

BIG DATA & ALGORITHMIC FINANCE



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Sabuhi is PhD student at the Universitat de Barcelona, specializing in economics. He holds master's degree from the Central European University, Sabuhi's research focus revolves around the integration of AI tools into the domains of economics and finance. With a keen interest in analyzing systemic risks and crises, he endeavors to push the boundaries of conventional economic research by leveraging cutting-edge technologies. Sabuhi's academic pursuits reflect a passion for innovation and a forward-looking approach to addressing contemporary challenges in the financial landscape.

MONITORING TIME-VARYING SYSTEMIC RISK IN SOVEREIGN DEBT AND CURRENCY MARKETS WITH GENERATIVE AI

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We propose generative artificial intelligence to measure systemic risk in the global markets of sovereign debt and foreign exchange. Through a comparative analysis, we explore three novel models to the economics literature and integrate them with traditional factor models. These models are: Time Variational Autoencoders, Time Generative Adversarial Networks, and Transformer-based Time-series Generative Adversarial Networks. Our empirical results provide evidence in support of the Variational Autoencoder. Results here indicate that both the Credit Default Swaps and foreign exchange markets are susceptible to systemic risk, with a historically high probability of distress observed by the end of 2022, as measured by both the Joint Probability of Distress and the Expected Proportion of Markets in Distress. Our results provide insights for governments in both developed and developing countries, since the realistic counterfactual scenarios generated by the AI, yet to occur in global markets, underscore the potential worst-case scenarios that may unfold if systemic risk materializes. Considering such scenarios is crucial when designing macroprudential policies aimed at preserving financial stability and when modeling the effectiveness of the implemented policies.

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