Backtesting the Forecasting Model

AgPretium's cattle price forecasting model estimates the probability of price increases over various forward-looking windows (e.g. 13, 26, or 52 weeks) using historical and fundamental market data. This report evaluates how those probability forecasts align with actual market outcomes through a structured backtest.

What This Backtest Measures

The backtest compares the model's predicted probabilities against realized price changes for each week in the historical period. For every forecasting window, we examine how well the probability readings corresponded to future price changes - helping to gauge the model's effectiveness at anticipating directional trends.

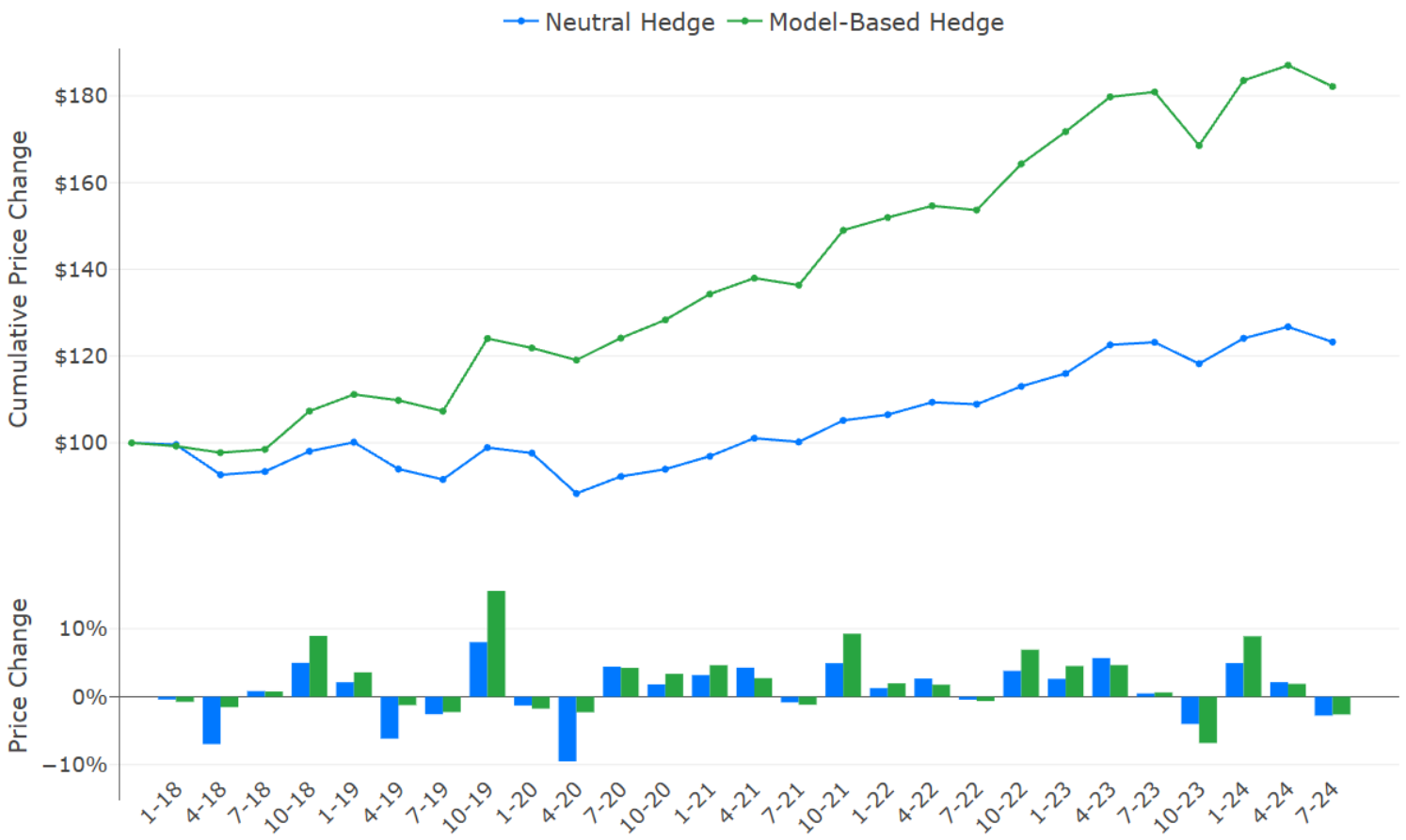
Simulated Hedging Comparison

The report focuses on a simulation comparing two hedging strategies over time:

- **Neutral hedge:** maintains 50% hedge coverage consistently.
- **Model-driven hedge:** adjusts hedge coverage based on the model's forecast. A 0% forecasted probability results in 100% hedged; 100% probability leaves the cattle fully unhedged. Intermediate values scale linearly.

