UNDERSTANDING NEGATIVE PRODUCER PRICE DIFFERENTIALS

MARIN
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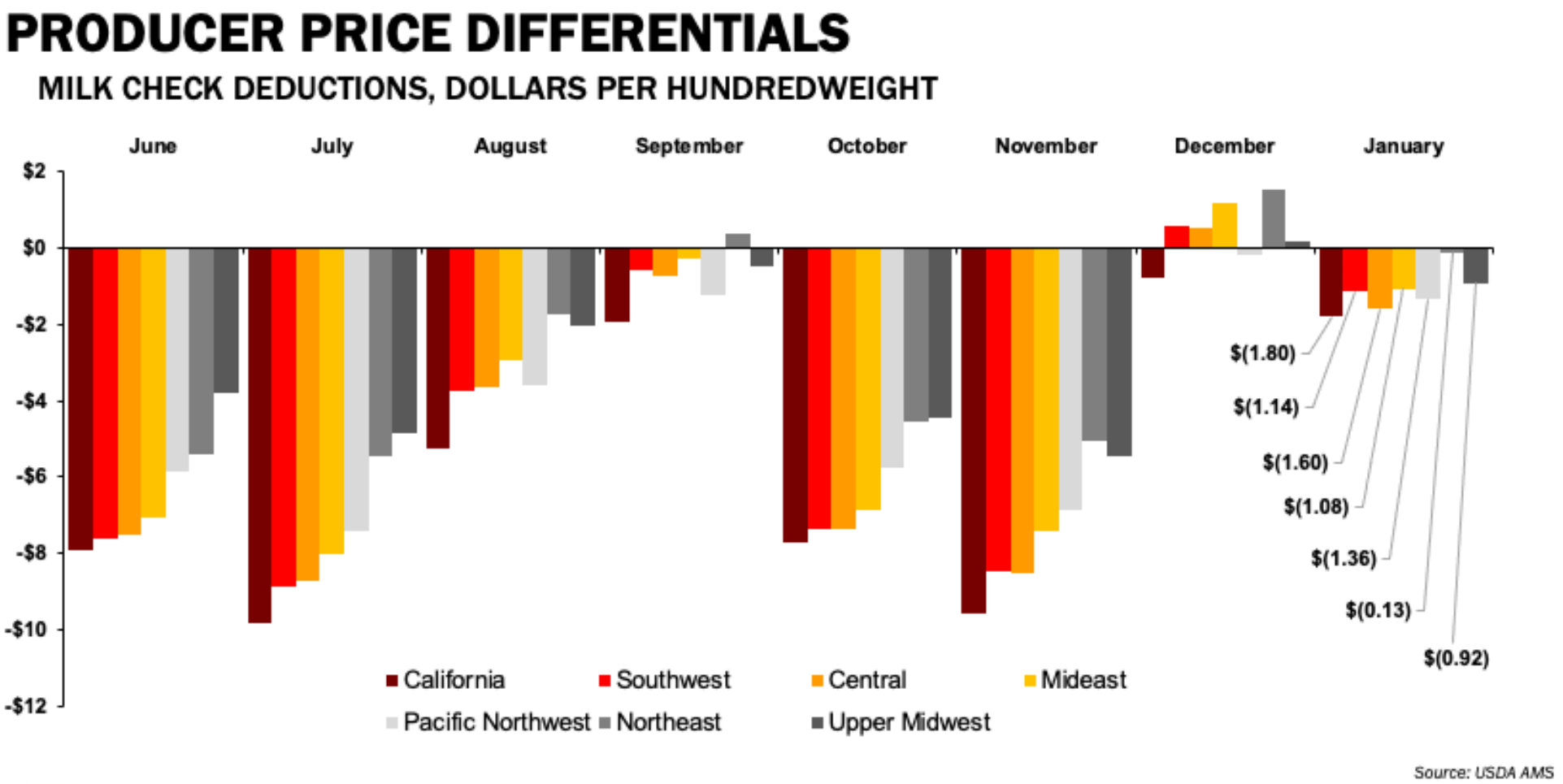
EDGE & MN MILK

Apr 13, 2021

Dairy Policy Issues

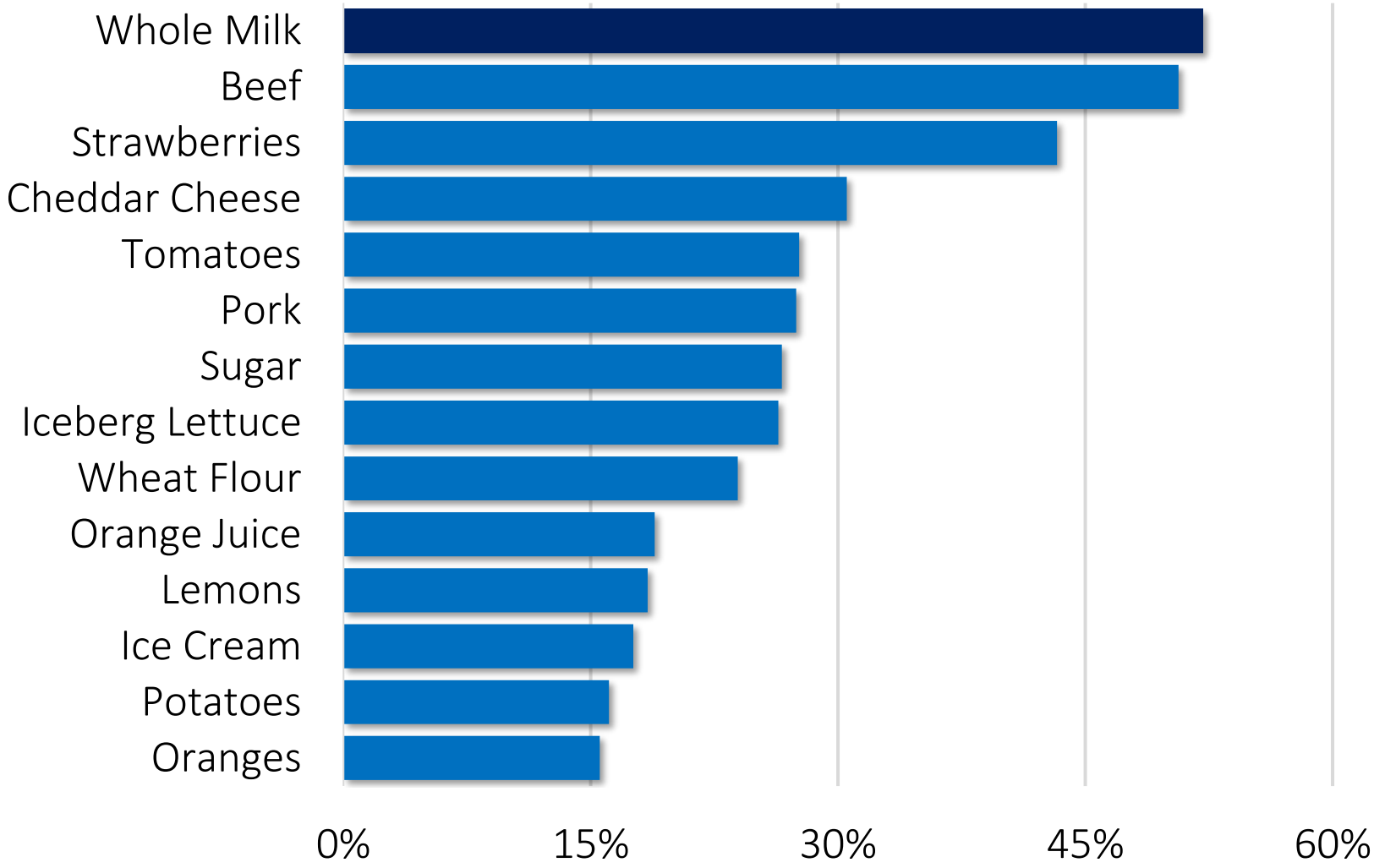


Source: Dr. John Newton

Revenue Pooling as a Noble Concept

Central principle of the FMMOs is that producers would get paid on market-wide average value of dairy products made from milk of all the producers in some geography.

