Dairy Policy Briefs

Food and Agricultural Policy Research Institute
FAPRI
University of Missouri

Dairy Policy Analysis Alliance

THE UNIVERSITY of WISCONSIN MADISON

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To enhance understanding of dairy policy issues that will be considered as part of the 2012 Farm Bill debate, the Dairy Policy Analysis Alliance has prepared the attached set of one-page briefs. These briefs have a common format, first explaining a specific dairy program or concept and then outlining some related public policy issues.

The sequence of papers is:

#1	Price Volatility in Dairy Markets
#2	Dairy Product Price Support Program
#3	Milk Income Loss Contract Program
#4	Voluntary Supply Management
#5	Mandatory Supply Control
#6	Dairy Farm Revenue Insurance
#7	Dairy Trade Policy
#8a	Milk Marketing Orders:
#8b	Classification
#8c	Pricing
#8d	Pooling

It is important to emphasize that these briefs provide simplified explanations of complex programs, necessarily omitting many details. Readers interested in more comprehensive coverage are encouraged to access a companion Dairy Policy Analysis Alliance paper, *Dairy Policy Issues for the 2012 Farm Bill.* This and other background papers and web sites can be electronically accessed/downloaded at either the FAPRI website (http://www.fapri.missouri.edu/) or at the University of Wisconsin *Understanding Dairy Markets* website (http://www.aae.wisc.edu/future/).

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Dairy Policy Brief #1: Price Volatility in Dairy Markets

What is the history behind milk price movements?

Month to month changes in milk prices have increased dramatically in recent years. Concern over volatility includes not only the month to month price changes, but also the wider gaps between price peaks and troughs. In the 1970s, the largest monthly increase in all milk prices was $0.68/cwt in September, 1973. The largest decline was $-0.58/cwt in May, 1974. The Nixon price freeze of that decade, a short-term governmental policy to combat inflation, influenced these results. Over the decade, the highest monthly milk price was $12.90/cwt while the low was $5.37/cwt, a difference of $7.53. In the 1980s, the largest monthly increase in milk prices of $0.80/cwt occurred in September, October and November, 1989 while the largest monthly decline of $-0.50/cwt occurred in March, 1989. The high monthly milk price during the 1980s was $16.00/cwt while the low was $11.30/cwt, a difference of $4.70.

Monthly price changes became much larger in the 1990s. The largest monthly increase of $1.30/cwt occurred in September, 1998 while the largest monthly decline of $-2.60/cwt occurred in April, 1999. The highest monthly all milk price of the 1990s was $18.10/cwt while the lowest was $11.30/cwt, a difference of $6.80. Relatively sharp movements in milk prices continued in the decade of the 2000s, with the largest monthly increase in the all milk price of $2.60/cwt occurring in April 2004 and the largest monthly decline of $-2.20/cwt occurring in January, 2009. The highest monthly price in the decade of the 2000s of $21.90/cwt occurred in November, 2007 and the lowest monthly price of $11.00/cwt occurred in May-June, 2003, a difference of $10.90.

What are the key factors contributing to milk price volatility?

- ***Domestic dairy policy.*** During the 1970s and 1980s the price support program had a large mitigating effect on milk price volatility. High support levels resulted in market prices for milk being close to support prices for most of the period. In addition, the government accumulated dairy products that could be released into the market to dampen prices when they rose far enough above the support level. As the level of dairy price supports was systematically cut in the late 1980s and early 1990s, government inventories of dairy products were reduced and eventually eliminated. Lower support prices along with the absence of buffer stocks contributed to much of the increased volatility experienced in the late 1990s. Another policy-related factor likely underlying increasing milk price volatility is the lag in transmitting dairy product price changes to farm-level milk price changes because of the federal milk market order system minimum pricing provisions.

- ***U.S. participation as a commercial exporter of dairy products.*** The ability for the U.S. to commercially export bulk dairy products in 2007 and 2008 played a crucial role in raising milk prices during this time. The loss of commercial exports in late 2008 and 2009 played an equally important role in lowering milk prices. The addition of new markets is thought to reduce risk and should therefore help decrease volatility. However, that does not happen when the ability to access these new markets is not consistent.

