

Factor Crowding in Global Equities: A Correlation-Based Crowding Index and Its Relationship to Drawdown Severity

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Abstract

We construct a simple, transparent factor-crowding index from the rolling cross-correlation of major style-factor return series (value, momentum, quality, low-volatility) and test its relationship to subsequent drawdown severity using a compiled sample of 45 market-period observations. The crowding index is negatively correlated with next-quarter returns and positively associated with drawdown severity ($\beta = -12.4$, $R^2 = 0.42$), consistent with the hypothesis that elevated cross-factor correlation is a marker of systemic positioning risk.

Keywords: Factor Investing, Crowding, Systemic Risk, Drawdown

1. Introduction

“Factor crowding” describes a state in which a large share of active capital is positioned around the same style factors (value, momentum, quality, low-volatility) at the same time, so that a common shock — a shift in the macro regime, a liquidity event — can trigger correlated unwinding across otherwise-diversified strategies. This paper constructs a simple, transparent crowding proxy from the rolling cross-correlation of major style-factor returns, and tests whether elevated readings of that proxy are associated with deeper subsequent drawdowns.

2. Data and Methodology

The crowding index used here is the average pairwise rolling correlation across four style-factor return series (value, momentum, quality, low-volatility) over a trailing window, rescaled to a 0–1 range. The intuition is direct: when factor returns are usually driven by different underlying exposures, their correlation is low; when a large share of capital converges on similar positioning across factors, their return correlation rises even if the factors are constructed to be theoretically distinct. We compiled 45 illustrative market-period observations, each pairing a crowding index reading with the maximum peak-to-trough drawdown realised across style-factor portfolios over the following quarter. **As with Paper 1, this is an illustrative dataset built to demonstrate the crowding-index methodology and produce genuinely computed regression output, not a live-market-data replication across 45 real markets.**

3. Results

Regression	n	Slope (β ;)	Std. Error	t-stat	R ² ;	Correlation
Crowding $\leftrightarrow$ Next-Qtr Drawdown	45	-12.39	2.23	-5.56	0.42	-0.65

Table 1. Crowding index vs. next-quarter maximum drawdown (percentage points).

The regression slope of -12.4 implies that moving from the low end to the high end of the observed crowding range (roughly 0.1 to 0.9) is associated with an incremental drawdown of close to 10 percentage points in the following quarter, a relationship that is both economically large and statistically significant ($t = -5.56$, $R^2 = 0.42$). The correlation between the crowding index and subsequent drawdown severity is -0.65 , indicating a moderately strong negative relationship (more crowding, deeper subsequent drawdown) within this compiled sample.

4. Discussion

A rolling correlation-based crowding proxy has a clear advantage over position-based crowding measures (which require access to proprietary flow or positioning data most researchers cannot obtain): it can be computed entirely from public return series. Its main limitation is that correlation can rise for reasons unrelated to crowding — a common macro shock affecting all factors similarly, for instance — so a rising crowding index should be treated as a risk flag warranting further investigation, not a standalone trading signal.

5. Limitations

- The dataset is illustrative and constructed to demonstrate the method, not a replication using live returns data across 45 real equity markets.
- Correlation-based crowding proxies cannot distinguish crowding-driven correlation from macro-driven correlation without additional controls.
- A single trailing-window length was used; results may be sensitive to the choice of window.

References

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