Producer's Share of Retail Price

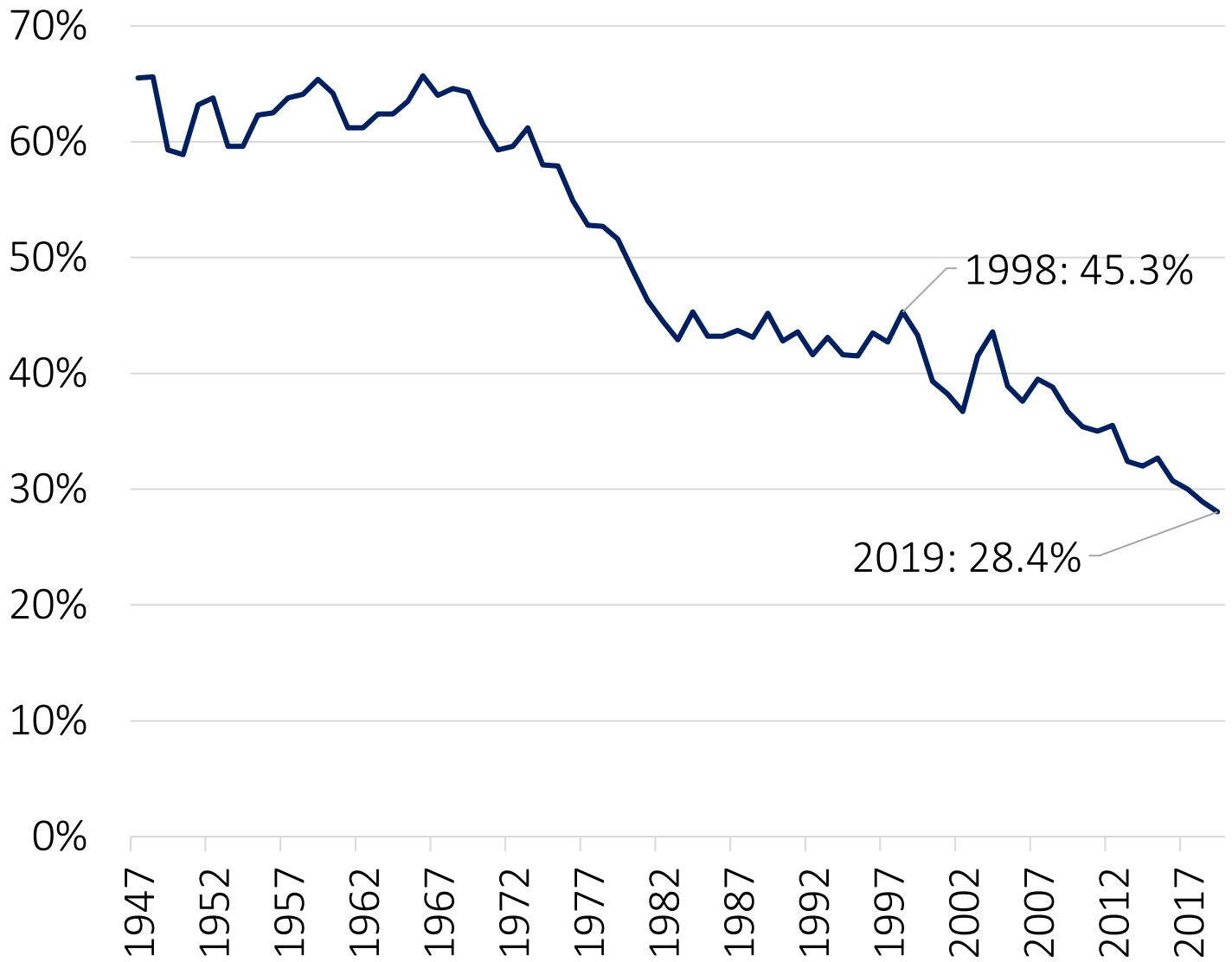


FMMOs protect against market power abuses of large milk buyers with considerable negotiating power.

What is driving PPDs?

1) Long-term trends in utilization rates
2) Rising protein tests
3) Spreads between Class III and Class IV milk prices
4) Advanced pricing for fluid milk products
5) Class I mover formula reform introduced in the 2018 Farm Bill
6) Depooling

FMMO Class I Utilization Rate Over Decades



When the last major FMMO reform was designed, in late 1990s, over 45% of pooled milk was used in Class I.

Today, less than 30% is Class I.

It’s not enough.

Baseline PPDs

- Utilization rates by class are equal to those predicted for 2010 by trend models described in Bozic and Wolf (2021). These predicted utilization rates do not allow for depooling and reflect the 'typical' utilization of milk a decade ago.

- Component tests are as observed in 2010. By setting component tests at levels typical a decade ago we facilitate the analysis of consequences of rising component tests.

- Announced dairy product and milk component prices are held constant at the average levels observed over January 2010 through December 2019.

