ARC Commodity Factor Risk Model
Monthly Report November 2025

The Asset Risk Company (ARC) Commodity Model is a cross-sectional commodity factor model. The model contains 50 of the most widely traded commodity products with approximately 1,200 futures in total over all maturities. All futures in the model have exposures to sectors, sub-sectors, style and trading factors such as basis, momentum, and open interest. The model is estimated daily with 25 years of history. It provides a framework for managing risk and investment decision-making.

In this report, you will find:

- Performance of Sectors, Sub-Sectors and Style and Trading Factors
- Examples of Factor Tilted Portfolios (Low Vol, Value, Momentum, Backwardation)
- Factor Based Risk Decomposition of Popular Commodity Indexes (BCOM, GSCI)
- Inflation prediction

The ARC Commodity Model is a powerful tool to help many constituencies in the financial industry, trading, and real economy. Some of the applications of the model are very straightforward, but some uses of the model are more nuanced. We recommend this short piece that provides details on both common and novel use cases for a commodity factor model: https://www.assetriskcompany.com/whyfactor.html. You can access our latest research at https://www.assetriskcompany.com/library.html.

Sectors and Factors Performance Report:

Table 1: Sectors and Subsectors Performance

Sectors	Nov 25	2025	5-year Return	5-year Volatility
Agriculture	**-0.7%**	**-5.7%**	**8.6%**	**12.4%**
Grain And Oilseed	0.2%	-2.2%	6.6%	15.2%
Lumber And Pulp	-8.4%	-16.2%	-12.1%	43.9%
Proteins	-2.1%	17.8%	14.0%	11.2%
Softs	-0.8%	-19.2%	6.5%	14.2%
Energy	**-1.4%**	**-3.6%**	**7.0%**	**13.1%**
Biofuels	-1.4%	-3.6%	15.3%	17.3%
Coal	-1.4%	-3.6%	22.4%	24.0%
Crude Oil	-0.7%	-8.7%	3.5%	14.4%
Natural Gas	-1.6%	4.5%	8.1%	15.5%
Petrochemicals	-1.4%	-3.6%	3.7%	16.0%
Refined Products	-2.2%	-9.0%	7.6%	16.5%
Metals	**5.0%**	**54.1%**	**14.5%**	**15.1%**
Base	0.8%	28.0%	12.1%	18.2%
Precious	7.7%	73.2%	15.3%	17.3%

Precious Metals are up again this month, delivering an exceptional year-to-date performance of 73.2%. Base Metals are also showing strength, with double-digit gains of 28% YTD. Energy markets were down this month, Crude Oil is down 8.7% YTD, Refined Products -9%, while Natural Gas is up 4.5%. Most Agricultural sectors remain

negative for the year, with the notable exception of Proteins, which remain up 17.8% YTD. Softs are now down 19.2% YTD.

As a reminder, ARC sectors and sub-sectors returns are not estimated using a static configuration of commodity weightings. The returns come naturally from a cross-sectional regression of the 1,200 assets in the model and therefore cover the entire term structure. For instance, Natural Gas has more than 120 maturities in the model. The model uses all of that information to derive sector and subsector returns and one can think of our sectors as risk weighted on the entire curve.

Table 2. Styles/Trading Factors Performance

Factor	Nov 25	2025	5 Year Return	5 Year Volatility
Basis	0.4%	-3.8%	-7.6%	4.2%
Open Interest	0.4%	0.8%	1.8%	4.1%
Momentum	3.6%	6.9%	4.0%	6.9%
ST Momentum	0.3%	-5.3%	-7.0%	5.5%
Trading Activity	0.3%	-2.3%	-0.6%	2.2%
Volatility	2.5%	11.9%	3.3%	8.9%
ST Volatility	-1.1%	-10.5%	-1.7%	7.9%

Our Momentum factor is on fire this year, delivering an exceptional 6.9% year to date performance. Notably The Volatility factor is up double digits (+11.95), while the short term Volatility factor is down double digits (-10.5%). The factor replicating portfolios — which include both long and short exposures across nearly all instruments in the model's universe — are theoretical constructs and not directly tradable.

In contrast, our practical long-only, factor-tilted implementation offers a more parsimonious and liquid representation of the strategy. Despite the underlying factor's

record performance, the long-only liquid version advanced only +1.2% in October — an unusually large divergence between the theoretical and investable implementations.

Factor Tilted Portfolios Performance Report:

As shown above there are some clear patterns emerging for the ARC Commodity Styles and Trading Factors. However in order to take advantage of these trends, ARC has created long-only tilted versions. Our findings, based on 25 years of data, are:

- Low Volatility and Low Momentum (Value), Low Basis (Extreme Backwardation) are reliable and produce much better performance and risk than traditional indices
- High Momentum performed well over the last 5 years
- High Basis is reliable in underperforming the indices

Table 3: Top 5 Futures Tilted Portfolios and BCOM Performance

Return & Risk	Low Vol	Low Mom/Value	Low Basis	Hi Mom	BCOM
Nov Returns	-0.6%	-0.9%	-1.8%	3.3%	2.9%
YTD Returns	5.2%	3.4%	-2.8%	15.5%	11.8%
5 Yr Returns	11.8%	15.8%	13.3%	23.7%	7.2%
5 Yr Volatility	7.0%	17.0%	13.5%	15.1%	14.0%
Sharpe	1.7	0.9	1.0	1.6	0.5

*Annualized 5 years

High Momentum is the best-performing factor this year (+15.5%) and now ranks as the second-highest Sharpe factor over the past five years, just behind Low Vol.