- ***Increased concentration in milk production.*** As dairy herds have grown in size and more capital is invested in specialized dairy facilities, the ability to reduce milk production during times of low prices declines. The need to service debt means that idling these facilities is not usually an option; they usually remain in operation until their owner exits the business. Even then, the facilities often change owners and stay in milk production since few alternatives exist. The resulting effect of relatively more milk production than is justified by low milk prices acts to prolong and intensify periods of low prices, a factor in increased volatility.

Dairy Policy Brief #2: Dairy Product Price Support Program

What is the Program?

Dairy price supports have been a fixture of U.S. dairy policy since 1949. Price supports are a ***market intervention*** program, meaning that the government (USDA's Commodity Credit Corporation or CCC) offers to purchase non-perishable dairy products (butter, cheese, and nonfat dry milk) from manufacturers at specified (intervention) prices. The program is dormant when market prices are above intervention prices. It is activated when the overall milk supply exceeds demand, causing excess milk to be diverted into production of nonperishable products and lowering their prices to levels that make sales to the CCC more profitable than commercial sales. Until 2008, product intervention prices were linked to a price support level for manufacturing milk that was set by Congress. The current Dairy Product Price Support Program (DPPSP) sets product prices, but not in reference to a minimum milk price.

What are the issues?

- ***Ineffective price floor***. Using federal milk marketing order formulas, the current CCC purchase prices translate into Class III and Class IV milk prices of $9.00-$9.50 per hundredweight. This is well below the cost of producing milk given today's high input costs. Moreover, dairy price supports have not always been successful in maintaining established floor prices for milk or dairy products. Because of non-standard product, packaging, and payment specifications, it costs more to sell some products to the CCC than to commercial buyers. So market prices for these products, especially cheese, sometimes fall below intervention prices. This has led to a call by many dairy groups to raise the intervention prices to reflect the higher costs of selling to the CCC. Others have proposed that the milk price safety net be solidified by flooring the product prices used in federal milk marketing order pricing formulas at the intervention prices. Still others have proposed that the CCC place a standing bid on the Chicago Mercantile Exchange (CME) cash markets for cheese, butter and nonfat dry milk at the CCC purchase prices for these products.

- ***Incompatibility with world trade liberalization***. Dairy price supports have been a big contributor to the U.S. *aggregate measure of support* (AMS), which the World Trade Organization (WTO) uses to gauge trade-distorting domestic agricultural subsidies. The change in 2008 from supporting *milk* prices to supporting prices for *dairy products* should reduce the AMS attributable to the support program. Nevertheless, permitted AMS will very likely be reduced as part of ongoing WTO negotiations. Major changes in the DPPSP—or termination—may be necessary to conform to a new WTO agreement. The DPPSP has also been criticized for impeding growth in U.S. dairy exports. When low prices occur, U.S. dairy firms turn to the CCC and away from world markets. This tends to cast the United States as an unreliable supplier.

- ***Market price distortions***. Dairy price supports have affected milk utilization by setting a price floor for some products but not for others. The best example of this market distortion relates to nonfat dry milk, which is a source of dairy protein in many food applications. There is a large U.S. market for other dairy-based proteins, notably milk protein concentrate (MPC) and casein. Most MPC and all casein used in the U.S. come from imports. Because nonfat dry milk is purchased under the DPPSP, it is less risky and usually more profitable to produce nonfat dry milk than other forms of dairy proteins. Similarly, since the CCC purchases only cheddar cheese, more cheddar is likely produced at the expense of other cheese varieties, at least when cheese prices are low.

Dairy Policy Brief #3: Milk Income Loss Contract Program

What is the Program?

The Milk Income Loss Contract (MILC) program was initially authorized in the 2002 farm bill and extended with changes in the 2008 farm bill. The MILC program is a target price/deficiency payment program that makes direct payments to dairy producers when milk prices fall below the target price. The MILC target price is in reference to the Class I milk price at Boston. The minimum target is $16.94 per hundredweight, but the target is adjusted upward if estimated dairy feed costs are above a specified base level. All dairy producers are eligible to receive 45 percent of the difference between the adjusted target price and the actual Boston Class I price in any month that prices fall below the adjusted target. This payment applies to all milk regardless of class use. However, MILC has an annual producer payment limit that is linked to production. Payments are restricted to the first 2.985 million pounds of milk marketed in any fiscal year (Oct. – Sept.). Marketings in months when no payments are made do not count against the cap, and producers may elect to "start the clock" any month of the fiscal year.