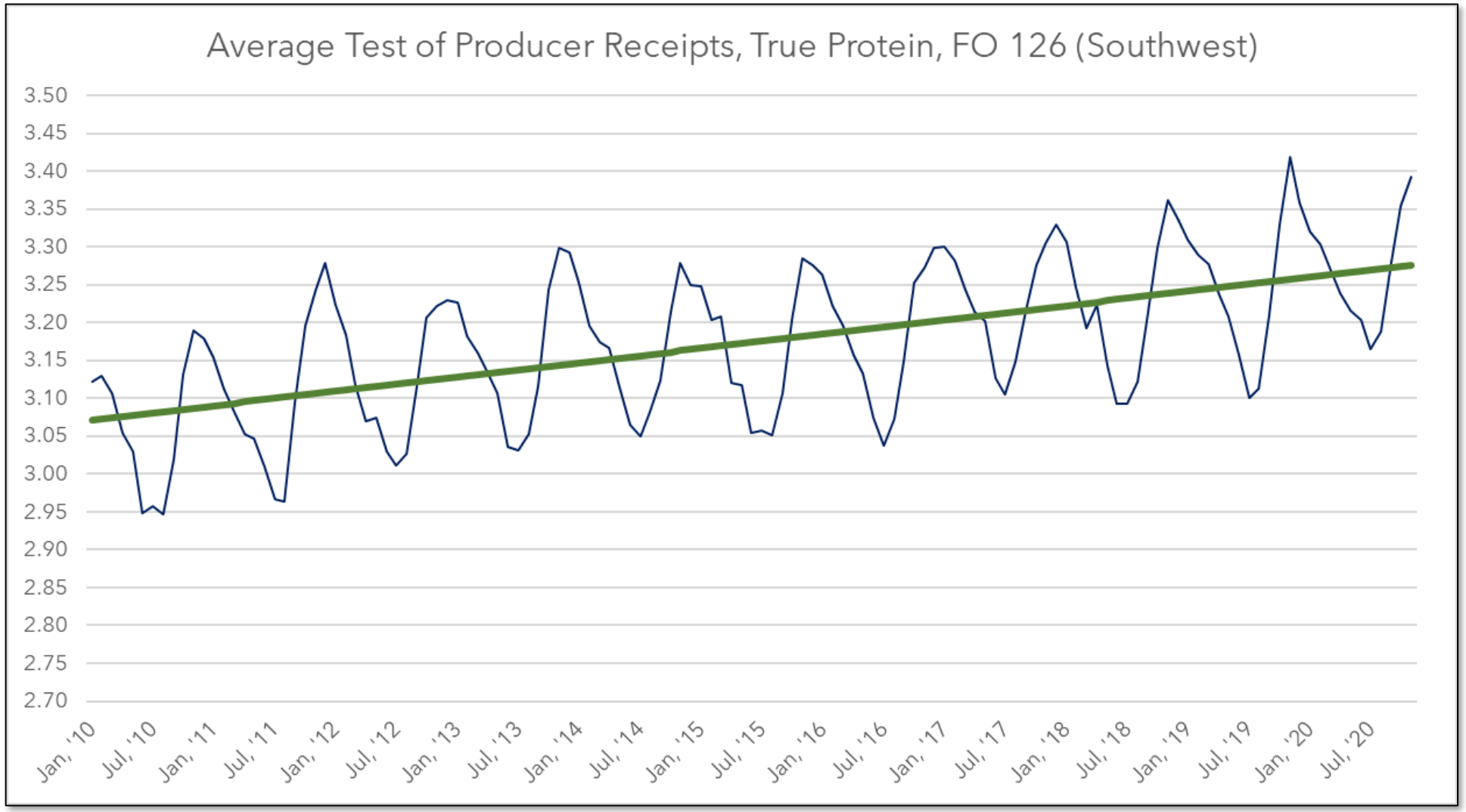
- Advanced prices are set equal to the announced prices.

- Base Class I skim prices are calculated using the "higher-of" pricing method.

Federal Milk Marketing Orders – Long Term Trends

Step 1 - Utilization Rates	Jan 2010 Predicted	Jan 2021 Predicted	Change	% Change
FO #1 – Northeast	1.88	1.41	-0.47	-25%
FO #30 – Upper Midwest	0.35	0.23	-0.12	-34%
FO #32 – Central	0.71	0.45	-0.26	-37%
FO #33 – Mideast	0.92	0.67	-0.25	-27%
FO #124 – Pacific Northwest	0.58	0.30	-0.28	-48%
FO #126 – Southwest	1.74	1.34	-0.40	-23%

Rising Protein Tests



Rising Protein Tests

Average Milk Component Tests

	2008-2009			2020		
Federal Milk Marketing Order	**Butterfat**	**Protein**	**Other Solids**	**Butterfat**	**Protein**	**Other Solids**
FO #1 – Northeast	3.72	3.06	5.70	3.92	3.11	5.77
FO #30 – Upper Midwest	3.71	3.04	5.72	3.96	3.14	5.77
FO #32 – Central	3.63	3.07	5.73	3.92	3.20	5.79
FO #33 – Mideast	3.70	3.06	5.70	3.88	3.16	5.78
FO #124 – Pacific Northwest	3.69	3.10	5.70	4.07	3.25	5.77
FO #126 – Southwest	3.61	3.06	5.74	4.07	3.28	5.78

How Rising Protein Tests Affect PPDs – Fluid Milk Sales

COMPUTATION OF PRODUCER PRICE DIFFERENTIAL
FOR MARCH 2021

		Utilization Percentage	Product Pounds	Component Pounds	Rate	Value
Class I	Differential Value					$ 3,790,086.54
	Product	22.7%	219,159,910			
	Skim Milk			215,200,445	$10.6200	22,854,287.27
	Butterfat			3,959,465	1.4135	5,596,703.77
Class II	Product	22.1%	213,389,547			
	Nonfat Solids			18,956,000	1.0400	19,714,240.00
	Butterfat			11,242,939	1.7246	19,389,572.62
Class III	Product	36.9%	355,467,968			
	Protein			11,283,798	2.6954	30,414,349.11
	Other Solids			20,717,460	0.3652	7,566,016.41
	Butterfat			12,761,728	1.7176	21,919,544.00
Class IV	Product	18.3%	176,490,188			
	Nonfat Solids			15,443,122	0.9396	14,510,357.45
	Butterfat			11,224,904	1.7176	19,279,895.10
SCC Adjustment (Class II, III, and IV)						1,107,526.22
Total Producer Milk			964,507,613			$ 166,142,578.49
Add:	Overage					27,682.81
	Inventory Reclassified					123,210.36
	Other Source Milk §.60(h)					16,333.91
	Other Source Milk §.60(i)					0.00
Subtract:	Transportation Credit					18,914.54
	Assembly Credit					174,101.60
	Credit for Reconstituted FMP					0.00
	Producer Milk Protein					82,665,586.49
	Producer Milk Other Solids					20,401,449.18
	Producer Milk Butterfat					67,311,088.27
	Producer Milk SCC Adjustment					1,419,408.61
Total Milk and Value			964,507,613			$ (5,680,743.12)

Class I handlers pay to the pool based on skim milk which uses standardized protein tests (3.1 per hundredweight of skim milk, or 2.9915 per hundredweight of standard milk). As protein tests rise, Class I handlers draw more from the pool for component value of milk, without paying more to the pool, thus reducing funds available for PPD.

Why Higher Protein Tests Reduce PPDs: Class IV Pool Accounting

Butterfat Test x Butterfat Price

Butterfat Test x Butterfat Price

Producer Price Differential

Protein Test x Protein Price
Other Solids Test x Other Solids Price

(Protein + Other Solids Test)
x Nonfat Solids Price

How Rising Protein Tests Affect PPDs – Paying for Protein

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Under federal orders, protein is paid for based on the value in cheese, but only a fraction of protein is used in cheese. Protein is also used in nonfat dry milk powder, in yogurts and fluid milk. When there is a positive spread between market value of skim solids in cheese (Class III) vs. nonfat dry milk powder (Class IV), then under current FMMO rules, producers are paid for components beyond the pool average value they create in the market, and the deficit is manifested as a lower PPD.