The next section shows how the returns of these strategies compare across different forecast timeframes. The final section presents the raw data, including the forecasted probabilities and actual price changes for each forecasting period on each backtest date.

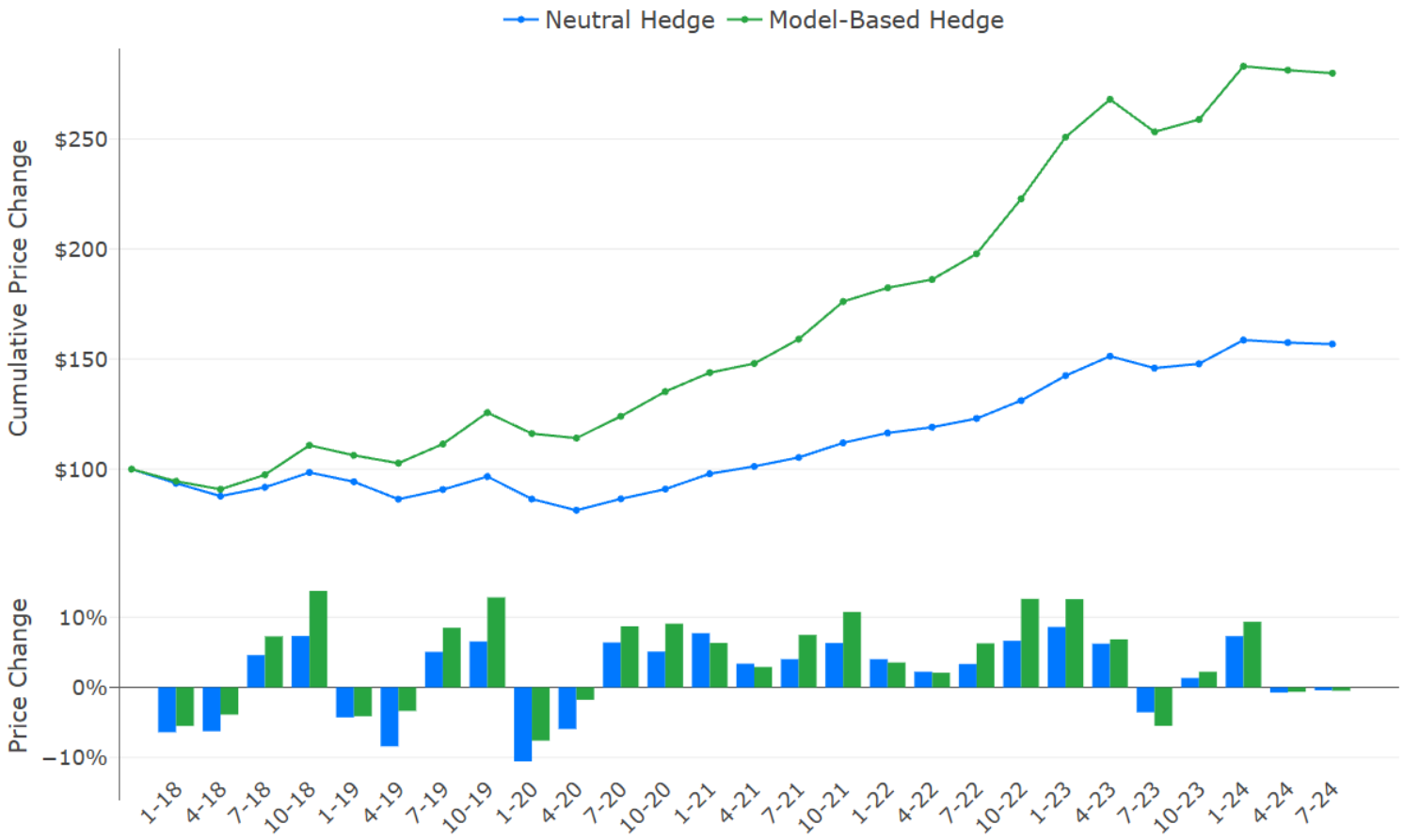
13 Week Forecasts



	Average	Total	Min	Max
Model-Based Hedge	2.35%	63.43%	-6.82%	15.60%
Neutral Hedge	0.86%	23.27%	-9.52%	8.04%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 1.49%. Over the period, this added up to a compounded return of $182.13 for the MB strategy compared to $123.24 for the neutral strategy. Looking at the range of returns, the MB strategy had a smaller min and substantially larger max than the neutral hedge.