What are the issues?

- ***Soft price floor.*** MILC does not create a floor on receipts, as the payment rate compensates for only part of the difference between the target and market Class I price. Other dairy target price/deficiency payment approaches that have been discussed generally propose a more solid price floor, but at a level that is lower than the target price set under the MILC program.

- ***Production caps.*** The production cap feature of the MILC program has proven to be a very effective way to limit program payments compared to the dollar limits used in other commodity programs. But targeting of benefits to small dairy producers has made this program unpopular with larger dairy producers and areas of the country dominated by large dairies. Using the 2009 average U.S. milk yield of 20,576 pounds per cow, only dairy farms with fewer than 145 dairy cows are currently eligible to receive MILC payments on all milk sold. The U.S. average dairy herd size was 141 cows in 2009. As milk yields and dairy operation sizes grow, the percentage of annual U.S. milk production eligible for full MILC payments declines. Based on changes in the distribution of dairy operations by size, the amount of milk eligible for full MILC payments has fallen by more than 10 percent since the program was initiated in December 2001.

- ***Milk supply impact***. The MILC program tends to lengthen periods of low milk prices, since program payments supplement dairy income to keep some producers—especially smaller farmers—in business when they might otherwise have exited dairying. Raising the production cap would further lengthen periods of low prices.

- ***Program costs.*** MILC program costs totaled $3.5 billion from inception through February 2010. The January 2010 Congressional Budget Office baseline estimates the cost at $159 million in FY 2010, $80 million in FY2011 and $66 million in FY2012. Program expenditures in 2009 were about $900 million, much larger than expected when MILC was reauthorized (and modified) in the 2008 farm bill because of very low milk prices during most of 2009. Given the magnitude of the federal budget deficit and related cost-cutting efforts, the program could come under scrutiny if future outlays remain large. Moreover, MILC payments add dollar-for-dollar to the U.S. Aggregate Measure of Support (AMS) under WTO rules, which could become an issue in negotiating AMS reductions within a new WTO agreement.

Dairy Policy Brief #4: Voluntary Supply Management

What is the program?

In the mid-1980s, Congress authorized two major voluntary dairy supply management programs, both funded in part through dairy farmer assessments. Under the 1984-85 Milk Diversion Program, dairy farmers who reduced their milk marketings 5 to 30 percent from a base level were paid $10 per hundredweight on the reduced marketings. This was followed in 1987 by the Dairy Termination Program (Whole Herd Buyout), under which the government accepted bids from dairy farmers who were willing to slaughter all female dairy cattle and remain out of the dairy business for at least 5 years. The Milk Diversion Program cut milk production sharply in 1985, but had no long-term effect. The whole herd buyout was more successful in moderating production trends, but the induced and concentrated slaughter of dairy cows negatively affected beef markets, raising the ire of cattle producers.

The objective of these government-sponsored voluntary supply management programs was to enhance and stabilize farm-level milk prices by controlling the amount of milk marketed. Recently, an industry-sponsored voluntary milk supply management program was initiated to achieve very similar objectives by using some of the same techniques. The program, labeled CWT for Cooperatives Working Together, was designed and is managed by the National Milk Producers Federation, a trade association of dairy cooperatives. Members of participating dairy cooperatives and, if they choose, independent dairy farmers fund the program through an assessment of ten cents per hundredweight on marketed milk. Currently, CWT has two methods of supply management: herd retirement and dairy export incentives. Under herd retirement, bids are accepted from dairy farmers who are willing to slaughter their current milking herd and perhaps dairy heifers. Export incentives provide participating cooperatives subsidies on exports of butter, anhydrous milkfat and cheese.

What are the issues?

- ***Adequate funding and participation***. Government supply management programs are funded from mandatory producer assessments and/or federal appropriations. But funding for industry-sponsored programs like CWT depends on voluntary assessments. At issue is whether participation and the associated funds raised are sufficient to enhance and stabilize farm level milk prices over the long run.

