AgPretium

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.
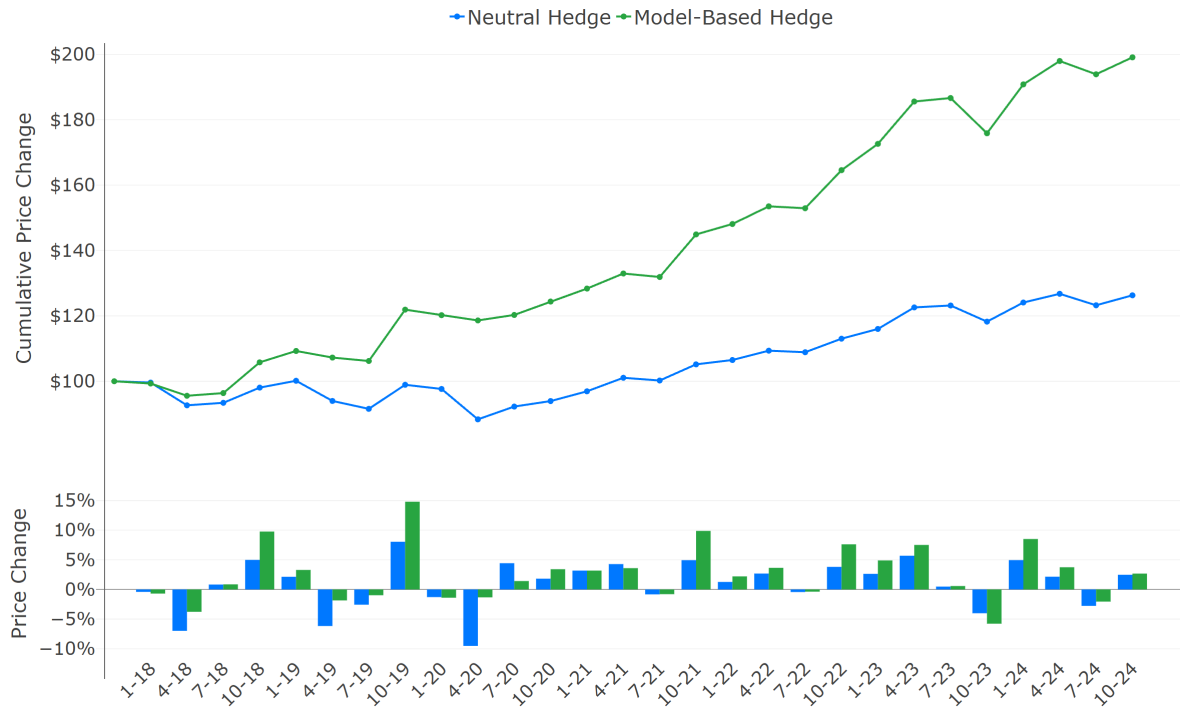

Simulated Hedging Comparison

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.
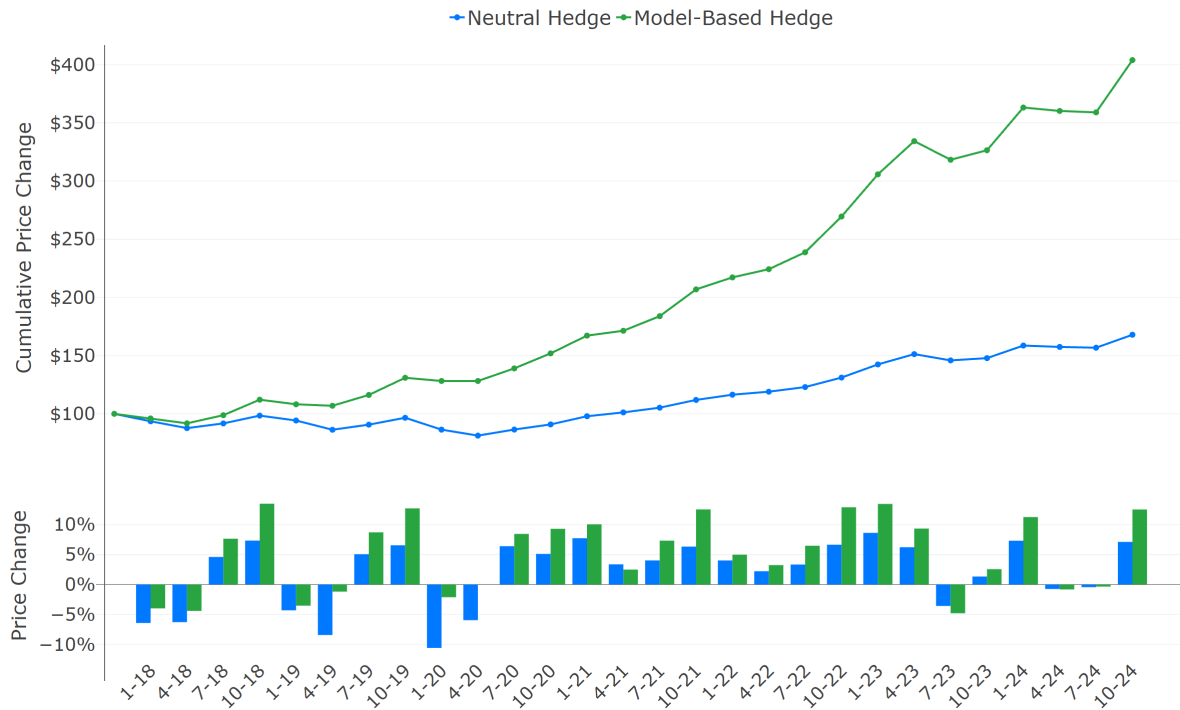
13 Week Forecasts

