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# Livestock Gross Margin-Dairy Insurance: An Assessment of Risk Management and Potential Supply Impacts

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## What Is the Issue?

Livestock Gross Margin-Dairy (LGM-Dairy) is a risk management tool that enables dairy producers to purchase insurance against decreases in gross margins—the difference between revenues and feed costs. LGM-Dairy offers features seen in only a few other insurance and risk management tools. As a type of index insurance that makes payments based on broader market conditions rather than individual farm outcomes, it reduces the likelihood of common insurance problems such as riskier behavior by the insured to increase indemnities (“moral hazard”) or information gaps that make it difficult for the insurer to determine appropriate premiums (“adverse selection”). It also gives dairy producers the ability to insure a margin, not just the output price. Lastly, LGM-Dairy is available through local insurance agents and is offered in scales appropriate for any size dairy operation. Less appealing to producers may be the very short buying period for an LGM-Dairy contract and the program’s rules and specifications.

The introduction of LGM-Dairy in 2008 coincided with increased market volatility in both input (feed) and output (dairy) prices, making it an attractive risk management tool. However, funding allocated to all Federal Crop Insurance Corporation livestock insurance programs for expenses that include administrative and operating (A&O) subsidies and premium subsidies paid by the Government on behalf of participating producers is limited to \$20 million per reinsurance year, which prevents producers from using LGM-Dairy insurance as a year-round risk management strategy.

Initial and ongoing 2012 farm bill legislative efforts included a dairy margin insurance plan similar to LGM-Dairy but with different operating parameters. Among the key differences are the levels of margins to be insured and the determination of premium rates. Information on the effectiveness of the existing LGM-Dairy program as a risk management tool and its impact on milk supplies will help inform continued efforts to understand the impacts of policies for dairy risk management.

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## What Did the Study Find?

Among the key findings of the economic analysis are:

- Had LGM-Dairy been widely available during the entire period studied (2001-11), reductions in risk would have ranged from 28 to 39 percent in the 13 dairy-producing regions analyzed.
- While the risk reductions were significant, use of LGM-Dairy was shown to have little effect on the average producer margins across regions, which would have changed by -1 to 2 percent.
- Based on the estimated risk-reduction levels, and risk elasticities derived from the literature and risk modeling, the potential for LGM-Dairy to induce an expansion in milk supplies, if it had been more widely available and adopted, was modest across regions, ranging from 0 to 3 percent. The upper end of this range is unlikely because producer participation has been far below 100 percent to date, and because the upper estimate requires producer supplies to respond strongly to changes in risk. The main incentive for producers to expand supply comes from subsidies currently offered on the LGM-Dairy insurance premiums.

Generally, results suggest that insuring both output prices and feed costs is more effective for managing risk than insuring output prices alone and appears to produce similar risk management performance across the selected regions. LGM-Dairy, as a gross margin insurance program, is more flexible in terms of coverage than other risk management tools, such as hedging in futures or options markets, which likely makes LGM-Dairy more attractive for small farms.

## How Was the Study Conducted?

The study consisted of two parts, the first of which was an analysis of the effectiveness of LGM-Dairy as a risk management tool. Using monthly cash and futures prices for milk, corn, and soybean meal, researchers calculated gross margins (milk price minus feed costs) with and without the use of LGM-Dairy as a risk management tool. Although the program was established in 2008, outcomes were simulated using data from January 2001 to April 2011.

The second component was estimating the likely effects of risk reduction on milk production. Researchers collected milk production data from multiple sources for a subset of the period used above (first quarter 2006 to fourth quarter 2010). Regression analysis was employed to estimate production response to market risk. Results from supply modeling were used in conjunction with results from risk estimation to evaluate the likely impacts on production.