Research paper

Give me some Credit!

Credit Index Futures as a source of differentiated returns for quantitative strategies

Architects of trusted markets EUREX

Credit Index Futures as a source of differentiated returns for quantitative strategies

Content

Authors

Leon von Essen
FIC ETD Product Design, Eurex

Mark Khabarov
FIC ETD Product Design, Eurex

Management Summary

- **Credit Index Futures allow Quantitative Investors to easily add credit to their allocation mix.**
- **Gaining credit market exposure through Credit Index Futures improves the performance of CTA-Type Momentum strategies.**
- **Volatility weighting of exposure outperforms equal- and Minimum-Variance approaches.**

Trend following and mean reversion have long been staple strategies in the quantitative investment toolkit. As of Q4 2024, trend-following hedge funds, commonly known as Commodity Trading Advisors (CTAs), account for approximately 6.5% of total hedge fund assets under management, with more than $340 bn in managed capital[1].

CTAs have mostly been limited to Commodity, Equity, Rates and Energy markets, without being able to access credit markets. Low-margin exchange-traded futures are generally regarded as the preferred instrument type due to their transparency, liquidity and low capital costs. Only a select number of managers are able to include corporate bonds in the risk mix through Bonds, ETFs, Total Return Swaps and Credit Default Swaps.

Credit Index Futures at Eurex now allow CTAs to access global credit markets. As of April 2025, EUR and USD investment grade and high-yield total return index futures trade at Eurex, plus futures on a USD Emerging Market Sovereign Credit and a GBP Investment Grade index. Reaching more than EUR 2bn in Open Interest and EUR 300mn in average traded volume in Q1 2025, the products have established themselves as liquid and transparent alternatives to existing OTC Derivatives.

Setting up the strategy between mean-reversion and trend following

We find that mean-reversion strategies underperform, and, on average, Momentum is better for most specifications used. Of the 27 strategy specifications tested, Momentum performed better in 18 of them.

Momentum and mean-reversion strategies are time-series-based strategies, looking back at historical data to estimate future movements and choose an asset allocation accordingly.

Now, the question arises as to which time periods are appropriate. While there are many common approaches with look-back periods ranging from intra-day to years, we limit ourselves to the past returns over 3, 6, 9, and 12 months. Assets are held for a range of 1, 2 and 3 months. Weighting assets in any strategy is both art and science. Any return comes at the price of risk, and it is not immediately obvious how heavily higher-volatility assets should be weighed versus lower-volatility assets.

[1] Hedge Fund Industry Assets Under Management – ION Analytics

We assessed a range of weighting strategies: A Minimum Variance portfolio, plus equally weighted and historical-volatility-weighted. Weights for the latter are calculated as follows:

$$w_i = \frac{0.07}{volatility_{i,TTM}}, i \in \{1, \ldots, N\}$$

The sum of the weights for each long/short decision is set up to 7.

For the Minimum Variance Portfolio, weights are derived as:

$$\overline{w} = \underset{w_i, w_j}{argmin} \sum_{i=1}^{N} \sum_{j=1}^{N} w_i w_j \sigma_{i,j} \in [0.1]^N$$

For the Markowitz portfolio, the sum of the weights for each decision is multiplied by

$$\frac{0.07}{\sigma_{portfolio}},$$

where 0.07 is set up as the target volatility. The sum of the weights, as before, is limited to 7.