	Average	Total	Min	Max
Model-Based Hedge	2.59%	72.50%	-5.77%	14.79%
Neutral Hedge	0.92%	25.75%	-9.52%	8.04%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 1.73%. Over the period, this added up to a compounded return of $193.90 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.
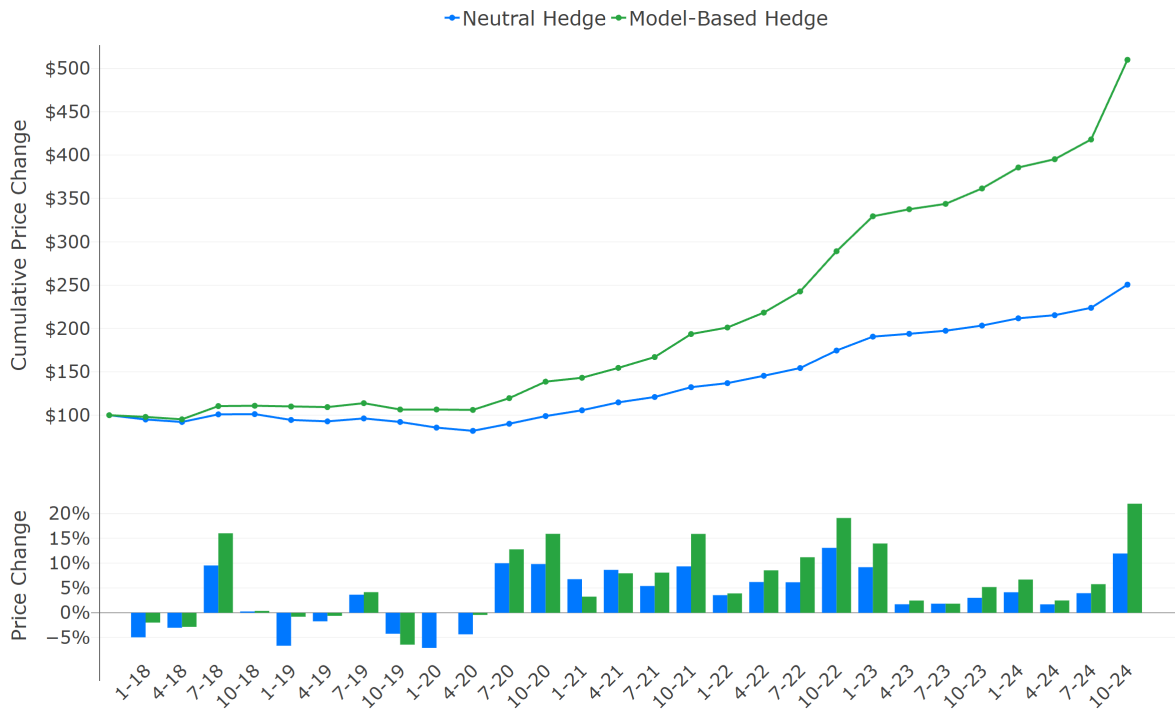
26 Week Forecasts

