting and hedging describes unsubsidized privately available risk management tools.<sup>9</sup> The following sections review tools with some measure of federal involvement.

## **Private / Government Delivery: Livestock Gross Margin Insurance for Dairy (LGM-Dairy)**

Another option available to dairy producers is the Livestock Gross Margin for Dairy Cattle insurance policy (LGM-Dairy), which provides protection against a loss in gross margin (market value of milk minus feed costs). As such, it is considered “bundled hedging,” where both the output price (milk) and the input price (feed) are hedged at the same time. LGM-Dairy is administered by USDA’s Risk Management Agency (RMA) as part of the federal crop insurance program and is sold by private insurance agents. At the end of an 11-month insurance period, producers receive an indemnity if the actual gross margin is less than the guarantee.<sup>10</sup>

LGM-Dairy became available in 2008. Observers have commented that participation has been low because producers are still learning how to use it, and until recently, the policy premium has not been subsidized (unlike most other RMA products).

In 2010, USDA announced that it would begin subsidizing policy premiums and would make other changes to this dairy insurance product to encourage its use. These included shifting the due date for the premium paid by the producer from the beginning of the policy period to the end (approximately one year later). Policy sales increased sharply but then were halted when allocated funds (\$16 million) ran out midway through FY2011. The Federal Crop Insurance Act, as

---

<sup>9</sup> The Commodity Futures Trading Commission is an independent agency that regulates commodity futures and options markets in the United States.

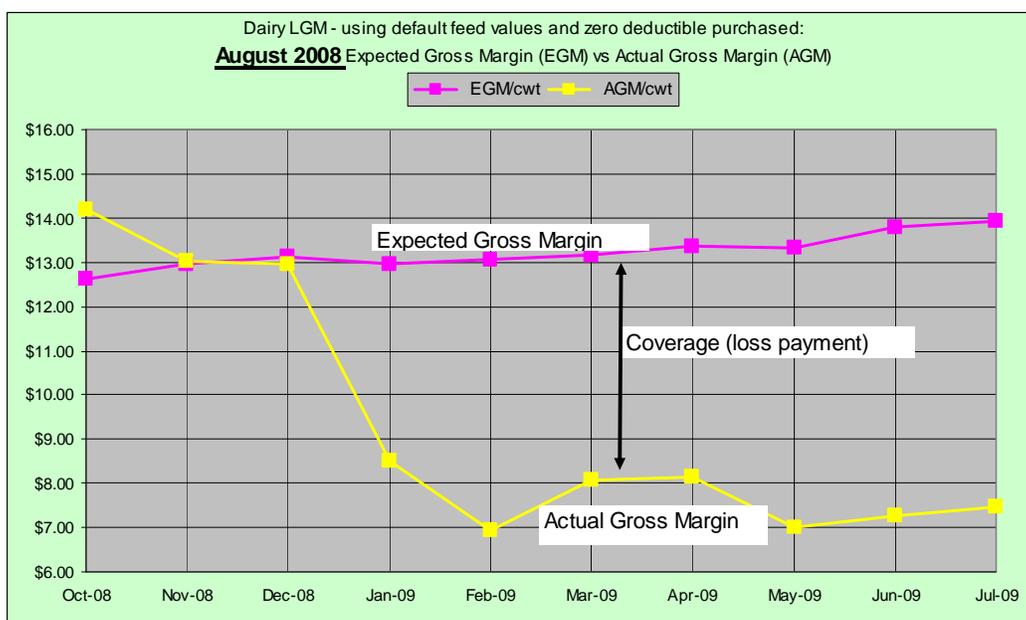
<sup>10</sup> The policy uses futures prices for corn, soybean meal, and milk to determine the actual and guaranteed margins. For more information, see U.S. Department of Agriculture, Risk Management Agency, “FAQ on Livestock Gross Margin—Dairy,” Washington, DC, April 23, 2009, <http://www.rma.usda.gov/help/faq/lgmdairy.html>. Additional materials are available from the University of Wisconsin at [http://future.aae.wisc.edu/lgm\\_dairy.html](http://future.aae.wisc.edu/lgm_dairy.html).

amended (7 U.S.C. §§ 1501 et seq.), limits expenditures on livestock policies to \$20 million per year (7 U.S.C. § 1523). In FY2011, policies were subsidized at approximately 40% of the total premium (this compares with about 60% overall for the crop insurance program).

