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Partial Differential Equations for Financial Risk Estimation in Tanzania: Stability Analysis and Convergence Proofs

Kasagga Muhamed[1]

[1] Department of Interdisciplinary Studies, University of Dar es Salaam

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Correspondence: kmuhamed@outlook.com

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Author notes

Kasagga Muhamed is affiliated with Department of Interdisciplinary Studies, University of Dar es Salaam and focuses on Mathematics research in Africa.

Abstract

Partial differential equations (PDEs) are used to model financial risk in various economic contexts. A novel approach using stochastic calculus is employed to derive the PDEs. Stability and convergence proofs are established based on assumptions about market dynamics and data quality. The model demonstrated consistent results across different initial conditions, validating its reliability in financial risk estimation. Stability and convergence analyses confirm the robustness of the proposed PDE models for financial risk assessment in Tanzania. Further research should explore the practical application of these models in real-world scenarios to enhance their utility. Partial differential equations, Financial risk estimation, Stability analysis, Convergence proofs, Tanzania Under standard regularity and boundary assumptions, the forecast state is modelled by $partialt\,u(t,x)=\kappa ¿\partial\{xx\}u(t,x)+f(t,x)$, and stability follows from bounded perturbations.

Keywords: *Tanzania, Partial Differential Equations, Stochastic Calculus, Financial Risk Management, Stability Analysis, Convergence Proofs, Monte Carlo Methods*

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