Impact of Rising Protein Tests on PPDs

Federal Milk Marketing Order	Jan 2021 Predicted Util Rates	Jan 2021 Predicted Comp Tests	Change	% Change
FO #1 – Northeast	1.41	1.26	-0.15	-11%
FO #30 – Upper Midwest	0.23	0.18	-0.05	-22%
FO #32 – Central	0.45	0.24	-0.21	-47%
FO #33 – Mideast	0.67	0.49	-0.18	-27%
FO #124 – Pacific Northwest	0.30	0.07	-0.23	-77%
FO #126 – Southwest	1.34	0.99	-0.35	-26%

CLASS III MILK PRICE

Class III Price ($/cwt) = [**Butterfat Price** ($/lb) X **3.5** (lb butterfat/ cwt milk)] +

[**Protein Price** ($/cwt) X **2.9915** (lb protein/ cwt milk)] +

[**Other Solids Price** ($/lb) X **5.6935** (lb other solids/ cwt milk)]

CLASS IV MILK PRICE

Class IV Price ($/cwt) = [**Butterfat Price** ($/lb) X **3.5** (lb butterfat/ cwt milk)] +

[**Nonfat Solids Price** ($/cwt) X **8.685** (lb nonfat solids/ cwt milk)]

How Class III – IV Spread Affects PPDs – Paying for Protein

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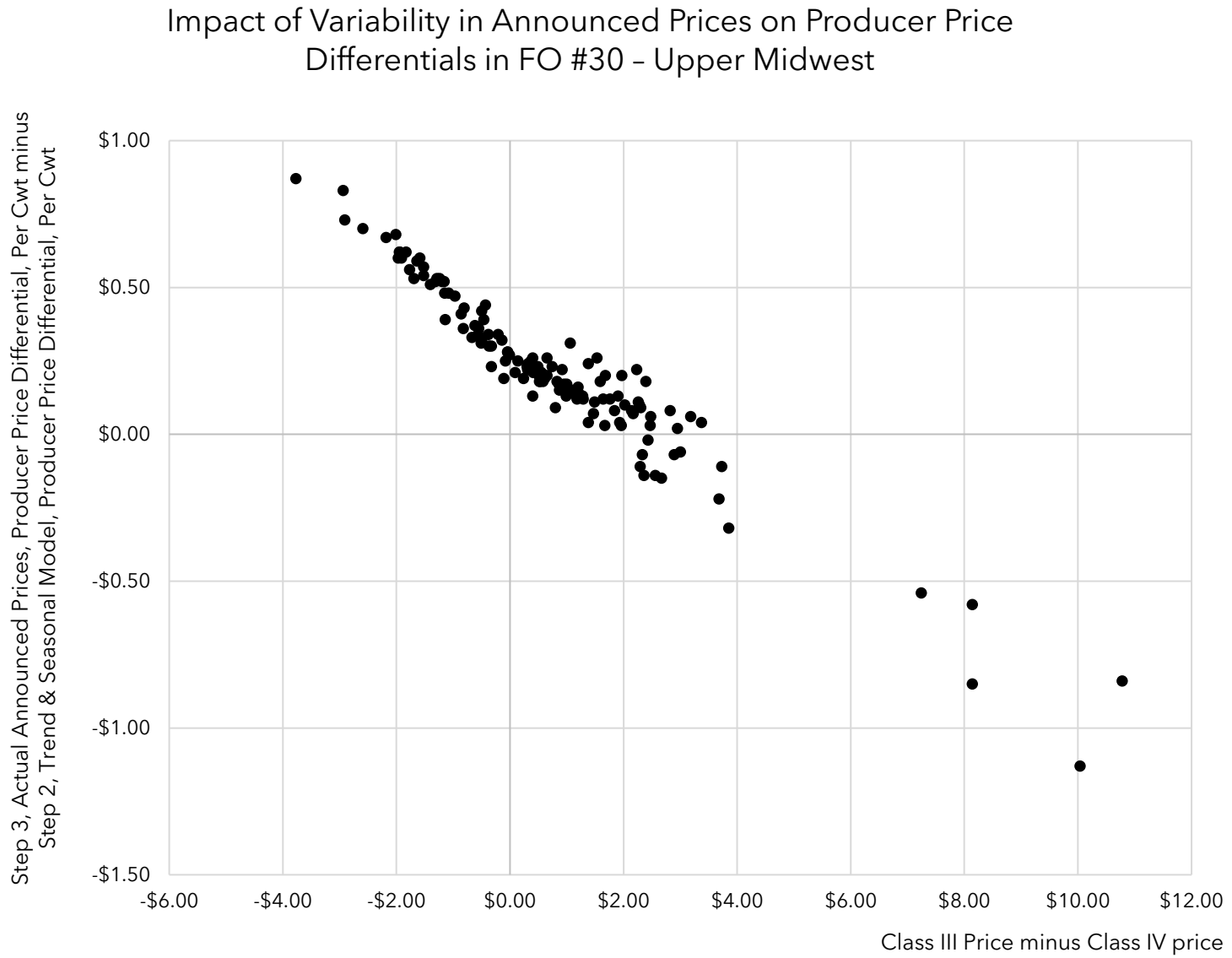
The spread between Class III and Class IV prices averaged $0.39/cwt over 2010-2019 period. In March 2021, Class III price was $16.15 and Class IV price was $14.18. The spread of $1.97/cwt is larger than historical average, which reduces the predicted PPD. PPD will be more reduced in orders with higher Class II and Class IV utilization rates.

How Class III – IV Spread Affects PPDs – Paying for Protein



FARMERS TO FAMILIES FOOD BOX PROGRAM

AGRICULTURE · **Published** August 25

Ivanka Trump announces $1B more for 'Farmers to Families Food Box' program

The program has helped bring more than 70 million boxes of food from small U.S. farms to families in need since May