For the equal-weighted portfolio, the formula is expressed as:

$$w_i = \frac{1}{N} \times 3.5$$

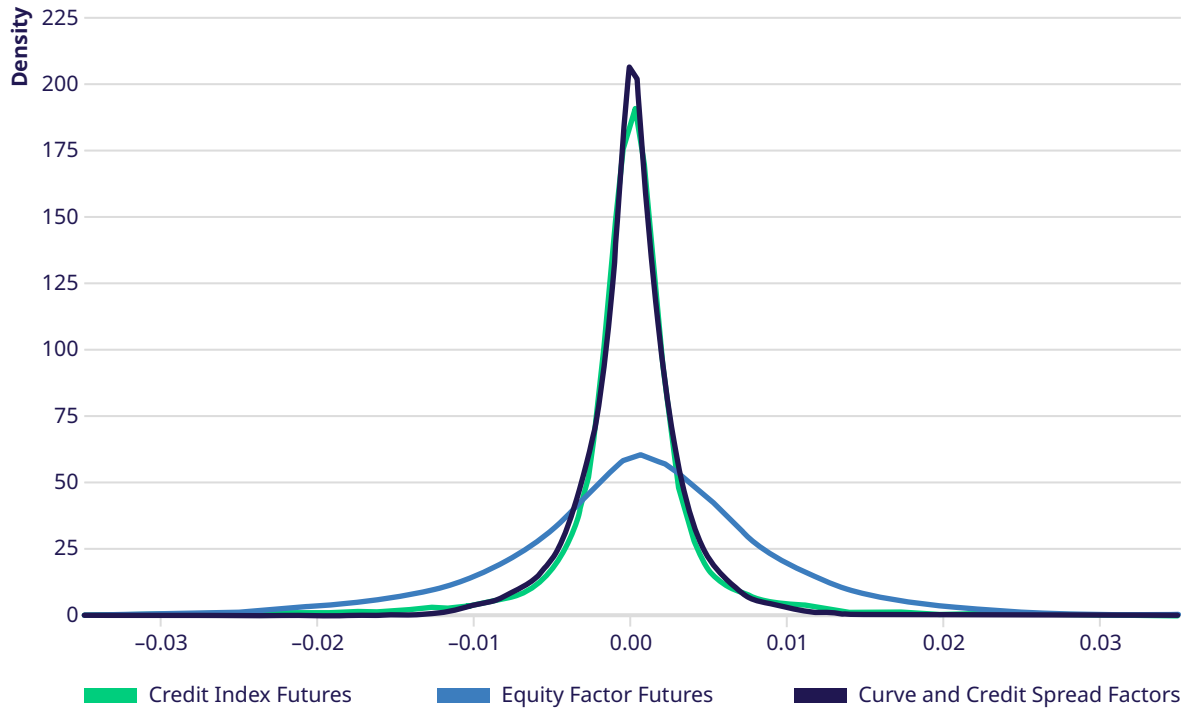
In the basket of assets, the following Eurex futures were used: Credit Index and MSCI Factor Indexes. These equity index futures provide investors with various independent factor exposures that can be embedded in CTA strategies. Additionally, curve factor exposure to German government bonds (curve level, steepness, convexity) was implemented through portfolios of government bond futures, as well as credit spreads of Euro-denominated Credit Index Futures versus government bond futures. The initial basket consists of 23 different assets with the earliest starting date in April 2016.

Over the observed period, daily log returns exhibited a mean of zero with moderately thin tails and almost no skew. Only the MSCI factor index futures were moderately skewed positively.

We focused on two directional strategy types: Momentum and Mean-reversion. While the second appeared to be inconsistent with the assets used, Momentum would help compare the product and its importance for portfolio construction in Momentum strategies.

It is commonly known that time-series based strategies work better on longer timeframes (Moskowitz et al., 2012). In this research a minimum holding period of one month was applied. Further, we studied a range of look-back periods, where we find improved performance for longer-term observations.

Figure 1. Daily return of Equity, Curve factors and Credit futures



Tracking back the future

Eurex listed the first Credit Index Futures from the currently active suite in 2021 and subsequently listed five by mid-2025. Before the listing, the prices of Credit Index Futures were reconstructed up to January 2018 by applying the respective funding rates on the Bloomberg underlying indexes with a conventional fair cost of carry approach. We limit our analysis to long-only strategies, focusing on the top 20% in terms of performance. In this, we deviate from the standard market-neutral approach (see e.g., Griffin et al., 2004) and follow Daniel & Moskowitz (2016).