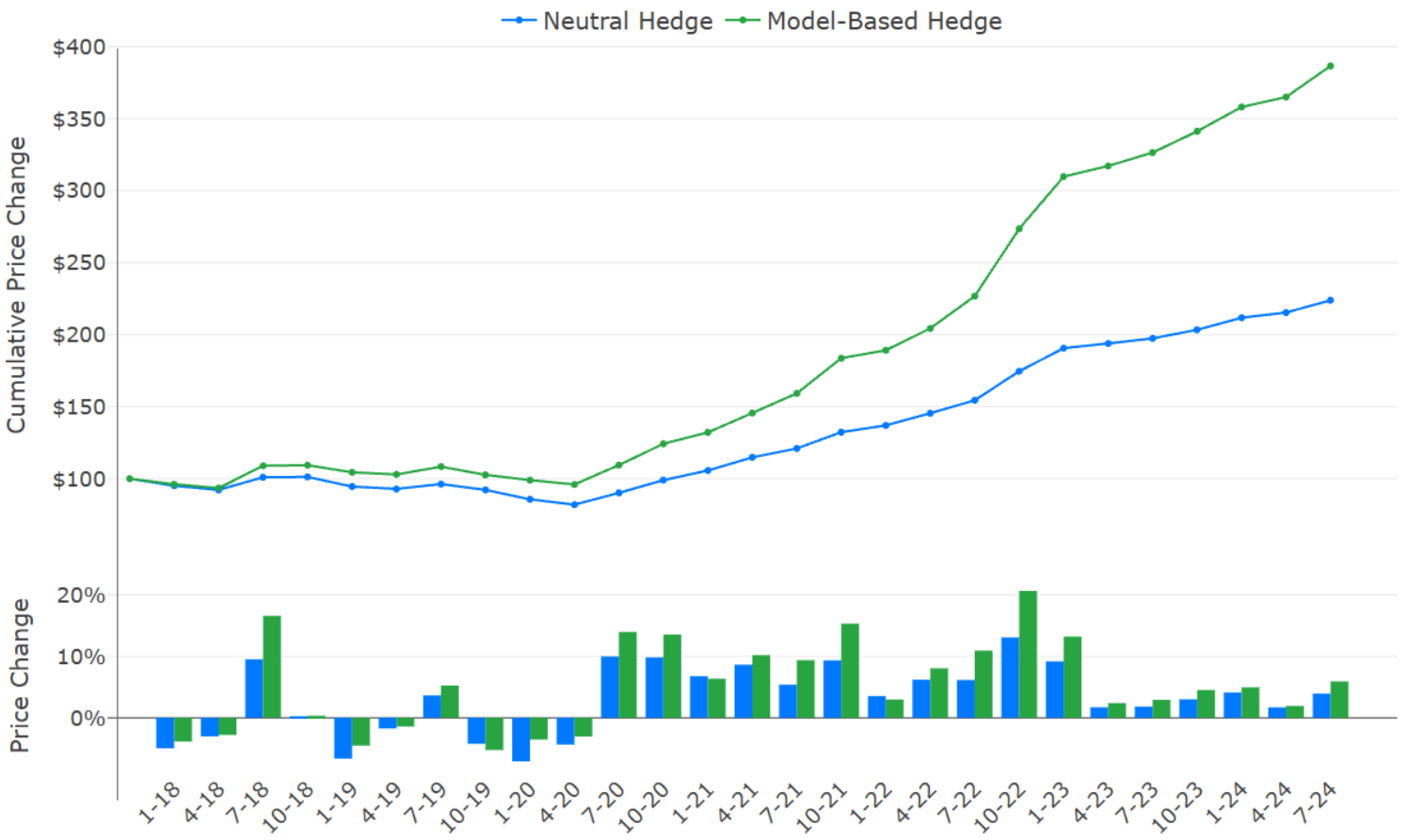
26 Week Forecasts



	Average	Total	Min	Max
Model-Based Hedge	4.08%	110.21%	-7.61%	13.77%
Neutral Hedge	1.83%	49.51%	-10.56%	8.62%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 2.25%. Over the period, this added up to a compounded return of $279.94 for the MB strategy compared to $156.80 for the neutral strategy. Looking at the range of returns, the MB strategy had a smaller min and significantly larger max than the neutral hedge.