Two examples illustrate how using LGM-Dairy can potentially help a producer manage milk and feed price risks. **Figure 9** shows the guarantee level during 2008 just prior to the 2009 milk price crash. The actual margin determined later was substantially lower. Producers received a per-cwt loss payment equal to the difference between the guarantee and the actual margin.

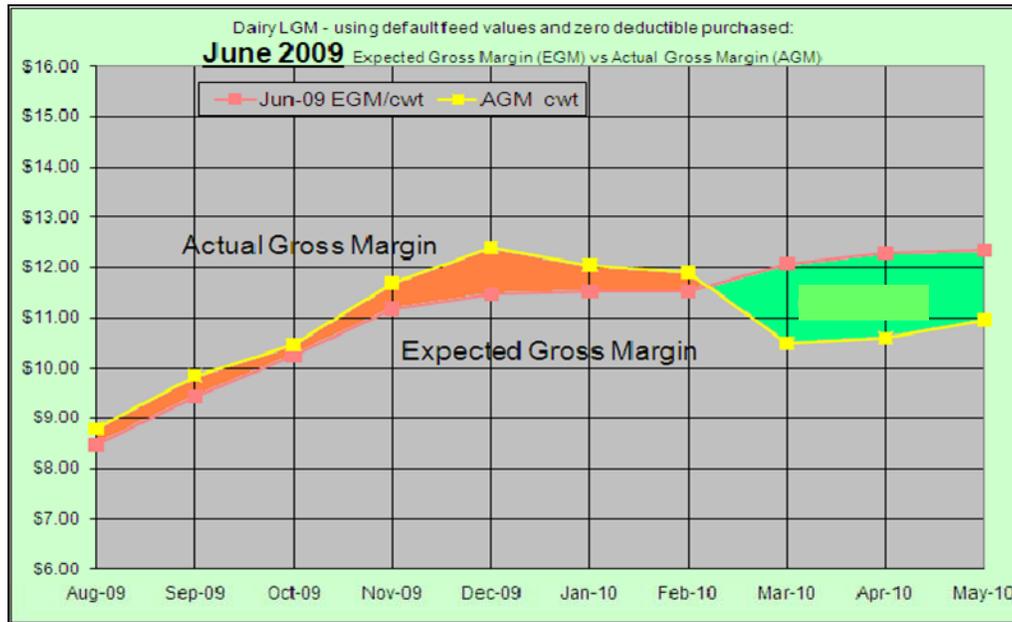
A second example in **Figure 10** illustrates how LGM-Dairy may be much less attractive, depending on market conditions. In the summer of 2009, when milk prices were hitting rock bottom, the guarantee level was fairly low. For a producer who purchased a policy in mid-summer 2009, the actual margin turned out to be higher than the guarantee for much of the insurance period. These two examples illustrate that the margin guarantee a producer can purchase is only as good as what the market offers at the time of purchase.

**Figure 9. Example #1 of Livestock Gross Margin—Dairy**  
(policy purchased in August 2008)



**Source:** Gene Gantz and Karen Powell, *Dairy Gross Margin—Overview/Concepts & Illustrations*, presentation material, U.S. Department of Agriculture, Risk Management Agency, 2011.

**Figure 10. Example #2 of Livestock Gross Margin—Dairy**  
(policy purchased in July 2009)



**Source:** Gene Gantz and Karen Powell, *Dairy Gross Margin—Overview/Concepts & Illustrations*, presentation material, U.S. Department of Agriculture, Risk Management Agency, 2011.