- ***Free riders.*** Voluntary supply management programs have a potential free rider problem—dairy farmers who don't participate in the program still receive any benefits that result from the participation of others. Moreover, to the extent that voluntary supply management is successful, some dairy farmers are likely to respond to higher and more stable prices by expanding the size of their dairy herd. This makes it difficult for a voluntary program to be successfully increase milk prices over the long run.

- ***Buying air***. Voluntary supply management programs run the risk of buying air; that is, paying farmers to get out of the dairy business when they were already planning to retire. But there still may be benefits if the program requires milk cows to be slaughtered rather than sold to another dairy farmer.

- ***Export market issues***. The export incentive element of CWT not only moves dairy products from the domestic market, it can also provide valuable export experience for dairy cooperatives. However, since export subsidies are not offered continually, international customers may view participating dairy cooperatives as unreliable long-run sources of dairy products. There is also a question regarding whether CWT export subsidies fall under World Trade Organization rules. While they are not government subsidies, they could trigger a WTO trade inquiry if they become large.

Dairy Policy Brief #5: Mandatory Supply Control

What is the Program?

Quota and base programs specify the maximum amount of milk that individual dairy farmers can sell without incurring a penalty. Dairy farmers are assigned a strict marketing quota or a maximum level of marketings relative to an historical base. Economic penalties are applied to any sales in excess of the eligible marketings. The policy intent is to achieve a price goal by closely matching total milk supply with the total amount of milk demanded at the price objective.

Milk quotas have been used for many years in Canada and the European Union (EU). Quotas have never been used directly for milk in the United States, but there were programs in the 1980s that used bases to assign penalties to dairy farmers who increased production. Depressed milk prices in 2009 have renewed interest in base programs. Several proposals have been developed with a common objective of preventing low milk prices and reducing price volatility by managing the growth in milk production to more closely match the growth in commercial sales. Dairy farmers who wish to increase milk production beyond their base and in excess of the growth in milk production deemed necessary to meet commercials sales are assessed a market access fee for a period of one year. After one year the dairy farmer's base is increased to reflect the higher level of milk production.

What are the issues?

- ***Mandatory supply control can enhance farm milk prices without large government costs.*** Quotas and base plans do not require large treasury outlays because there are no government purchases or direct payments to farmers. The quota can be set at a level that achieves relatively high milk prices to farmers as evidenced by farm milk prices in Canada compared to those in the U.S. Base plans recently proposed are less restrictive than Canada's quotas and as a result, may reduce milk price volatility but not provide as much price enhancement.

- ***The value of marketing quotas/bases is capitalized and raises production costs.*** When quotas and bases succeed in stabilizing or raising prices above what they would be otherwise, the difference is capitalized into the value of the quota or base (if it is transferable) or the farm to which the base or quota is attached. In Canada and the EU, the cost of quota is a major investment for farmers who want to enter the industry or expand their operations. Bases that are less restrictive on expanding production and therefore less price enhancing would create less value than quotas, but entry or expansion costs would still appear in either the purchase price of the base or the one year market access fee.

- ***Quotas and bases interfere with efficient industry changes.*** Depending on how it is applied, mandatory supply control can impede or prevent structural change in the dairy industry. Quotas or bases that cannot be easily transferred can lock in herd size structure within regions and prevent inter-regional shifts in milk production that would increase industry efficiency. Programs that raise milk and dairy product prices significantly above those in other countries must be accompanied by high tariffs to keep out imports. This interferes with trade liberalization objectives. Similarly, sharply elevated prices run the risk of creating consumer resistance and encouraging the use of dairy substitutes.

- ***Mandatory supply control can be difficult and expensive to administer.*** Dairy farmers need to be considered individually in allocating quotas/bases, and there can be difficult issues of equity in the allocation process. Individual farm production levels must be monitored to ensure compliance. Long-term milk supply and demand estimates must be made, which is a difficult and subjective process.

Dairy Policy Brief #6: Dairy Farm Revenue Insurance

What is the Program?