Impact of Advanced Pricing

United States Department of Agriculture

Announcement of Advanced Prices and Pricing Factors

United States Department of Agriculture

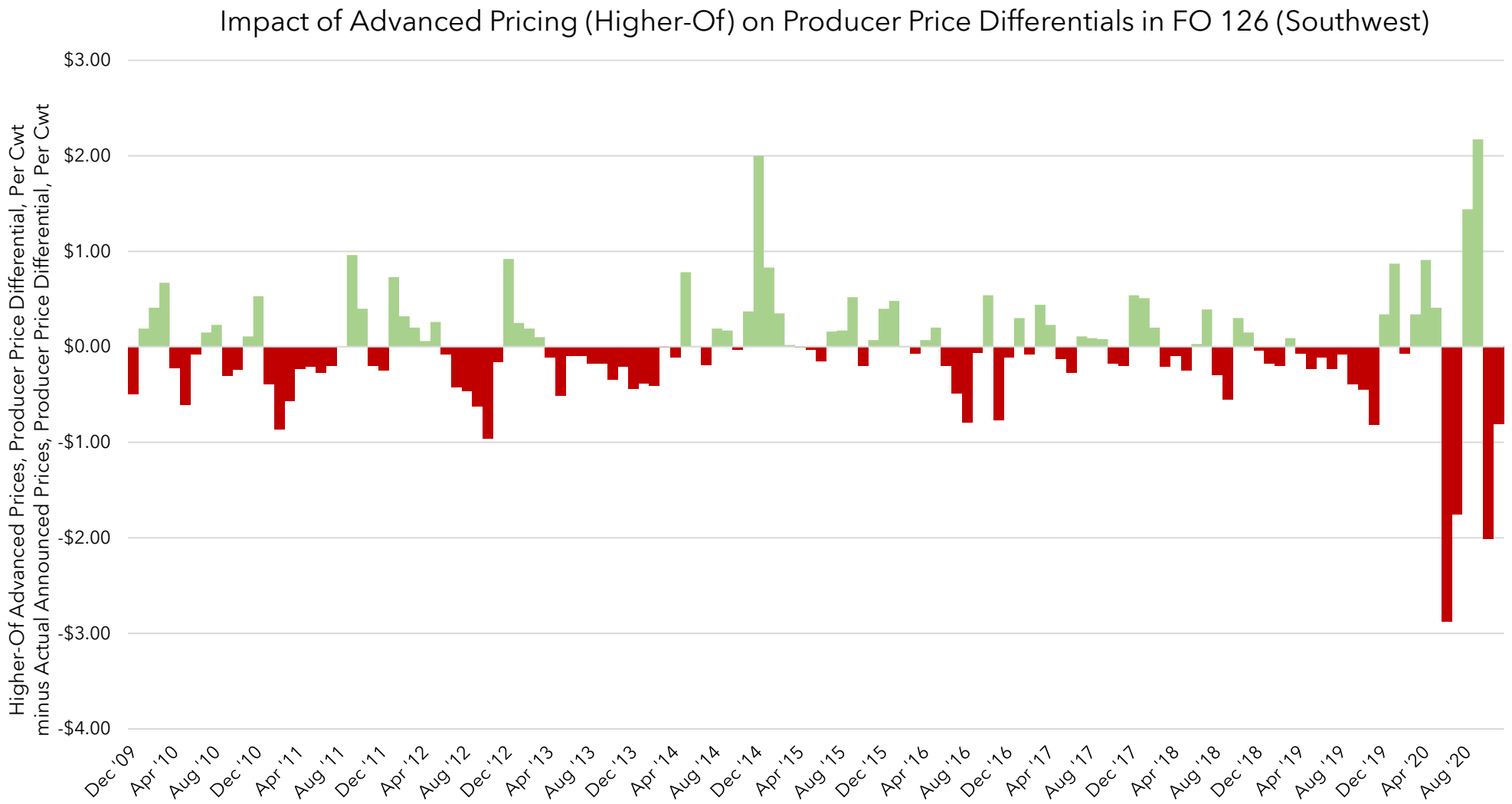
Agricultural Marketing Service	**Dairy Program**	**Market Information Branch**
ADV - 0321		February 18, 2021

March 2021 Highlights

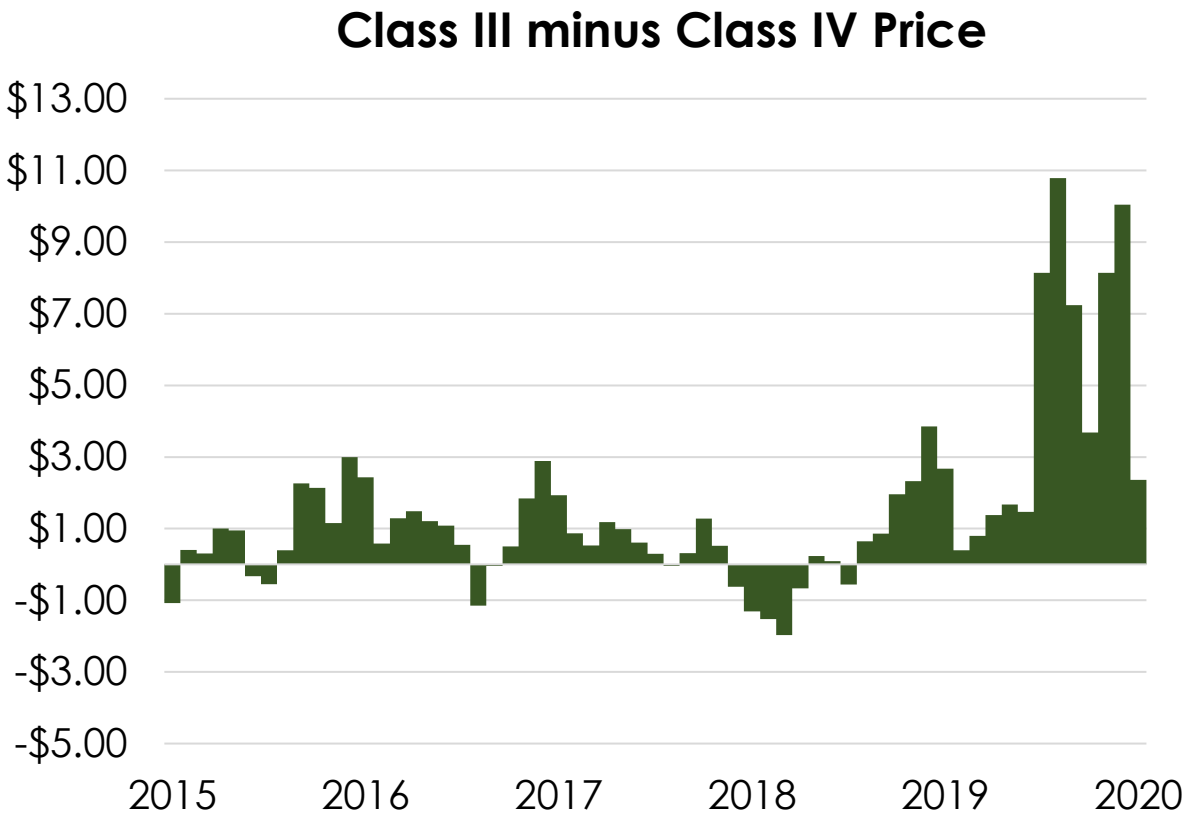
Base Class I Price was $15.20 per hundredweight for the month of March 2021. The price per hundredweight decreased $0.34 from the previous month.