## Private / Government Delivery: Whole Farm Insurance

RMA also administers whole-farm crop insurance policies called Adjusted Gross Revenue (AGR) and AGR-Lite that insure revenue of the entire farm rather than for an individual crop by guaranteeing a percentage of average gross farm revenue, including livestock revenue. The policies are available in selected states and make use of five years of income and expense information from a producer's Schedule F tax forms and current-year expected farm revenue to calculate the policy revenue guarantee.<sup>11</sup> The current insurance products are designed primarily for small, diversified livestock and specialty crop farms.<sup>12</sup> With less than 1,000 policies sold nationwide annually, whole farm insurance is not widely popular, reportedly because it requires extensive tax data and is considered to have relatively expensive premium costs (despite federal subsidies) for the protection a farm receives.

## Government Delivery: Milk Income Loss Contract (MILC) Program

Aside from the LGM-Dairy insurance policy, the only federal government program that provides a measure of risk management for individual producers is the Milk Income Loss Contract (MILC) Program. MILC makes monthly payments to dairy farmers when the milk price (as measured by

<sup>11</sup> U.S. Department of Agriculture, *Adjusted Gross Revenue (AGR) Fact Sheet*, November 2010, <http://www.rma.usda.gov/pubs/rme/agr.pdf>; *Adjusted Gross Revenue-Lite Fact Sheet*, November 2010, <http://www.rma.usda.gov/pubs/rme/agr-lite.pdf>.

<sup>12</sup> Richard V. Llewelyn and G. A. (Art) Barnaby, *AGR-Lite Interactive Producer Worksheet Instructions*, Kansas State University, May 2008, p. 4, [http://www.agmanager.info/crops/insurance/spreadsheets/AGR-Lite\\_Instructions.pdf](http://www.agmanager.info/crops/insurance/spreadsheets/AGR-Lite_Instructions.pdf).

the Class I price in Boston) drops below the target price of \$16.94 per cwt established in the farm bill. The per-cwt payment is equal to 45% of the difference between these two price levels. When feed costs are high, the target price is increased by 45% of the difference between the monthly feed cost and a threshold of \$7.35 per cwt. The percentages in the two calculations decline to 34% for the final month of program authority (September 2012). The annual payment quantity is limited to 2.985 million pounds of annual production (equivalent to about a 160-cow operation) and declines to 2.4 million pounds for the last month of program authority. Because of the payment factor and the production limit, MILC addresses only a part—not all—of the risk producers face when milk prices decline below the target price.

A concern for producers and policymakers who support the program is whether the program delivers sufficient protection from unfavorable market conditions. Congress considered MILC inadequate during the 2009 crisis and passed legislation authorizing emergency assistance worth \$350 million in additional farm payments and dairy product purchases.<sup>13</sup> Another concern is coverage for larger farms. The production limit results in less effective protection for medium and large operations.

In contrast, given the current budget climate, policymakers interested in reducing federal spending might question why the federal government should support dairy farm income or farm programs in general. Some might argue that the private sector offers risk management tools that producers can use without cost to taxpayers.<sup>14</sup>

## Dairy Risk Management and the Next Farm Bill

As Congress prepares to deliberate dairy policy in the next farm bill, policymakers might consider a number of options currently circulating in the industry to address the risk management needs of individual dairy producers. These include facilitating the use of private hedging, expanding the government's LGM-Dairy margin insurance, establishing "farm savings accounts," implementing a national margin insurance program, and modifying the existing MILC program that provides counter-cyclical payments to dairy producers. The section below briefly describes these approaches.

In addition to considering risk management tools, Congress might also choose to address milk and dairy product market volatility through modification of federal dairy policy, might leave federal policy unchanged, or might reduce or eliminate federal assistance. For a discussion of dairy policy options, see CRS Report R41141, *Previewing Dairy Policy Options for the Next Farm Bill*.

### Adoption of Private Risk Management Tools

Recommendations from USDA's Dairy Industry Advisory Committee (DIAC) and comments during a May 2011 workshop for dairy economists and policy analysts highlighted a perceived

---

<sup>13</sup> The assistance was provided in the FY2010 Agriculture appropriations bill (P.L. 111-80).