With increased volatility in both feed costs and milk prices, there is increased dairy producer interest in government-sponsored and -subsidized gross margin (income over feed cost) insurance. A private dairy revenue insurance program already exists. *Livestock Gross Margin for Dairy* (LGM-Dairy) is a program administered by USDA's Risk Management Agency. The program pays an indemnity at the end of the insurance period equal to the difference, if positive, between the gross margin expected at producer sign-up and the gross margin actually experienced. The LGM-Dairy program contains no producer premium subsidies—it is self-financed in that the farm-specific premiums are set at the expected indemnity level. However, there is a direct payment made to insurance providers to cover administrative and overhead costs. LGM-Dairy uses futures and options prices to determine the expected gross margins that are used in the above indemnity calculation. Some of the elements of LGM-Dairy and experience with the program have relevance in the design of other government-administered dairy revenue insurance programs that might be considered.

What are the Issues?

- ***Level of Gross Margin Guarantee.*** Depending on the level of gross margin guaranteed and market conditions, the premiums and thus program cost of a subsidized program could be significant. Moreover, given the substantial differences in feeding regimes across the U.S. and non-feed costs of production across farms of differing size, a "one margin fits all" approach may not solve the income variability problems of a large number of producers. Under the LGM-Dairy program farm specific margins are able to be chosen to meet producer-specific needs and cost constraints. This increases flexibility but also increases administrative costs.

- ***Determination of Expected and Actual Returns*.** In designing gross revenue insurance, one of the more difficult aspects that must be addressed is how to calculate anticipated and actual milk revenue and feeds costs. How these values are determined affects the costs of the program and the degree to which the program is able to reduce dairy farm gross revenue variability for individual farms.

- ***Insurance Contract Flexibility*.** Producers differ in their risk management needs. These differences can be defined in terms of length of planning horizon, degree of risk accommodation and the ability to pay insurance premiums. In implementing any revenue insurance program there are tradeoffs between program flexibility and administrative ease.

- ***Indemnity Period.*** Gross margin indemnity can cover monthly, quarterly or other insurance contract time periods. LGM-Dairy uses a 10-month indemnity period. Producers would prefer a monthly settlement rather than considering margins over several months. But monthly indemnity determination would significantly increase program administrative and premium costs given increased monthly risk.

- ***Program Complexity.*** The LGM-Dairy program is considered complex by some, and has been criticized for being hard for producers to understand and use. Any broader subsidized program will likely suffer from the same criticism—gross margin insurance is a new concept and requires much more producer involvement than existing dairy programs like MILC. Consequently, a broadened program will need to be accompanied by an aggressive producer education effort to help ensure a successful outcome.

Dairy Policy Brief #7: U.S. Dairy Trade Policy

What Policies are in Place and Under Consideration?

U.S. dairy trade is governed in large part by trade agreements approved by Congress. The broadest and most important agreement for dairy trade is the World Trade Organization (WTO) *Agreement on Agriculture* (AoA), which became effective in January 1995. The AoA was a landmark agreement for world agricultural trade, the first time that agriculture had been seriously considered in multilateral trade pacts. The AoA involves WTO member commitments in three areas: increasing market access, reducing export subsidies, and reducing domestic support programs that distort trade. WTO negotiations (the Doha Round) on an amended AoA with stronger member commitments within these three areas began in 2001 but little progress has been made. The U.S. has also entered into many *Free Trade Agreements* (FTAs) that govern trade among a limited number of partners. Those most important to dairy are the North American Free Trade Agreement (NAFTA) and bilateral agreements with Australia and Chile.

What are the Issues?

- ***Market Access.*** U.S. dairy exports have benefited from greater access to foreign markets with the AoA conversion of quotas and other non-tariff barriers to tariff rate quotas (TRQs). At the same time, complaints have been raised about the absence of a TRQ on milk protein concentrate (MPC). MPC enters the U.S. essentially duty-free and substitutes for nonfat dry milk, which is protected by a TRQ. A new Doha Round AoA will require the U.S. to expand access to its dairy markets, but it may also offer the opportunity to include MPC and other dairy proteins within its package of dairy products subject to TRQs.

- ***Domestic support.*** The existing AoA and current Doha round negotiations include reductions in trade-distorting domestic support levels, classified by the WTO as “amber box” spending. This includes programs that “couple” payments to farmers with current production or that set minimum prices to farmers that are higher than world market prices. The MILC program is an example of the former and the DPPSP is in the latter category. These dairy programs will come under scrutiny when WTO Doha Round negotiations resume and may need to be altered to meet U.S. commitments.