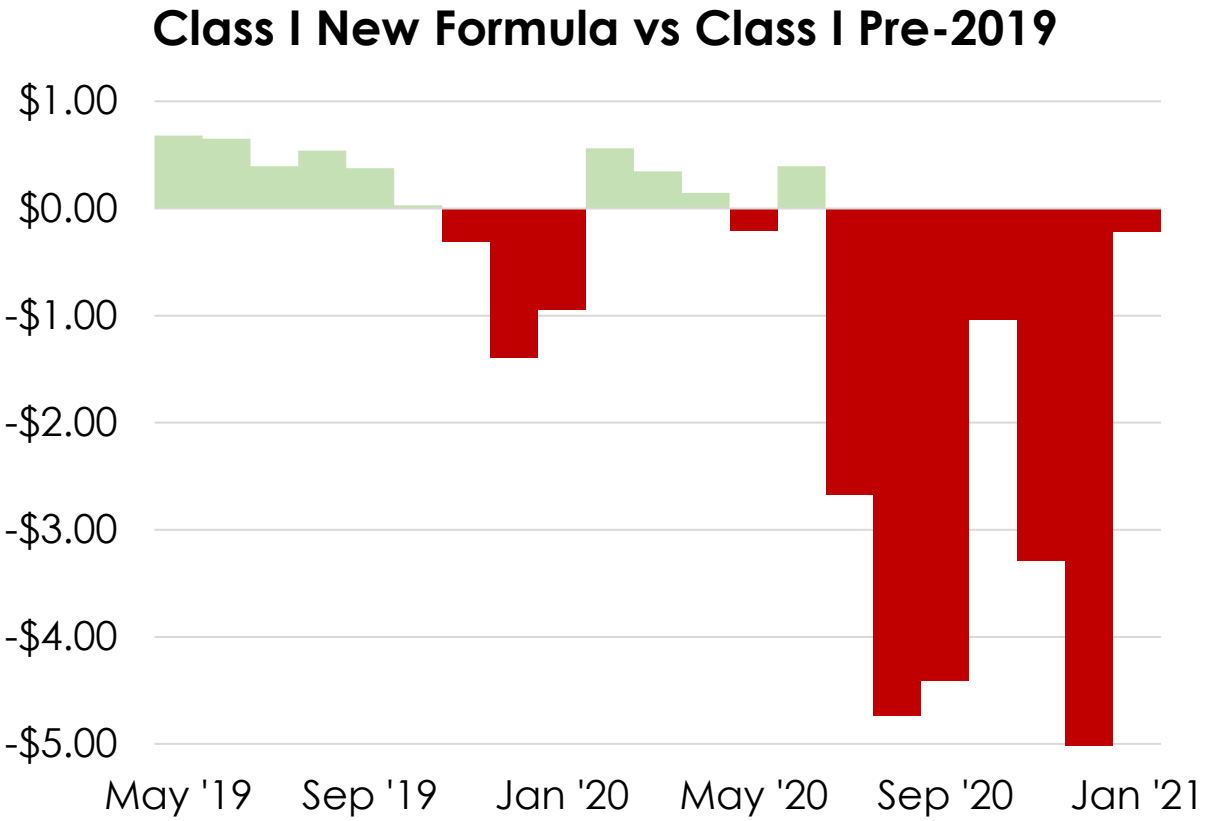
Base Skim Milk Price [1] for Class I was $10.62 per hundredweight for the month of March 2021. The price per hundredweight increased $0.25 from the previous month.

Impact of Advanced Pricing



CLASS I PRICE PERFORMANCE





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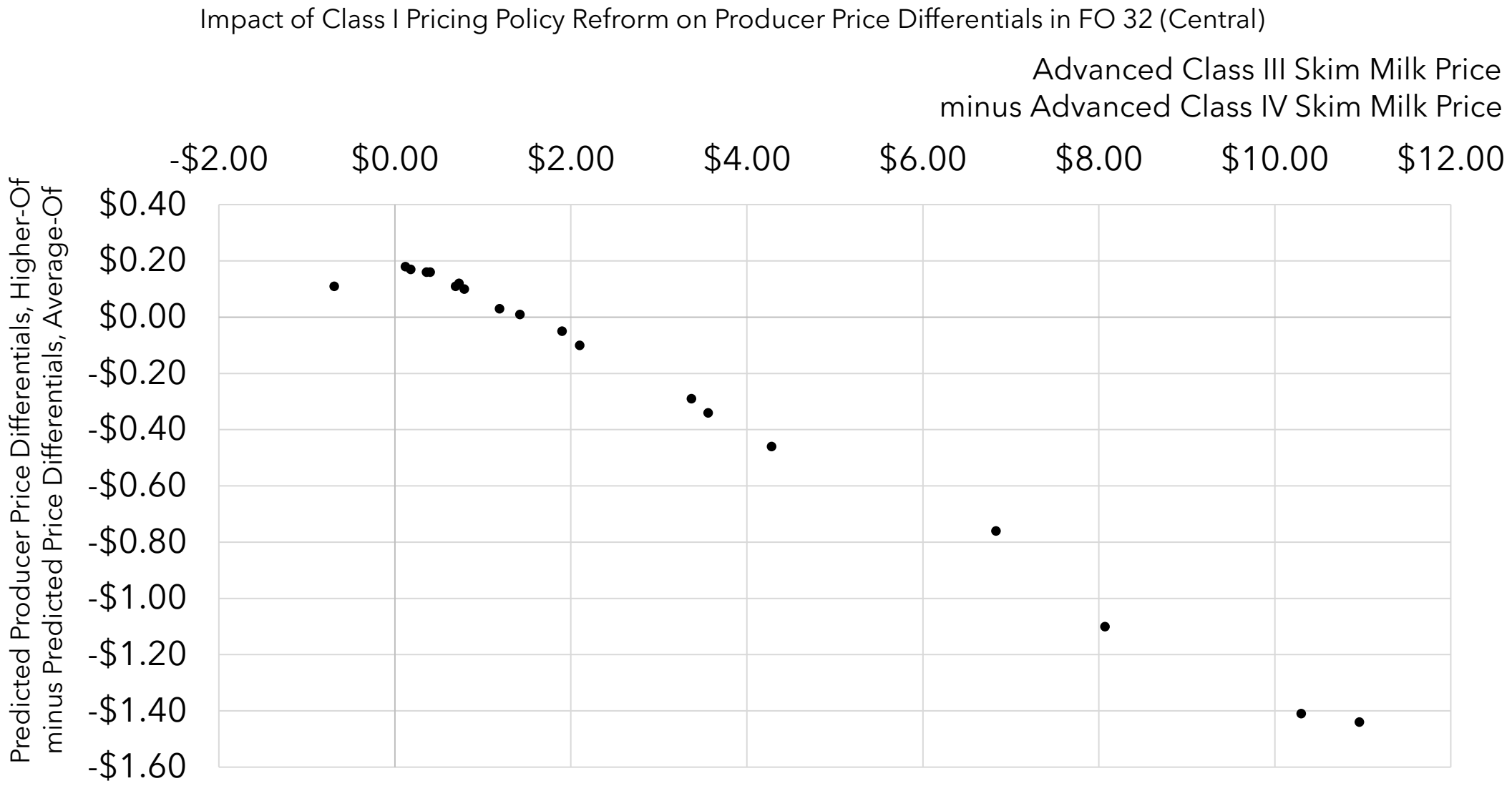

How FMMOs were intended to work

<u>Class I</u>
Must Participate

<u>Class II</u>
Can Participate

<u>Class III</u>
Can Participate

<u>Class IV</u>
Can Participate

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Why FMMOs no longer equalize milk prices among producers