	Average	Total	Min	Max
Model-Based Hedge	5.29%	148.18%	-4.78%	13.48%
Neutral Hedge	2.02%	56.62%	-10.56%	8.62%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 3.19%. Over the period, this added up to a compounded return of $359.05 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	6.23%	174.33%	-6.42%	21.97%
Neutral Hedge	3.49%	97.78%	-7.08%	13.07%

The model-based (MB) hedge strategy outperformed the neutral hedge by an average of 2.47%. Over the period, this added up to a compounded return of $418.39 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	85.0%	31.0%	20.0%
	Change	-0.82%	-12.82%	-9.89%
2018-03-26	Forecast	27.0%	35.0%	47.0%
	Change	-13.96%	-12.54%	-6.04%
2018-06-25	Forecast	52.0%	83.0%	84.0%
	Change	1.65%	9.20%	19.06%
2018-10-01	Forecast	98.0%	92.0%	72.0%
	Change	9.96%	14.65%	0.52%
2018-12-31	Forecast	77.0%	41.0%	6.0%
	Change	4.27%	-8.59%	-13.28%
2019-04-01	Forecast	15.0%	7.0%	18.0%
	Change	-12.33%	-16.83%	-3.45%
2019-07-01	Forecast	19.0%	86.0%	57.0%
	Change	-5.14%	10.12%	7.28%
2019-09-30	Forecast	92.0%	97.0%	76.0%
	Change	16.08%	13.09%	-8.45%
2019-12-30	Forecast	54.0%	10.0%	0.0%
	Change	-2.58%	-21.13%	-14.16%
2020-03-30	Forecast	7.0%	0.0%	5.0%
	Change	-19.04%	-11.88%	-8.69%
2020-06-29	Forecast	16.0%	66.0%	64.0%
	Change	8.85%	12.79%	19.96%
2020-09-28	Forecast	94.0%	91.0%	81.0%
	Change	3.63%	10.21%	19.63%
2020-12-28	Forecast	50.0%	65.0%	24.0%
	Change	6.36%	15.45%	13.53%

Date	Type	13w	26w	39w
2021-03-29	Forecast	42.0%	37.0%	46.0%
	Change	8.55%	6.74%	17.28%
2021-06-28	Forecast	48.0%	91.0%	75.0%
	Change	-1.66%	8.04%	10.78%
2021-09-27	Forecast	100.0%	99.0%	85.0%
	Change	9.87%	12.65%	18.69%
2021-12-27	Forecast	87.0%	62.0%	55.0%
	Change	2.53%	8.03%	7.09%
2022-03-28	Forecast	68.0%	73.0%	69.0%
	Change	5.36%	4.44%	12.39%
2022-06-27	Forecast	43.0%	97.0%	91.0%
	Change	-0.87%	6.67%	12.29%
2022-09-26	Forecast	100.0%	97.0%	73.0%
	Change	7.61%	13.28%	26.15%
2022-12-26	Forecast	93.0%	78.0%	76.0%
	Change	5.26%	17.23%	18.36%
2023-03-27	Forecast	66.0%	75.0%	72.0%
	Change	11.37%	12.44%	3.42%
2023-06-26	Forecast	60.0%	67.0%	50.0%
	Change	0.96%	-7.14%	3.66%
2023-09-25	Forecast	72.0%	96.0%	86.0%
	Change	-8.02%	2.67%	6.02%
2024-01-01	Forecast	86.0%	77.0%	81.0%
	Change	9.89%	14.61%	8.26%
2024-04-01	Forecast	87.0%	55.0%	73.0%
	Change	4.30%	-1.48%	3.39%
2024-07-01	Forecast	37.0%	39.0%	73.0%
	Change	-5.54%	-0.87%	7.89%
2024-09-30	Forecast	54.0%	88.0%	92.0%

Date	Type	13w	26w	39w
	Change	4.95%	14.22%	23.88%

Important Information

This document is provided for informational purposes only and does not constitute financial, legal, or investment advice. While efforts are made to ensure accuracy, AgPretium makes no representations or warranties, express or implied, as to the completeness, reliability, or accuracy of the content. Forecasts are based on historical data and assumptions that may not reflect future market conditions. Users are solely responsible for decisions made based on this information, and AgPretium disclaims any liability for losses or damages resulting from such use. Redistribution without written permission is prohibited.