In line with convention, only front-month futures contracts are used to implement the strategy, which are rolled one day before expiry.

Results

Excluding Credit Index Futures increases raw profit but also significantly increases volatility (~30%), resulting in a lower Sharpe ratio. Including the entire universe of tested securities yields the best performance in terms of Sharpe ratio and maximum drawdown (MDD). This is in line with expectations, as further diversification generally improves risk-return profiles.

Table 2. Summary table of returns for different asset classes traded

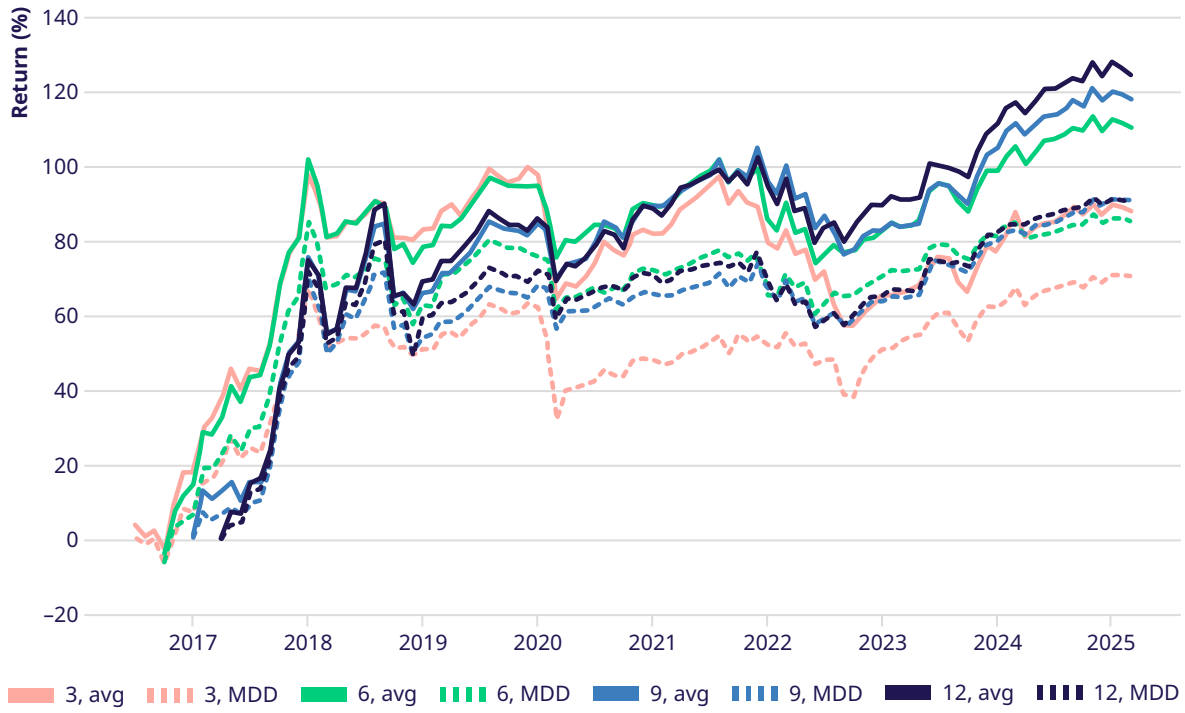
Assets	Vol	MDD	VaR	AAR	Sharpe
All	22%	–40%	–30%	14%	**59%**
w/o MSC	10%	–31%	–14%	6%	**53%**
w/o Credit	29%	–52%	–45%	17%	**51%**

Among the portfolio weighting methods studied, a historical volatility-weighted approach attained the highest Sharpe ratio of 0.62. Markowitz and Equal-weighted reached 0.56 and 0.45, respectively. The underperformance of the Markowitz portfolio likely resulted from reducing exposure to high-volatility assets, excluding core assets of momentum that contributed a substantial amount of potential returns.