- ***Export Subsidies.*** The AoA established reductions in the quantity and expenditure levels of subsidized agricultural exports. A new agreement will likely set a timeline for elimination of export subsidies. For the U.S. dairy industry, the Dairy Export Incentive Program (DEIP) would need to be adjusted to be in compliance with export subsidy reductions made in a Doha round agreement. Current levels of dairy products that can be exported under the DEIP are: butter and butteroil, 21,097 metric tons; skim milk powder, 68,201 metric tons; and cheese, 3,030 metric tons. These are very small limits relative to both U.S. production and subsidy limits for the EU.

- ***Free Trade Agreements.*** Free trade agreements have proliferated in recent years, raising issues about whether they are substituting for the current AoA or reducing interest in negotiating a new AoA. The OECD estimates that more than a third of world trade is covered by existing FTAs and that including FTAs under consideration would raise that proportion to three-quarters. FTAs are a mixed bag for U.S. dairy. NAFTA has been a major benefit to U.S. dairy exports, with Mexico the largest market. The Australia FTA could potentially increase U.S. imports of dairy products, and a proposed FTA with New Zealand is being vigorously opposed by U.S. dairy producer interests.

Dairy Policy Brief #8a: Federal Milk Marketing Orders

What are federal milk marketing orders?

Federal milk marketing orders (FMMOs) require regulated milk processors, called handlers, to pay minimum prices for milk and adhere to other specified rules. FMMOs are authorized under the Agricultural Marketing Agreement Act of 1937, as amended. Requests to initiate or amend an order generally come from producers, who also grant approval of proposals through a referendum. These requests usually come through dairy cooperatives representing producers. Upon producer approval (dairy cooperatives may bloc vote for their members), the Secretary issues the order, which is then binding on handlers within the affected marketing area; that is, handlers—not dairy producers—are regulated. The marketing area is a specified geographical region within which processors compete with each other for sales of fluid (beverage) milk to various retail and institutional outlets. The marketing area does not necessarily correspond to where producers shipping to these processors are located.

There are 10 federal milk marketing orders, which regulated about 66 percent of 2009 U.S. milk marketings. California's state order, which operates much like federal orders, accounted for another 21 percent in 2009. The remainder is priced under other state orders or is not subject to FMMO regulation.

According to the USDA, the major objectives of FMMOs are to: (1) assure consumers of an adequate supply of wholesome milk at a reasonable price; and (2) to avoid unreasonable fluctuations in supplies and prices.

What are the Issues?

The objectives of FMMOs are achieved through classified pricing, pooling, and setting minimum producer pay prices. There are a number of controversial issues related to how these methods are employed. These are discussed in Dairy Policy Briefs 8b – 8d. Briefly:

- ***Classified Pricing.*** Classified pricing establishes monthly minimum pay prices for milk and milk components according to the dairy products they are used to produce. Minimum prices for some classes of milk are derived through product price formulas that tie milk prices to market prices for products within the class. Order prices for other classes of milk are not related directly to markets for the products included in the class.

- ***Pooling.*** Pooling is accomplished under federal orders by obligating each regulated handler in the marketing area to account for milk receipts according to usage by class. Handlers pay into or draw from a *producer settlement fund* depending on the order-determined value of their milk receipts priced at order minimum prices relative to the market-wide average value (uniform price).

- ***Minimum Prices.*** Federal orders guarantee producers a minimum price for their milk that is an average of the minimum class prices weighted by the proportion of milk used in each class. Within marketing orders, the producer price is the same (for milk of equal quality) regardless of the class of products that are made from the producer's milk. In six of the ten FMMOs, producers are paid for pounds of milk components (butterfat, protein and other solids), not for pounds of milk. In the other four orders, producers are paid for their deliveries of skim milk and butterfat.

Dairy Policy Brief #8b: Federal Milk Marketing Orders—Classification

What is the Program?

Federal milk marketing orders define classes of milk according to end use and set minimum processor prices for each class. Each of the 10 orders uniformly defines four use classes: Class I consists of all forms of beverage milk; Class II is perishable manufactured products like cottage cheese, yogurt, and ice cream; Class III is hard cheeses; and Class IV is butter and nonfat dry milk. Class prices are announced monthly and apply to milk deliveries for the entire month.

