عنوان مقاله:

A dynamical system model-driven approach to pricing with smart volatility : a case study of catastrophe bonds pricing for China's flood

محل انتشار:

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خلاصه مقاله:

This study explores the application of dynamic systems for modeling and valuing catastrophe bonds to establish a more intelligent and adaptive approach to determining their volatility parameter. These financial instruments hold significant importance for insurance companies in safeguarding against the risk of insolvency stemming from the escalating frequency and severity of natural disasters worldwide. Employing mathematical principles, this research formulated a pricing partial differential equation and introduced a dynamic system for its resolution. The damage model was assumed to follow a stochastic process, and a radial basis neural network was utilized to estimate the volatility parameter of this stochastic process by leveraging historical data. The study scrutinized the pricing framework of catastrophe bonds related to floods and storms in China, ultimately demonstrating that the proposed methodology proved effective and computationally efficient when contrasted with alternative approaches.

کلمات کلیدی:

Dynamical Systems, Catastrophe Bonds, Pricing, Volatility, Radial Basis Function Neural Networks