BIG DATA & ALGORITHMIC FINANCE

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Clint Howard is a researcher at Robeco's Quant Equity Research team. His areas of expertise include stock selection research, portfolio construction, and machine learning. He joined Robeco in 2022. Prior to this, he started his career in 2016 as a systematic equity researcher at Macquarie Investment Management in Sydney, Australia. Clint holds a PhD in Finance from the University of Technology Sydney. He also holds a Bachelor of Engineering (Chemical & Biomolecular) and a Bachelor of Science (Mathematics) with First Class Honours and the University Medal, both from the University of Sydney.

CAUSAL NETWORK REPRESENTATIONS IN FACTOR INVESTING

Clint Howard, Harald Lohre and Sebastiaan Mudde.

The most common methods for studying the comovement of assets hinge on correlation-based measures. Given the mounting criticism of correlation-based models in the factor investing literature, we use causal discovery algorithms to revisit three salient investment applications through the lens of novel causal network representations. First, we benchmark causality-based peer groups in the context of industry neutralization of long-short investment strategies, finding that they often outperform correlation-based or industry peer groups from a Sharpe ratio perspective. However, industry peer groups remain important from a volatility reduction perspective. Second, we build a long-short equity factor guided by stocks' centrality in the causal network. We characterize peripheral stocks as potential hedges against value, whilst central stocks tend to be larger, value companies. Finally, we explore market timing of the S&P 500 using a causal network density indicator as a gauge for systematic risk and market resilience. Indeed, a shrinking network density predicts negative market returns and exhibits return predictability with an out-of-sample R2 of 0.55%. Although causal networks thus provide novel insights in factor investing, their implementation calls for cautious pioneering as they bring about computational complexity and render interpretability more challenging.

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