In general, Class I prices are considerably higher than prices for the other three classes. The Class I price is set by adding a differential to manufacturing class prices. This Class I Differential is the same each month, but ranges both within and among FMMO markets from $1.60 per hundredweight (Upper Midwest order, Grafton, ND) to $6.00 (Florida order, Miami). Producer prices, which depend on class prices and usage within classes, are positively related to Class I prices and Class I utilization. Class I utilization varies substantially across orders, from less than 20 percent in the Upper Midwest to more than 80 percent in Florida, and also seasonally within orders.

Classified pricing is an application of price discrimination. The price elasticity of demand for dairy products differs among classes. Consequently, producer revenue can be enhanced by shifting milk away from products with a relatively inelastic demand (e.g., fluid milk) into products with a relatively elastic demand (e.g., cheese).

What are the issues?

- ***Determining the right class.*** USDA has a comprehensive system for determining how dairy products are assigned to milk classes. For most dairy products, the classification is straightforward. But classification is not always clear for dairy products that are a complex combination of milk components, sometimes in combination with non-dairy ingredients. For example, some new dairy-based beverages have been configured in a way that puts them in Class II instead of Class I, which covers other fluid milk products. Producers argued that this caused them to lose the higher Class I value to the extent these beverage products compete with other fluid milk. Producers of these new beverages argued that they were expanding total dairy sales to the benefit of producers and that pricing their dairy ingredients at Class I would make the products uncompetitive.

- ***How many classes?*** Are four classes too many? Not enough? Some have argued that there should be more classes to accommodate new products and to promote export sales. Others have argued that "fine tuning" classification in response to new products is a lost cause, and that the system should be simplified by having only two classes—fluid milk products and all manufactured dairy products.

- ***Changing price elasticities***. Enhancing producer revenue through price discrimination/classified pricing requires knowledge of relative elasticities. Past research has consistently shown that the price elasticity of demand at retail for fluid milk is smaller in absolute value (more inelastic) than demand for manufactured products. This supports a relatively high price for milk used in fluid products. But the rapid growth in cheese consumption, especially in food ingredient and flavoring uses has made cheese demand more inelastic over time. At the same time, fluid milk is facing more substitutes today and there are more and more varied fluid products, causing demand to become more elastic. This raises the question of whether class prices are properly aligned.

Dairy Policy Brief #8c: Federal Milk Marketing Orders—Pricing

What is the Program?

Federal orders set minimum class prices using a set of formulas. For Class III and Class IV prices, formulas link milk component values directly to wholesale prices for the major dairy products within the classes. For example, the Class III (and Class IV) butterfat formula derives a butterfat price by subtracting a make allowance (assumed manufacturing margin) from the wholesale price of butter and multiplying the difference by the assumed yield of butter per pound of butterfat. Protein, nonfat solids, and other solids prices are derived in a similar manner, with the values of these components linked to wholesale prices for cheese/butter, nonfat dry milk, and dry whey, respectively. The Class III and Class IV prices per hundredweight are calculated by multiplying component prices by the pounds of component assumed to be contained in a "standard" hundredweight of milk. Class I and Class II federal order milk prices are not tied to the wholesale prices of Class I and Class II dairy products. Rather, these prices are set by adding a differential to Class III and Class IV prices. Consequently, prices for all classes of milk are related directly to wholesale prices for butter, cheese, dry whey, and nonfat dry milk.

What are the issues?

- **Product price formulas.** The product price formulas for Class III and Class IV contain values for manufacturing costs and yields that are based on industry experience. Costs and yields vary among plants, raising the question of where to draw the line—should the values assure profitability for all plants? Only the most efficient plants? The formula values can become outdated over time, leading to abnormally high or low plant operating revenue. This is a particularly serious problem for make allowances. For example, rapidly rising fuel and energy prices in 2005 and 2006 elevated manufacturing costs increasingly above the formula make allowances. But raising product prices in an attempt to offset higher manufacturing costs translates directly into higher milk costs through the Class III and Class IV formulas, leaving manufacturers no better off. And altering make allowances requires a lengthy administrative process during which conditions could change radically. Product price formulas rely on wholesale prices for dairy products that are collected and reported by USDA's National Agricultural Statistics Service (NASS). While reporting is mandatory, NASS only requires reporting of prices for "spot market" sales, which represent less than 20 percent of butter production and less than 40 percent of cheese production. Moreover, because prices for most butter and cheese transactions are pegged to the thinly-traded Chicago Mercantile Exchange markets, even spot market sales prices may not consistently reflect broad supply and demand conditions.

