

# Commodities L/S Strategy

Broad Version

## Description

The Commodities Long/Short Strategy (Broad Version) uses a systematic method based on machine learning algorithms that predict the relative performance of 27 liquid commodity futures contracts. The portfolio weights are proportional to the signals, which are the estimated probabilities of the relative performance of each commodity. Rebalancing is carried out on a daily basis only if the correlation between desired and actual portfolio weights is lower than a 0.975 threshold. An automatic mechanism is in place to adapt the strategy to anomalous data as detected by an independent machine learning detection model.

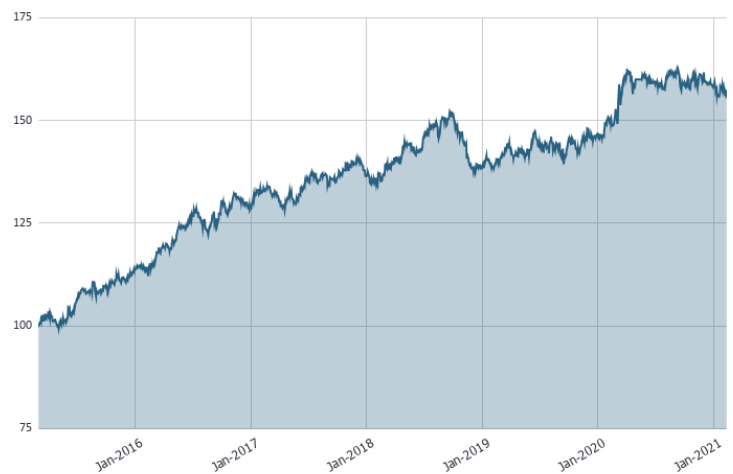
## Performance

Returns	2021 YTD	2020	2019	2018	2017	2016	2015
	-1.8%	8.0%	6.0%	1.4%	6.1%	12.9%	13.9%

### Other Metrics

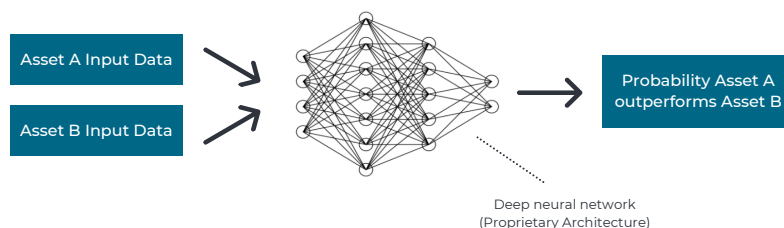
Starting Portfolio	\$ 10M	Sharpe Ratio	1.04
Final Portfolio	\$ 15.56M	Calmar Ratio	0.77
CAGR	7.4%	Sortino Ratio	1.57
Annual Vol	7.1%	Max Drawdown	-9.7%

## Strategy Performance



## Model Development

A machine learning model (deep neural network) is trained to predict the probability that any given asset A outperforms another asset B over a given time horizon. The model is trained on historical data of target assets and context indicators. The output of the model is used to rank all the assets in the investment universe.



## Development Steps

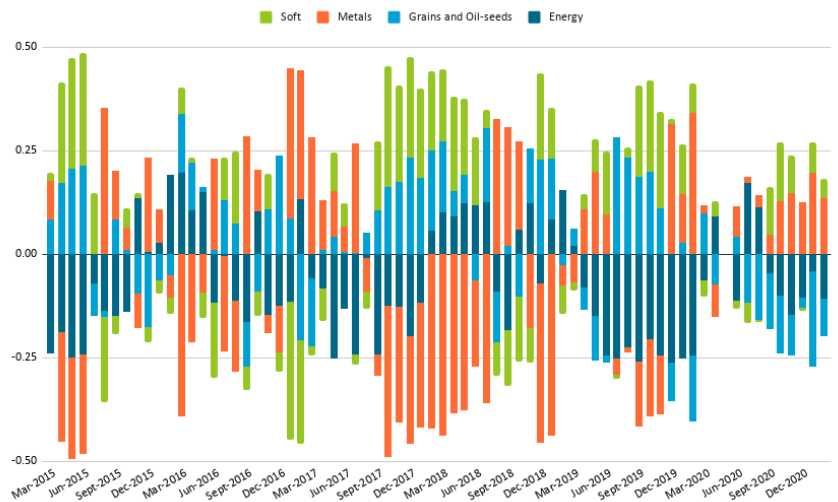
- A large number of candidate models is trained in an asset-agnostic supervised learning framework
- Hyperparameter optimization and input data selection is performed automatically using Genetic Algorithms
- An optimal ensemble of predictors is selected and used to produce test (out-of-sample) predictions
- An independent machine learning model is trained to estimate the probability of observing an anomalous feature vector.

Traded Instruments

The strategy trades liquid futures quoted at the Chicago Mercantile Exchange, London Metal Exchange and Intercontinental Exchange. The net exposure of the portfolio to different commodity categories varies month by month and is totally governed by the predictions of the proprietary machine learning model.

Net category exposure per month

<p><b>Energy</b></p> <p>Light Crude Oil Brent Crude Oil Heating Oil RBOB Gasoline Natural Gas</p>	<p><b>Grains and Oil-seeds</b></p> <p>Corn Wheat Soybean Soybean Meal Soybean Oil Oats</p>
<p><b>Soft</b></p> <p>Lumber Cotton Sugar Coffee Cocoa Live Cattle Lean Hogs</p>	<p><b>Metals</b></p> <p>Copper Aluminium Nickel Zinc Lead Gold Silver Platinum Palladium</p>



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