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Cybercrime in digital asset markets: evidence from high-frequency cryptocurrency data and implications for MiCA

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Abstract

This study examines whether cybercrime in cryptocurrency markets generates localised disruptions or systemic distress, and considers the implications for the European Union's Markets in Crypto-Assets Regulation (MiCA). The research is original in three respects: it uses hourly data to capture intraday contagion, it integrates efficient market, behavioural, and regulatory theories within a single empirical design, and it proposes performance-based metrics for MiCA supervision. The results show that most incidents are absorbed as idiosyncratic shocks, whereas a small subset of large, infrastructure-relevant events produce short-lived contagion. Infrastructure-relevant events are defined as those targeting cross-chain bridges, major decentralised finance platforms, or systemic custodians, with losses exceeding US\$200 million. Drawing on theories of information efficiency and financial contagion, complemented by behavioural finance perspectives on herding, loss aversion and adaptive learning, we analyse hacks and scams that occurred between January

2020 and December 2022 using three inclusion criteria: a minimum verified loss of US\$200 million, a publicly verifiable timestamp, and the involvement of a distinct platform or protocol. We employ hourly data for Bitcoin, Ethereum, Bitcoin Cash, Litecoin and Ripple. Using multivariate GARCH, DCC-GARCH and event-study methods, we find that cybercrime consistently elevates volatility yet produces heterogeneous effects on abnormal returns and cross-market correlations. Most incidents are absorbed as idiosyncratic shocks with limited correlation spillovers, whereas the infrastructure-relevant events transiently increase market-wide co-movements, consistent with short-lived contagion and sentiment-driven overreaction. We further document patterns consistent with investor learning, in which reactions to later shocks are weaker than to earlier ones. These findings advance theory by demonstrating that the crypto market alternates between efficient information segmentation and episodic behavioural contagion under stress, a pattern not previously documented. From a policy perspective, the findings support risk-proportionate, performance-based supervision under MiCA using observable resilience metrics such as the speed of volatility normalisation, the persistence of abnormal returns and the intensity of cross-asset contagion. © The Author(s), under exclusive licence to Springer Nature Switzerland AG 2026.

Author keywords

Contagion; Event study; High-frequency data; Investor learning; Proportional supervision; Volatility persistence

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