

“CyRISK - Measuring Cyber Tail Risk in the Financial System”

Abstract

We introduce the first market-based, forward-looking measure of cyber tail risk exposure for the financial system. Embedding a cybersecurity return factor in the expected capital shortfall methodology of Brownlees and Engle [2017] and Jung et al. [2025], we estimate time-varying cyber betas for a large cross-section of global banks and compute their marginal cyber risk contributions. Unlike existing text-based approaches, our measure is continuously updated, directly aggregable to the system level, and does not require proprietary incident data. The measure is validated using a regulatory natural experiment. Cyber risk exposure is highly concentrated among large, internationally active institutions, and ignoring it understates system-wide capital shortfalls by up to 26%.