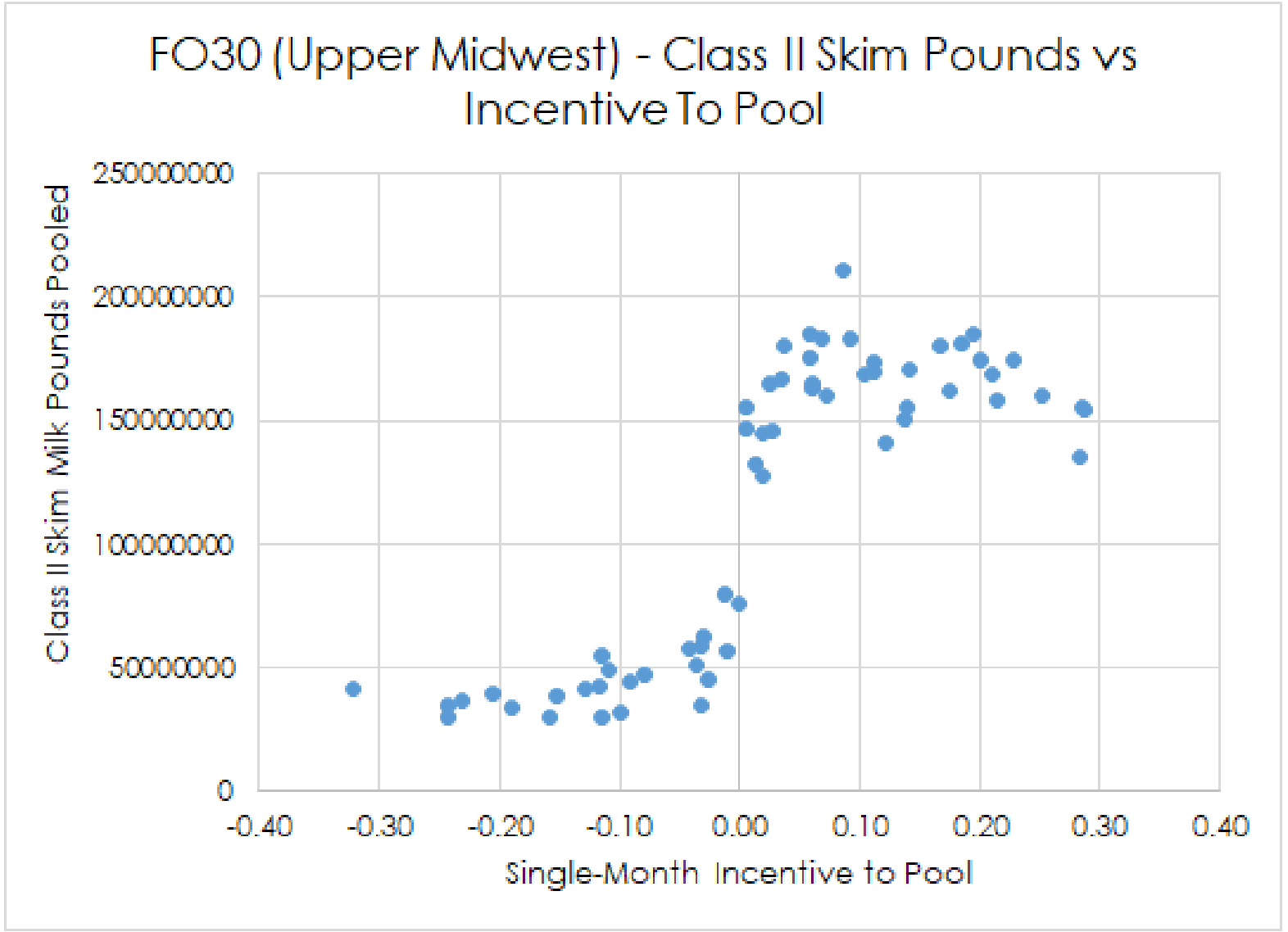
<u>Class I</u>
Must Participate

<u>Class II</u>
Can Participate

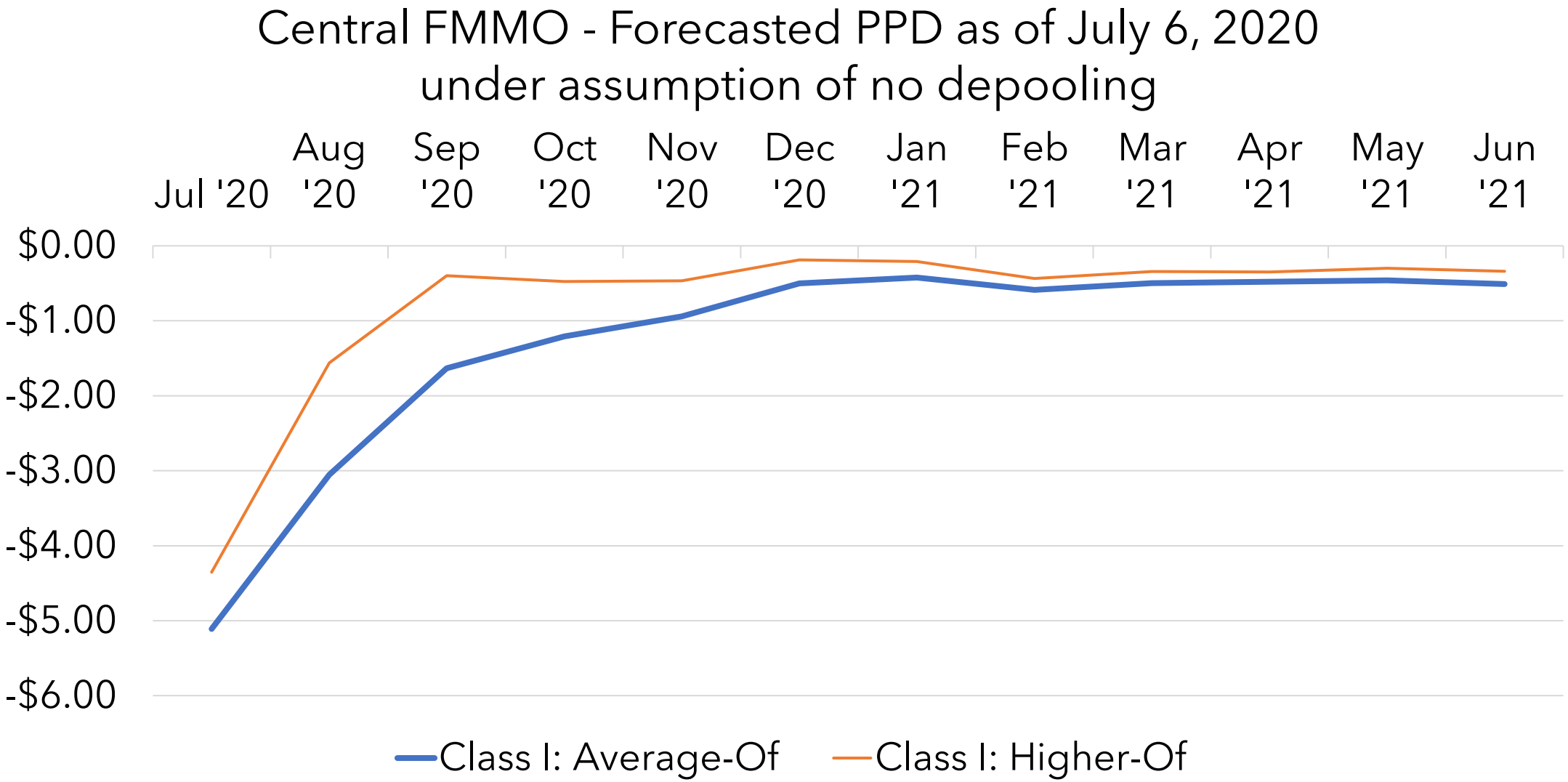
<u>Class III</u>
Can Participate

<u>Class IV</u>
Can Participate

