



Consider the unexpected with MPP-Dairy coverage

WINSTON Churchill once remarked that democracy is the worst form of government . . . except all those others that have been tried.

It would not be hard to argue that the same verdict is appropriate for futures prices as forecasting goes. Futures markets often get it wrong, but they are still the best we have. If you disagree with price quotes at the Chicago Mercantile Exchange, you are free to buy or sell, thus voting with your wallet — and making a buck if you are right and the market consensus was wrong.

With that in mind, our group, The National Program on Dairy Markets and Policy, in partnership with USDA's Farm Service Agency, used data implied from futures markets to create a decision-support tool which helps dairy producers navigate the new Margin Protection Program (www.fsa.usda.gov/mpptool). While we invested considerable effort to make the decision-support software intuitive, our task here is to take you out of your comfort zone by considering the unexpected.

Uncertainty about uncertainty

Uncertainty in forecasted dairy prices comes from two fundamental sources. First, there are likely to be new and unanticipated events

Bozic is an assistant professor in the department of applied economics at the University of Minnesota; Newtown is a clinical assistant professor in the department of agricultural and consumer economics at the University of Illinois-Urbana-Champaign.

that fundamentally change the market outlook. Second, any model that forecasts prices is unlikely to fully capture the complexity of milk and feed markets. In forecasting MPP-Dairy payments, several factors are important.

1. Are risks to commodities comprising the MPP-Dairy margin well-represented?

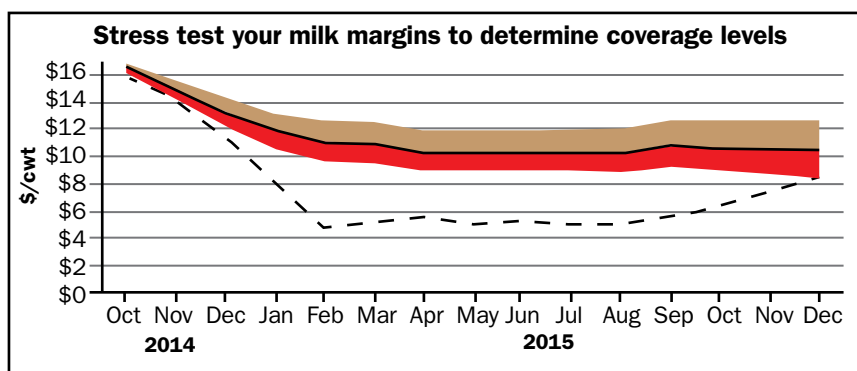
We use a model that infers the magnitude of risk from option premiums. Similar to how futures markets reflect the consensus among traders about likely price levels, option premiums reflect the market's consensus about the magnitude of risk to futures prices.

The devil here may lie in the tails, by that we mean extreme price changes. It may be the case that option markets do not fully capture the likelihood of low probability events in dairy markets. If the market underestimates the magnitude of extreme risk, then payments under MPP-Dairy may be more likely than estimated in the current version of our model.

2. What is the likelihood that milk and feed prices will move in the same direction?

If lower and more stable grain prices persist, changes in milk prices are likely to be driven more by events specific to dairy markets, rather than induced by rising feed costs. If the stronger correlation between milk and feed prices observed in recent years does not

MPP-Dairy margins and payments in 2015 under an "extreme decline" scenario							
	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sept-Oct	Nov-Dec	Annual avg.
MPP-Dairy margin	\$6.39	\$5.33	\$5.19	\$5.03	\$6.06	\$8.05	\$6.01
MPP-Dairy coverage level and payments							
\$4.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$4.50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$5.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
\$5.50	\$0.00	\$0.17	\$0.31	\$0.47	\$0.00	\$0.00	\$0.14
\$6.00	\$0.00	\$0.67	\$0.81	\$0.97	\$0.00	\$0.00	\$0.35
\$6.50	\$0.11	\$1.17	\$1.31	\$1.47	\$0.44	\$0.00	\$0.64
\$7.00	\$0.61	\$1.67	\$1.81	\$1.97	\$0.94	\$0.00	\$1.00
\$7.50	\$1.11	\$2.17	\$2.31	\$2.47	\$1.44	\$0.00	\$1.36
\$8.00	\$1.61	\$2.67	\$2.81	\$2.97	\$1.94	\$0.00	\$1.71



persist, then the probability of MPP-Dairy payments would be higher than our tool currently indicates.

A black swan scenario

The milk price outlook could change quickly if a "black swan" event (a major, unexpected and adverse event) roils the markets. The most recent example is the Russian ban on EU dairy imports.

Russia is a major market for EU dairy exports, and this ban may substantially impact dairy trade flows in 2015. To examine what would happen to MPP-Dairy payments if futures prices suffer a major blow, we conducted the following exercise. We measured the percentage change in 2009 prices, relative to futures prices observed on September 30, 2008. At that point in time, the July 2009 Class III milk futures price was \$16.29 per hundredweight (cwt.). The final USDA announced July 2009 Class III milk price was only \$9.97 per cwt., a reduction of 39 percent.

We took those "extreme" percentage shocks and applied them to 2015 futures prices as observed on October 3, 2014. For example, the July 2015 Class III milk futures price on that date was \$17.35. Applying a 39 percent reduction yielded \$10.62 per cwt. Applying corresponding shocks to all months in 2015 would reduce the average 2015 Class III milk price from \$17.44 per cwt. down to \$12.21 per cwt., a decline of \$5.23.

In absolute terms, that drop is actually deeper than the decline observed in 2009 Class III milk prices, relative to September 2008 futures price projections, which was a \$4.83 per cwt. reduction. Finally, we applied similar shocks to alfalfa hay prices, thus reducing them by 30 percent. In line with the discussion in the previous section, we will not reduce corn or alter soybean meal prices for this stress-test exercise.

What do we find? The table forecasts MPP-Dairy margins under this stress-test scenario as well as gross payments under each MPP-Dairy coverage level. Several results are worth emphasizing.

First, the average forecasted MPP-

Dairy margin for 2015 would decline from \$10.70 per cwt. to \$6.01 per cwt., a \$4.69 per cwt. drop. Despite imposing “extreme” declines in the milk price, catastrophic \$4 per cwt. coverage would still not trigger payments in 2015. Even though the margin decline relative to what was forecast at the end of September of the preceding year would be more severe than it was in 2009, the average realized margin level would still be \$1.43 per cwt. higher than it was in 2009. A simple reason for this is that the end-of-September forecast in 2014 for 2015 is higher than was forecast for 2009.

Second, for farms with a production history under 4 million pounds, \$6.50 per cwt. coverage would net 57 cents per cwt., with five out of the six two-month periods triggering payments. For a larger dairy (a 3000-cow farm with a production history of 66 million pounds), the financial protection provided from MPP-Dairy would be virtually identical at the \$6.50 per cwt. and \$8 per cwt. coverage levels, with a net annual benefit of 35 cents per cwt.

What we learned

There are two key points we hope you will take from this article. First, the MPP-Dairy decision tool we built updates margin forecasts daily to reflect the most recent market consensus about price levels and the magnitude of risk. As we write this in October, the model suggests very solid margins in 2015 and relatively low probability of MPP-Dairy payouts, but no forecast should be read as scripture.

Our second point is that when making risk management decisions, such as deliberating whether to register for MPP-Dairy and what coverage level to choose, you should take time to consider several stress-test scenarios. Rather than focusing on the average forecasted margin, you should consider how your farm would handle unlikely low margin realizations, and then consider how MPP-Dairy may help if the unexpected occurs. 🐄