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Changing Structure, Financial Risks, and Government Policy for the U.S. Dairy Industry

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What Is the Issue?

Congress reorganized dairy policy in the Agricultural Act of 2014. A new program, the Dairy Margin Protection Program (MPP-Dairy), aims to provide farmers with financial protection against adverse movements in milk and feed prices. MPP-Dairy was initiated in response to increasing volatility in milk and feed prices, particularly in 2009 when falling milk prices combined with still-high feed prices to impose unprecedented financial stress on the dairy industry. In contrast to prior dairy policy, MPP-Dairy targets fluctuations in the difference between milk and feed prices (the margin), relies on a combination of Government support and producer premiums for financing, and offers protection against margin risks for all enrolled dairy operations.

The structure of dairy farming has changed dramatically in the last two decades, with cows and production shifting to much larger operations. Structural change has likely affected dairy industry competitiveness in world markets; it also results in a wide range of costs and of financial outcomes, which complicates the design and application of dairy policy. U.S. dairy products are also changing. Beginning in the 1970s, milk use has shifted from beverage products toward cheese and other dairy products used in foodservice and food manufacturing. International trade in dairy products—concentrated in nonfat dry milk, whey products, cheese, and butter—now has greater prominence. Shifts in the dairy product mix alter the geography of milk production as well as the price risks facing dairy farmers.

What Did the Study Find?

Structural change, in the form of production shifting to larger farms, has reduced industry-average production costs and contributed to an expansion of dairy product exports. However, increased international exposure creates new sources of price risks for U.S. farmers, and dairy policy has been redesigned in response to price risks and changing structure.

- Milk production continues to shift to larger farms. In 1987, after decades of consolidation, half of all dairy cows were on farms with 80 or fewer cows. By 2012, that midpoint herd size was 900 cows.
- Costs are a driving force behind structural change. The largest farms earn substantially higher net returns per hundredweight of milk produced, and they have strong incentives to expand. Average milk costs of production fall sharply as herd sizes increase, and the largest farms—those with 2,000 or more head—realize costs, per hundredweight of production, that are 16 percent below farms with 1,000-1,999 head and 24 percent below farms with 500-999 head.
- Changes in the size structure of dairy farms reduced national-average milk production costs by nearly 19 percent between 1998 and 2012. In turn, lower milk production costs reduced milk prices compared with what they would have been without structural change.

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- The United States has become a major exporter of dairy products, including nonfat dry milk, skim milk powder, cheese, butter, and whey. Total U.S. dairy exports were \$7.2 billion in 2014, up from \$1.0 billion in 2003. Expanded exports follow from growing international demand for dairy products (particularly from Asia and Latin America), improvements in U.S. dairy productivity, and changes in dairy and trade policies.
- Dairy farmers face substantial financial risks arising from wide fluctuations in milk and feed prices. Farm milk prices have been more volatile since 1995, and the volatility of feed prices increased sharply after 2005. Specific features of dairy markets make them prone to price volatility. Milk supply varies little in response to price changes. Moreover, dairy product demand also responds only weakly to price changes. Consequently, shifts in the demand for dairy products require substantial changes in price in order to reset the supply-demand balance for farm milk.
- The dairy industry faced a severe financial setback in 2009 when milk prices fell sharply, due to declines in domestic and international demand, and feed prices remained high. The margin between milk and feed prices—which must cover all other dairy costs such as labor, utilities, equipment, and structures—fell to unprecedented lows in 2009. Dairy farmers lost \$10 billion in equity—about \$150,000 per farm on average—and took on over \$4 billion in new debt, largely to finance rather than expand operations.

MPP-Dairy is designed to protect producers against adverse movements in milk-feed margins. Enrollees may receive catastrophic coverage, for a \$100 enrollment fee, providing payments when national-average margins fall below \$4 (the average monthly margin was \$8.30 in 2004-2013). Expanded coverage, which provides payments when national-average margins fall between \$4 and \$8, may be purchased for premiums.

- Almost 25,000 farms—55 percent of licensed dairy operations, accounting for about 80 percent of 2014 U.S. milk production—enrolled in the program for 2015 coverage. Forty-five percent of enrollees—representing more than half of the historic milk production of enrolled farms—chose catastrophic coverage for a \$100 administrative fee, while 42 percent of enrollees chose to pay premiums for coverage of \$6.00 and \$6.50 margins.
- MPP-Dairy provides farmers with the opportunity for greater financial protection, under a variety of scenarios, than the programs that it replaced. However, because farmers can change their coverage annually in anticipation of expected price changes, and thereby minimize the premiums that they pay, the program also carries the risk of substantial increases in Government costs.
- A crucial issue for MPP-Dairy concerns its effects on milk production. If the program leads to increases in milk production, it can lead to lower average milk prices. And if projected indemnities cause farmers to reduce production less than they might have in response to lower milk-feed margins, it can prolong periods of low margins.
- Finally, while farmers can adjust coverage each year, these adjustments relate only to the share of a farm's production history and the margin that the farm has chosen to cover; under current rules, farmers cannot adjust production histories to account for large changes in herd size. Much of the industry's structural change has been accomplished via such changes.

How Was the Study Conducted?

The study relies on farm-level records drawn from two U.S. Department of Agriculture (USDA) sources—the Census of Agriculture and the annual Agricultural Resource Management Survey (ARMS)—to summarize and analyze structural change in the industry and to assess the impacts of the 2009 margin crash on dairy farms. It uses data from USDA's National Agricultural Statistics Service, Agricultural Marketing Service, and Economic Research Service for summaries and analyses of trends in milk and feed prices, dairy product prices and consumption, and international trade in dairy products.

Data provided by USDA's Farm Service Agency, which administers MPP-Dairy, indicate initial enrollment in the program. Finally, we applied an updated Quarterly Dairy Forecasting model, developed for earlier analyses at the Economic Research Service, to assess industry supply responses to price movements and to evaluate the sources of the margin crash in 2009.