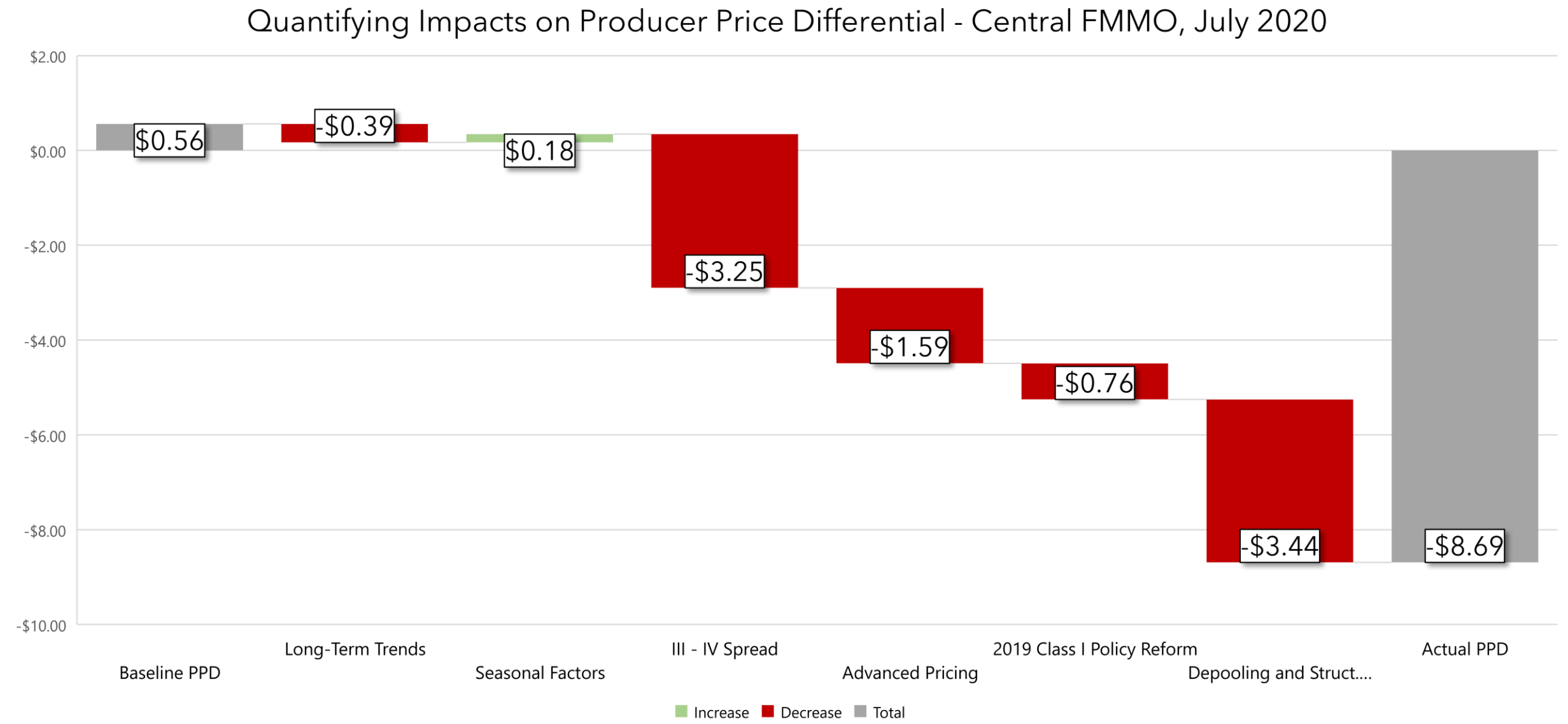
Manufactuers Only Pool When It Benefits Them



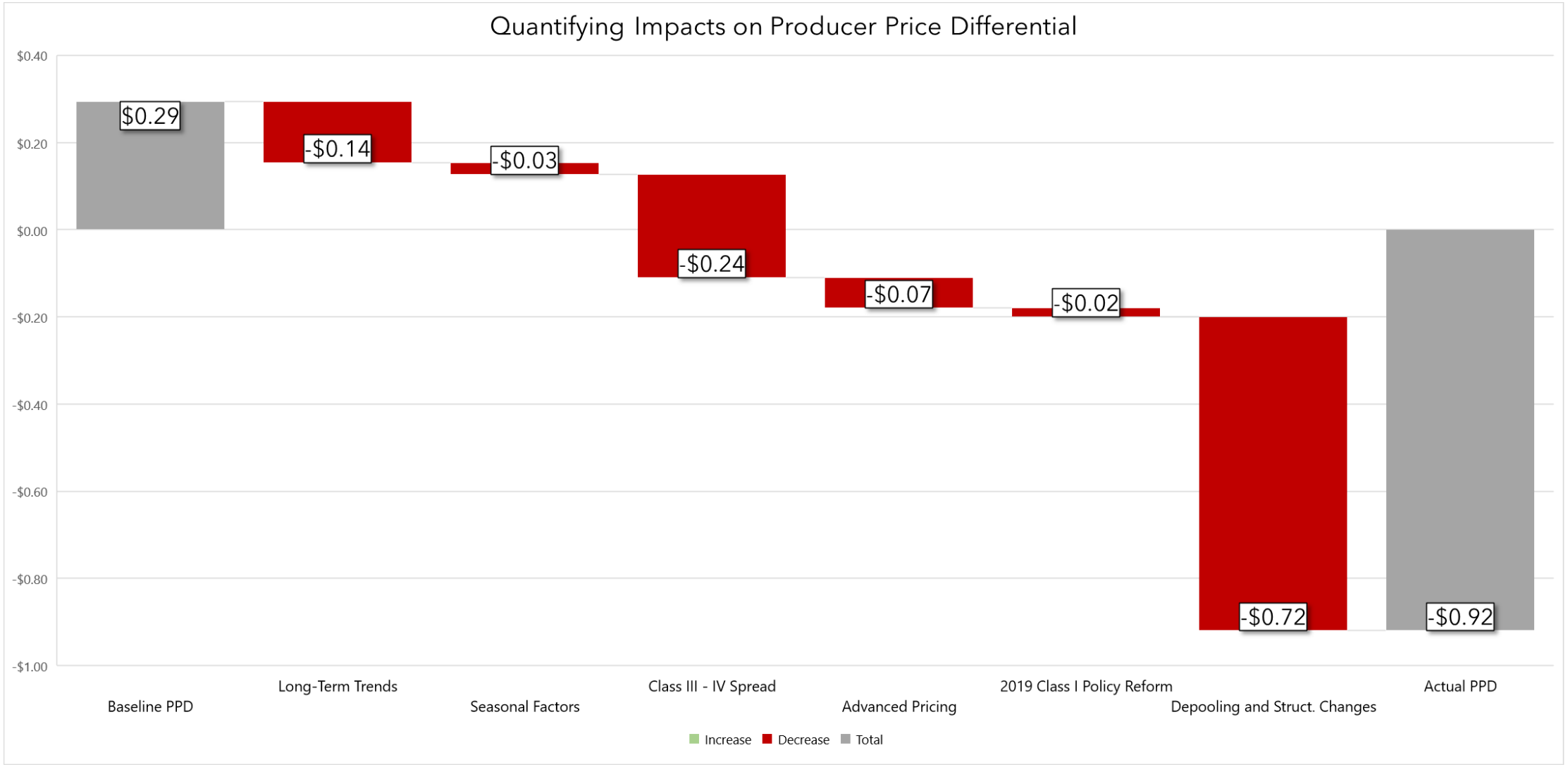
Dairy Policy Issues



PPD Decomposition – FO Central July 2020



FMMO Upper Midwest – January 2021



Relative Impacts