Impacts of a Changing Basis on the Use of IOFC to Select MPP-Dairy Coverage: An Example

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The relationship between the national MPP-Dairy margin and a farm's IOFC can vary over time. If so, what are the implications for MPP-Dairy participation and outcomes?

As noted in a previous Decision Guide (14-09), the relationship between an individual farm's IOFC and the national MPP-Dairy margin can vary over time. In particular for an individual farm, the relationship between IOFC and MPP margin might not be constant for a variety of reasons, including management changes that improved IOFC over time or business models that differ from the national average price surveys. (Many farms grow a high proportion of feed and are less affected by increased feed prices in the short-run, when valued at production cost.) This Decision Guide examines the impacts when a farm-specific IOFC is used to make MPP-Dairy participation decisions and the relationship between a farm's IOFC and the MPP-Dairy margin vary over time. Although the specific numerical results would differ for an individual farm, **the basic principle is that caution should be exercised in using farm-specific IOFC as a guide for MPP-Dairy participation decisions if the relationship with the national margin is not constant.**

We use the IOFC reported by the Penn State dairy herd as an example of a relationship between farm-specific IOFC and the MPP-Dairy margin that is not constant. The difference between the PSU herd's IOFC and the MPP-Dairy margin varied from -$0.87/cwt in 2007 to $4.41/cwt in 2012—which may be larger than it would be for other dairy farms. This difference (referred to as the 'basis' in risk management) implies that to cover a farm-specific IOFC value using MPP-Dairy, an adjustment must be made to the MPP participation decision. For example, if a farm's desired IOFC is $1.00/cwt MORE than the MPP-Dairy margin, then it could select an MPP-Dairy margin coverage level $1.00 LESS than its IOFC to cover that farm-specific margin. However, **when this 'basis' varies over time, then the choice of MPP-Dairy coverage is less certain if the goal is to cover a farm-specific IOFC.**

Using the PSU herd's IOFC, we calculated the revenue impacts of three different IOFC-based participation strategies for a 200-cow farm with a 21,000-lb herd average (or, 4.2 million lbs per year of "production history" as defined under the program):

- Use the 2007 relationship between IOFC and MPP-Dairy margin (-$0.87/cwt);

- Use the 2013 relationship between IOFC and MPP-Dairy margin (+$3.99/cwt);

- Update the relationship between IOFC and MPP-Dairy margin based on the previous year;

We assumed that the farm wanted to cover a $6.50/cwt IOFC, and calculated the premiums and payments that would have been made under the program if it had been in place from 2007 to 2013.

Coverage using the 2007 basis would have cost $0.19/cwt and would have returned $0.87/cwt during these 7 years. The strategy using the 2013 basis would have been to choose the catastrophic coverage each year (because the farm's IOFC was $4.00 larger than the MPP-Dairy margin, a $4.00/cwt MPP margin implies a $8.00/cwt IOFC—larger than the $6.50/cwt the farm wanted to protect). This would have cost the farm less than $0.01/cwt and returned $0.09/cwt in net payments. Coverage decisions made by updating the basis each year would have resulted in higher coverage earlier and catastrophic coverage in the last two years. This would have cost $0.06/cwt and returned $0.16/cwt. Use of the 2007 basis results in net returns close to the maximum possible, because it buys more coverage under a subsidized program. For this hypothetical farm, the net returns from MPP-Dairy differ by nearly $300,000 during these years depending on the choice of basis (Fig. 1). **Thus, basis matters to the choice of MPP-Dairy participation outcomes, especially if it is highly variable.**

Table 1. Implied Basis, Farm-Specific IOFC and MPP-Dairy Participation for Three IOFC-based Strategies, Dairy With 4.2 million lbs Production History, 2007 to 2013*

Year, Outcome	Implied Basis	IOFC to Be Covered for $6.50/cwt Farm IOFC	Coverage Under 2007 Basis	Coverage Under 2013 Basis	Coverage Under Previous Year Basis
2007	-0.83	5.67	7.50	4.00	7.50
2008	0.80	7.30	7.50	4.00	7.50
2009	0.79	7.29	7.50	4.00	5.50
2010	0.67	7.17	7.50	4.00	5.50
2011	2.34	8.84	7.50	4.00	6.00
2012	4.41	10.91	7.50	4.00	4.00
2013	3.99	10.49	7.50	4.00	4.00
Fees and premiums, $/year			7,930	100	2,449
Fees and premiums, $/cwt			0.19	0.00	0.06
Net returns from MPP-Dairy, $/year			36,607	3,666	6,717
Net returns from MPP-Dairy, $/cwt			0.87	0.09	0.16

* All strategies would cover 90% production history, given that this maximizes returns for each strategy.
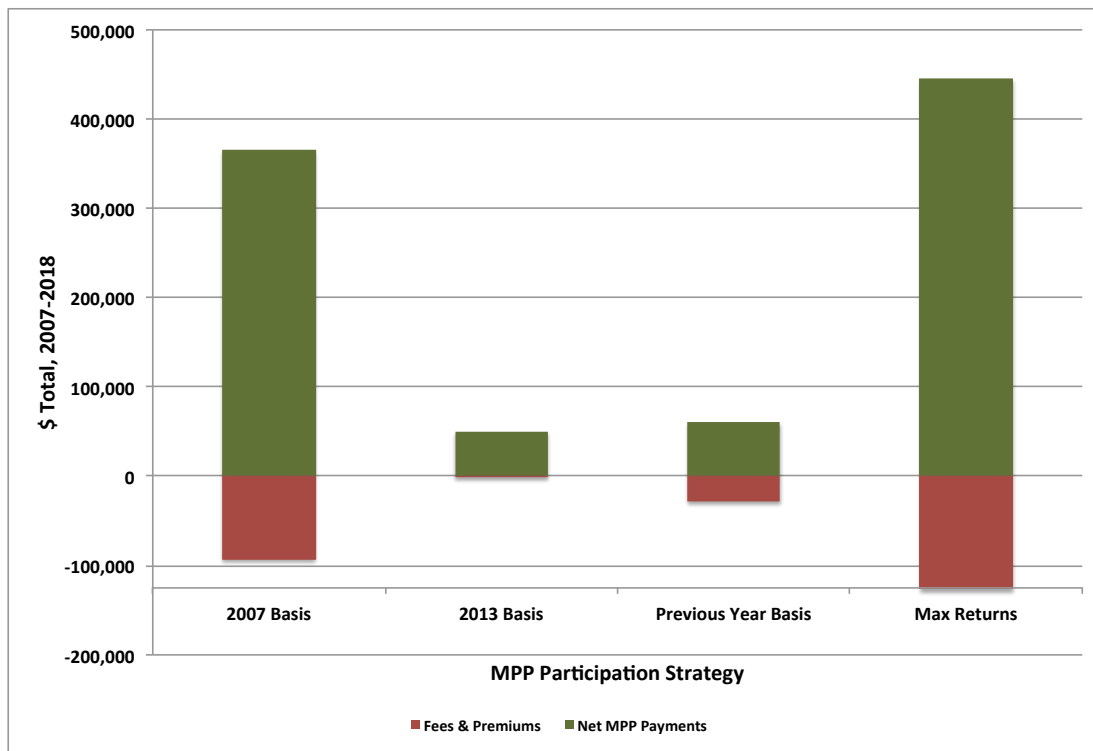

Figure 1. MPP-Dairy Fees & Premiums and Net Payments for Three IOFC-based Participation the Strategy that Maximizes Net Returns, 2007 to 2013

Participation strategies for MPP-Dairy based on IOFC can have very different net results when the relationship between IOFC and the national MPP-Dairy margin varies over time.