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Commodity Indices Risk Decomposition

Notably, we see an increase of total Ex-Ante volatility for both indices. BCOM displayed a much higher volatility than GSCI this month mostly due to a much larger contribution from Short Term Volatility.

Energy remains the largest sector in the GSCI, while it is the smallest in the BCOM index. Both indices exhibit elevated z-scores relative to Open Interest, highlighting their concentration in front-month contracts.

We use a 6 month half-life for this risk decomposition so the model is fairly reactive to market conditions. Despite different sector allocations, both indices have similar risk and exposures to styles. We noticed an uptick on the ex-ante volatility for both indices.

Table 4: Factor Exposures

Factors Exposures	BCOM	GSCI
Agriculture	0.33	0.28
Energy	0.26	0.48
Metals	0.41	0.24
Basis	0.17	0.12
Open Interest	2.34	2.20
Momentum	0.23	0.04
ST Momentum	0.52	0.13
Trading Activity	-0.14	-0.35
Volatility	0.02	-0.04
ST Volatility	0.49	0.28

Exposures, z-scores for BCOM and GSCI as of 11/28/2025

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A portfolio that is long/short would be evaluated on the breakout between systematic exposures and whether idiosyncratic risk. Long-only managers will want to find their exposures relative to their benchmark. As shown below in the correlation tables, sector correlations with style factors are relatively small. The model is able to separate risk due to sector allocation and styles risk. All risk is not equal. Systematic risk can display non-normal behavior when compared to specific or idiosyncratic risk. Both types of risks are driven by fluctuation, but systematic risk is driven by the "crowd" expressing some thematic bet. The systematic risk is related to market risk.

Table 5: Risk Attribution of BCOM and GSCI

Index	BCOM	GSCI
Total Risk	30.5%	19.6%
Agriculture	1.1%	0.9%
Energy	1.3%	3.3%
Metals	4.1%	2.3%
Basis	-0.1%	-0.1%
Open Interest	3.3%	4.8%
Momentum	0.4%	0.0%
ST Momentum	8.3%	1.6%
Trading Activity	0.0%	0.2%
Volatility	-0.2%	0.3%
ST Volatility	12.3%	5.9%
Specific Risk	4.0%	3.9%

Ex-Ante Annual Volatility Decomposition for BCOM and GSCI as of 11/28/2025

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Inflation:

Empirical testing finds that the ARC Commodity Model is an excellent predictor of breakout moves in the headline number, both in bouts of inflation and deflation. For November, we predict a small increase in CPI level, and a small increase year-on-year (Inflation). Reach out to info@assetriskcompany.com for our estimate.

Factor Correlations:

Long-term correlations between sectors and style factors are very low. The model is able to separate sector allocation risk from style risk providing key insights in the real key drivers of risk and performance of a portfolio.

Table 6. Factor Correlations

Correlations	Agriculture	Energy	Metals	Basis	Open Interest	Momentum	ST Momentum	Trading Activity	Volatility	ST Volatility
Agriculture	1.00	0.23	0.28	0.02	(0.04)	(0.05)	0.03	0.05	0.12	0.10
Energy	0.21	1.00	0.27	(0.09)	0.29	(0.09)	(0.03)	(0.13)	0.00	0.14
Metals	0.30	0.25	1.00	(0.18)	0.02	(0.09)	0.01	0.02	0.01	0.06
Basis	0.01	(0.07)	(0.18)	1.00	(0.17)	0.02	(0.14)	0.14	0.03	(0.05)
Open Interest	(0.03)	0.25	(0.01)	(0.15)	1.00	(0.08)	0.02	(0.57)	(0.24)	0.04
Momentum	(0.04)	(0.02)	(0.12)	0.03	0.05	1.00	0.22	0.04	0.23	(0.03)
ST Momentum	0.09	(0.01)	0.04	(0.18)	0.04	0.25	1.00	0.04	(0.15)	0.51
Trading Activity	0.09	(0.09)	0.06	0.10	(0.51)	(0.04)	0.01	1.00	0.14	(0.02)
Volatility	0.07	0.00	0.01	(0.01)	(0.19)	0.17	(0.21)	0.13	1.00	(0.65)
ST Volatility	0.11	0.11	0.05	(0.01)	0.02	0.00	0.62	(0.02)	(0.66)	1.00

1 yr correlations on the right (above the diagonal), 30 days on left (below the diagonal).

Conclusion:

In this report, we have shown the factor performance driving the commodity markets. Using the ARC Commodity model, style-tilted portfolios have shown great performance and seem to be suitable benchmarks for active managers to track. We then conducted an analysis into the risk dynamics of two major commodity indices. The view of commodities as diversifiers is quite accurate. All of this was possible with the ARC model. The model enables the user to look at their book or portfolio and how it fits into their thesis as well as how it fits in the broader economic landscape.

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