On average, including all products in the strategy improved risk-adjusted performance. We find the top spot taken by the Volatility Weighting approach on all assets with a 0.9 Sharpe ratio.

Our tests indicate that longer look-back periods for momentum signal generation yield better returns. On average and in terms of maximum drawdown, 12, 9 and 6 months performed better than 3 months.

Figure 2. Cumulative profit under different look back period



Apart from the returns, Credit Index Futures also provide independent risk exposure not replicable by linear combinations of other assets. While it is true that credit indexes behave similar to both rates and equities, we find a residual amount of uncorrelated returns. This may positively affect the portfolio of assets by adding additional uncorrelated time series, lowering the volatility with the same returns as before.

Introducing Credit Index Futures adds independent risk factors to the strategy, beyond the exposures generated by Rates and Equities. Regressions on both the residual factors as dependent variables and the reverse indicated that only 45–49% of the variance of returns was explainable.

Figure 3. R^2 for various Equity and Rates factors as regressed on Credit Index Futures

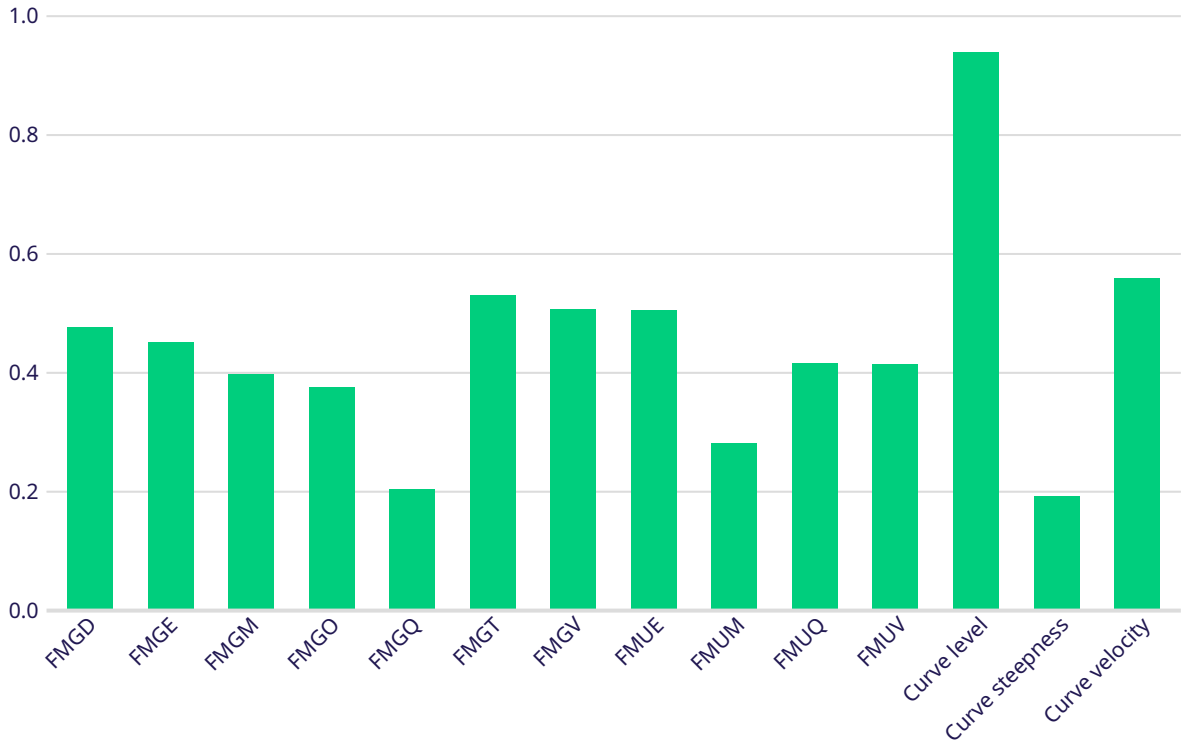


Figure 4. R^2 for various Credit Index Futures as regressed on Equity and Rates factors