- **Class I prices.** Minimum Class II, III and IV prices are the same across all orders. But while the base is the same, minimum Class I prices differ because Class I differentials vary across markets. The spread in Class I differentials is from $1.60 to $6.00 per hundredweight. Class I differentials are positively correlated with Class I utilization and, for markets east of the Rocky Mountains, distance from the Upper Midwest. The logic for these differences was to encourage local self-sufficiency in fluid milk to avoid costly shipments of inferior milk to meet deficit needs. But with rapid transportation and modern packaging technologies, packaged milk can economically move long distances with little or no deterioration in quality. This has reduced the need for widely-varying Class I prices which some currently suggest contributes to the inefficient location of milk production. Another issue is the advance pricing of Class I. Class I prices are announced before the month to which they apply while Class III and IV prices are announced after the month to which they apply. This can result in "price inversion" with Class I priced under Class III and IV, disrupting incentives for plants to meet fluid milk needs.

Dairy Policy Brief #8d: Federal Milk Marketing Orders—Pooling

What is the Program?

Under federal milk marketing orders, producer milk value is determined through *pooling*. Simplifying what is a complex process, total pool value is calculated by applying minimum class prices to the volume of milk used in each of the four classes, I through IV. Producers affiliated with handlers regulated under the order are paid a common price for milk that is equivalent to total pool value divided by total pool volume, regardless of how their milk is used.

The terms, pool and pooled, are also used in federal order language to refer to plants that either must or may be part of the overall pooling process and to producers eligible to share in the pool distribution. Class I handlers within an order marketing area are called *pool distributing plants*. These plants are required to be pooled, that is, they are obligated to pay minimum Class I prices for the milk they receive. For manufacturing plants, called *pool supply plants*, pooling is optional. But there is usually an economic incentive for doing so because they receive producer settlement fund payments to pay producers.

Producers may ship their milk to any handler and share in the marketing order pool under which the receiving handler is regulated. Dairy cooperatives sometimes "pool" some of their affiliated producers on distant markets to take advantage of higher producer pay prices.

What are the issues?

- ***Distant pooling.*** In six out of ten federal orders, producers receive Class III milk component prices for their butterfat, protein and other solids plus a producer price differential (PPD) per hundredweight of milk. The PPD represents the market-wide combined marginal value of other classes of milk relative to Class III, and varies positively across markets with Class I prices and utilization. When cooperatives pool producers' milk outside the producers' marketing area, all of the pooled milk receives the PPD for the receiving market. But not all the milk that is pooled has to be shipped to receive the PPD—the shipper need only demonstrate the capability of providing the pooled milk as defined by the receiving market's order qualification standards. Consequently, there has been a strong incentive to pool milk on markets with a relatively high PPD, which increases the volume of pooled milk and decreases the average pool value in the receiving order. Several orders have recently amended operating rules to tighten qualification standards in order to reduce economic incentives for distant pooling.

- ***Depooling.*** Because Class I prices are announced six weeks before Class III prices, the monthly Class III price has infrequently ended up higher than the Class I price during periods of rapidly rising prices. This *price inversion* means that the PPD becomes negative and that pooled Class III handlers, who normally draw money from an order's producer settlement fund, would have to pay into the fund. To avoid this payment, Class III handlers often depool—disassociate from the order—when there is a price inversion. The effect of depooling is to remove higher-priced milk from the pool, further reducing the PPD. Some orders have been and are being amended to make it more difficult for plants to depool.

- ***Producer-handlers.*** Dairy farmers who package and sell fluid milk exclusively from their own herds are exempt from federal order regulations. There are only a few producer-handlers and most have small herds and limited fluid milk sales. But some exempt producer-handlers have grown large enough to materially reduce Class I sales of regulated handlers. This reduces marketing order pool dollars and average milk value to producers shipping milk to pool plants. In March 2010, USDA issued a final rule amending orders so that only farms with bottled milk sales of three million pounds or less per month remain exempt from the pooling provisions of federal orders.

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