<sup>14</sup> The Congressional Budget Office estimates that the cost of dairy programs is about \$83 million per year on average (FY2012 through FY2016). Consequently, parameters for future programs likely will have to be set at modest levels to keep projected costs down.

need for more education of producers and bankers on the value of hedging market risks.<sup>15</sup> In some cases, bankers work closely with dairy farmers to make sure they are managing their price risks, offering a line of credit to cover the hedging activities so both the banker and the producer are better protected than by simply taking the price offered by the market when the milk is produced. In other cases, dairy producers are more experienced than their bankers and must convince them of the merits of hedging.

Private companies are currently explaining and selling strategies to producers. Dairy cooperatives and manufacturers also run hedging programs, and according to observers, some of them may need help securing lines of credit to serve a greater share of their producers. Education programs are also developed and delivered by USDA's Extension Service, USDA's Risk Management Agency, state departments of agriculture, and universities. Some want Congress to consider ways to enhance these activities through additional funding or improved coordination among the various players.

Also, availability and use of hedge lines of credit is often cited as a limiting factor when increasing the risk management activities of producers. The DIAC suggested a role for the government in providing or guaranteeing lines of credit as a way to encourage the use of risk management tools among dairy producers.

## **LGM-Dairy Enhancements**

Some are calling for expanding or simplifying the LGM-Dairy insurance product. They say a less complicated product with fewer options might simplify and speed up the decision and purchase process for producers. But such action could weaken current features that allow producers to customize the product to their particular operation (e.g., matching a producer's expected feed purchases with an insurance product that hedges the overall feed costs specific to the producer's operation).

It is not known whether USDA will extend the FY2011 subsidy rates for LGM-Dairy when funding for livestock insurance products (provided for annually under the Federal Crop Insurance Act) becomes available again in FY2012.<sup>16</sup> In FY2011, the subsidies reportedly crowded out some private hedging because the subsidies made it worthwhile to switch to LGM-Dairy coverage and receive roughly the same margin of protection at a lower cost to the producer.

A larger issue for policymakers involves perceived fairness across commodities—crops versus livestock. Some have pointed out that the total amount of federal money spent on livestock insurance (capped at \$20 million) is far less than the average of \$6 billion per year spent on the crop sector for the federal crop insurance program in FY2009 and FY2010.

---

<sup>15</sup> U.S. Department of Agriculture, *Report of the Dairy Industry Advisory Committee*, Washington, DC, March 2011, [http://www.fsa.usda.gov/Internet/FSA\\_File/diac\\_final\\_rpt\\_0302.pdf](http://www.fsa.usda.gov/Internet/FSA_File/diac_final_rpt_0302.pdf); "Living on a Roller Coaster" workshop for dairy economists and policy analysts, May 5-6, 2011, Chicago, IL. <http://dairy.wisc.edu/Workshops/Chicago11/>.

<sup>16</sup> Authority for crop insurance is provided under the Federal Crop Insurance Act and does not expire in 2012 (as do many provisions in the 2008 farm bill).

## **Farm Savings Accounts**

Debates on previous farm bills have considered tax-deferred “farm savings accounts” as a way for producers to manage farm revenue risk. The approach provides an option for producers to make deposits in an account in high-income years and defer taxes on farm income. Withdrawals would be made in years when losses occur. In the past, some proposals for such accounts have included government matching funds to encourage adoption.

In general, proponents of farm savings accounts for dairy producers, including USDA’s Dairy Industry Advisory Committee and the International Dairy Foods Association (representing dairy processors), point out two expected benefits: (1) increased producer savings/cash reserves to offset future market downturns, and (2) reduced industry price volatility, because the accounts would discourage overinvestment in dairy farms that can occur when producers expand to minimize income tax liability during boom years.

In previous farm bill debates, proposed farm savings accounts have been deemed too complicated, with too many restrictions on deposits and withdrawals. Also, some question whether farmers would actually change their propensity to invest in their operation when given an alternative way to minimize their tax liability.