Moreover, the returns of Credit Index Futures are more independent than others. This can be observed through the Variance Inflation Factor (VIF), which quantifies the ability of certain variables can be expressed as a linear combination of other variables. The median VIF for Credit Index Futures is 3, compared to 26 for the other factors studied. The lower the VIF value, the more independent the variable is. Including Credit Index Futures contributes additional previously unexplained variance to the portfolio of assets.

References

1. Moskowitz, T. J., Ooi, Y. H., & Pedersen, L. H. (2012). Time series momentum. Journal of Financial Economics, 104(2), 228–250.
2. Griffin, J. M., Ji, S., & Martin, J. S. (2004). Global momentum strategies: A portfolio perspective. *Available at SSRN 492804*.
3. Daniel, K., & Moskowitz, T. J. (2016). Momentum crashes. *Journal of Financial Economics*, 122(2), 221–247.

Table 1. Securities description

Name	Code	Group
Bloomberg Emerging Market USD Sovereign and Sovereign Owned Index Futures	FUEM	Credit Index
Bloomberg Liquidity Screened Euro High Yield Bond Index Futures	FEHY	Credit Index
Bloomberg MSCI Euro Corporate Screened Index Futures	FECX	Credit Index
Bloomberg Sterling Liquid Corporate Bond Index Futures	FGBC	Credit Index
Bloomberg US Corporate Index Futures	FUIG	Credit Index
Bloomberg US High Yield Very Liquid Index Futures	FUHY	Credit Index
Bloomberg MSCI Global Green Bond Index Futures	FGGI	Credit Index
MSCI World High Dividend Yield Index Futures	FMGD	Equity Index
MSCI World Equal Weighted Index Futures	FMGE	Equity Index
MSCI World Momentum Index Futures	FMGM	Equity Index
MSCI World Minimum Volatility Index Futures	FMGO	Equity Index
MSCI World Quality Index Futures	FMGQ	Equity Index
MSCI World Growth Target Index Futures	FMGT	Equity Index
MSCI World Enhanced Value Index Futures	FMGV	Equity Index
MSCI USA Equal Weighted Index Futures	FMUE	Equity Index
MSCI USA Momentum Index Futures	FMUM	Equity Index
MSCI USA Quality Index Futures	FMUQ	Equity Index
MSCI USA Value Weighted Index Futures	FMUV	Equity Index
EUIG Factor	FECX - FGBM	Credit spreads
EUHY Factor	FEHY - FGBM	Credit spreads
Curve level	FGBS * 5 + FGBM * 2 + FGBL	Yield curve
Curve steepness	FGBL * 1 - FGBS * 5	Yield curve
Curve velocity	FGBS * 5 - FGBM * 4 + FGBL	Yield curve

Contact

GLOBAL PRODUCT LEAD FOR CREDIT
Davide Masi
T +44-20-78 62-72 67
davide.masi@eurex.com

VP FIC ETD PRODUCT
Leon von Essen
T +49-69-211-1 49 64
leon.von.essen@eurex.com

SALES EMEA
David Carretero
T +49-69-211-1 82 33
david.carretero@eurex.com

Lisa-Marie Zamfirescu
T +44-7484-06 34 55
lisa-marie.zamfirescu@eurex.com

SALES AMERICAS
Iris Hui
T +1-917-939-1624
iris.hui@eurex.com

SALES APAC
Johnathan Chan
T +852-25 30-78 06
johnathan.chan@eurex.com

Published by
Eurex Frankfurt AG
Mergenthalerallee 61
65760 Eschborn
Germany

www.eurex.com

ARBN Number
Eurex Frankfurt AG ARBN 100 999 764

Find out more online at
www.eurex.com