39 Week Forecasts



	Average	Total	Min	Max
Model-Based Hedge	5.37%	145.04%	-5.24%	20.66%
Neutral Hedge	3.18%	85.84%	-7.08%	13.07%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 2.19%. Over the period, this added up to a compounded return of $386.59 for the MB strategy compared to $223.85 for the neutral strategy. Looking at the range of returns, the MB strategy had a smaller min and significantly larger max than the neutral hedge.

Raw Data

Date	Type	13w	26w	39w
2018-01-01	Forecast	91.0%	43.0%	39.0%
	Change	-0.82%	-12.82%	-9.89%
2018-03-26	Forecast	11.0%	31.0%	46.0%
	Change	-13.96%	-12.54%	-6.04%
2018-06-25	Forecast	47.0%	79.0%	87.0%
	Change	1.65%	9.20%	19.06%
2018-10-01	Forecast	90.0%	94.0%	65.0%
	Change	9.96%	14.65%	0.52%
2018-12-31	Forecast	84.0%	48.0%	34.0%
	Change	4.27%	-8.59%	-13.28%
2019-04-01	Forecast	10.0%	20.0%	41.0%
	Change	-12.33%	-16.83%	-3.45%
2019-07-01	Forecast	44.0%	84.0%	72.0%
	Change	-5.14%	10.12%	7.28%
2019-09-30	Forecast	97.0%	98.0%	62.0%
	Change	16.08%	13.09%	-8.45%
2019-12-30	Forecast	68.0%	36.0%	25.0%
	Change	-2.58%	-21.13%	-14.16%
2020-03-30	Forecast	12.0%	15.0%	35.0%
	Change	-19.04%	-11.88%	-8.69%
2020-06-29	Forecast	48.0%	68.0%	70.0%
	Change	8.85%	12.79%	19.96%
2020-09-28	Forecast	93.0%	89.0%	69.0%
	Change	3.63%	10.21%	19.63%
2020-12-28	Forecast	73.0%	41.0%	47.0%
	Change	6.36%	15.45%	13.53%

Date	Type	13w	26w	39w
2021-03-29	Forecast	32.0%	43.0%	59.0%
	Change	8.55%	6.74%	17.28%
2021-06-28	Forecast	71.0%	93.0%	87.0%
	Change	-1.66%	8.04%	10.78%
2021-09-27	Forecast	94.0%	85.0%	82.0%
	Change	9.87%	12.65%	18.69%
2021-12-27	Forecast	78.0%	44.0%	42.0%
	Change	2.53%	8.03%	7.09%
2022-03-28	Forecast	33.0%	47.0%	65.0%
	Change	5.36%	4.44%	12.39%
2022-06-27	Forecast	73.0%	94.0%	89.0%
	Change	-0.87%	6.67%	12.29%
2022-09-26	Forecast	91.0%	95.0%	79.0%
	Change	7.61%	13.28%	26.15%
2022-12-26	Forecast	86.0%	73.0%	72.0%
	Change	5.26%	17.23%	18.36%
2023-03-27	Forecast	41.0%	55.0%	70.0%
	Change	11.37%	12.44%	3.42%
2023-06-26	Forecast	66.0%	77.0%	80.0%
	Change	0.96%	-7.14%	3.66%
2023-09-25	Forecast	85.0%	83.0%	75.0%
	Change	-8.02%	2.67%	6.02%
2024-01-01	Forecast	90.0%	64.0%	60.0%
	Change	9.89%	14.61%	8.26%
2024-04-01	Forecast	44.0%	43.0%	57.0%
	Change	4.30%	-1.48%	3.39%
2024-07-01	Forecast	47.0%	56.0%	75.0%
	Change	-5.54%	-0.87%	7.89%

Important Information

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