## **Federal Margin Insurance Program**

One option for Congress would be to reauthorize the Milk Income Loss Contract (MILC) program. However, concerns with adequacy of the program have led to a proposed alternative by the National Milk Producers Federation (NMPF), representing dairy farm cooperatives, called the “Dairy Producer Margin Protection Program.”<sup>17</sup> It is considered a “margin insurance” program that would protect margins (price of milk minus price of feed) and not be subject to any production limits.

Under the proposed program, producers would receive a federal payment when the actual monthly margin drops below a guaranteed level. Free coverage would be offered for a modest margin on a portion of historical production. Producers could purchase supplemental coverage at higher levels of margin guarantee for a portion of their production. The intention is to place the basic coverage level high enough to provide protection from catastrophic market events for all milk producers (i.e., no production limits as under MILC) but low enough to not encourage additional milk production or guarantee a profit. During 2000-2010, the margin as calculated by NMPF averaged between \$7 and \$8 per cwt. During this period, actual margins dropped below \$4 per cwt during the 2009 crisis. Supplemental coverage at \$6 per cwt would have resulted in margin payments occurring on multiple occasions. Producers would need to evaluate how much supplemental coverage might cost relative to how much protection they might receive.

As with the MILC program, risk reduction implied by this program for an individual producer would be over a multi-year period and would be fixed in statute. This is in contrast with LGM-dairy or any hedging strategy, where the market determines what margin can be insured.

---

<sup>17</sup> For more information, see the National Milk Producers Federation, <http://www.futurefordairy.com/>.

In comparing the proposed program with MILC, research by the Food and Agricultural Policy Research Institute (FAPRI) indicates that the current MILC program would make payments sooner than the proposed program, but as margins decline further, the margin program would make larger payments than the current program. Also, under an “average” scenario, FAPRI estimates a slight increase in milk output (and small decline in prices) due to program benefits encouraging production (MILC has a similar effect).

## **MILC Program Modifications**

USDA’s Dairy Industry Advisory Committee recommended to the Secretary of Agriculture a modified MILC program, which would convert it to a margin program (described above) but keep the production limit that favors small farms. To address concerns that the production limit for MILC greatly reduces the program’s effectiveness for large producers, the modified program would add supplemental insurance coverage for production above the cap. Such a program that makes payments on a greater share of U.S. milk production would perhaps increase government costs or encourage additional production.

Some critics of proposals to change MILC or replace it with a margin program want to maintain current MILC and product price support programs but add a supply management component to overall dairy policy.

## **Conclusion**

A number of risk management tools exist that individual dairy producers can use to ameliorate the financial effects of volatile milk prices and margins. Private risk tools such as forward contracting and hedging are currently used by dairy producers, but additional training for producers and bankers might contribute to expanded use. Some have suggested that producers and buyers of farm milk need help securing additional lines of credit for producers’ margin accounts, which might increase their risk management activities.

USDA’s changes to the LGM-Dairy insurance product in FY2011 demonstrated that subsidies (and other changes in the policy) increased demand for the product. But it is not clear how much the subsidies actually increased total risk management activity or whether the subsidies crowded out the use of other risk tools and simply transferred money from taxpayers to farmers.

Proponents of the proposed farm savings accounts (FSAs) argue that this tool would assist individual producers to manage cash flows in an industry known for large annual fluctuations in income. Such a tool might address another vexing dairy policy issue—overinvestment in dairy operations—by offering producers a tax incentive to save during the boom years rather than build their herds to minimize tax liability. If not met with an increase in demand, industry expansion can lead to higher production and lower prices in future years.

Finally, with respect to both private and public marketing tools (e.g., hedging and government programs), policymakers might address whether the margin provided by the market (and determined essentially each day that the futures market is open) is sufficient for producers, or whether a minimum margin needs to be set through a “margin insurance” program or a MILC-type program. Policymakers may also consider the implications of removing “too much” risk, and the possibility that high levels of margin protection could potentially lead to excess milk production and unfavorable returns for dairy producers.

## **Author Contact Information**

Dennis A. Shields  
Specialist in Agricultural Policy  
dshields@crs.loc.gov, 7-9051