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Economic Stability Modelling through Livestock Insurance Coverage among Smallholder Farmers in Northern Ghana: A Methodological Approach

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Abstract

Livestock insurance coverage is a critical tool for smallholder farmers in mitigating risks associated with livestock diseases and market fluctuations. A mixed-method approach incorporating both quantitative survey data and qualitative interviews was employed to assess the effectiveness of insurance schemes in enhancing financial resilience. Among the surveyed farmers, 60% reported an increase in savings due to regular premium payments with insurance coverage, indicating a positive correlation between insurance uptake and economic stability. The econometric model revealed that smallholder farmers who participated in livestock insurance experienced significantly lower financial losses during periods of market volatility compared to uninsured counterparts. Policy-makers are encouraged to implement targeted insurance schemes for Northern Ghanaian smallholders, complemented by farmer education programmes on risk management and insurance literacy. Livestock Insurance, Smallholder Farmers, Economic Stability, Econometric Modelling Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Geographic, Sub-Saharan, Smallholder, Insurance, RiskManagement, Quantitative, Qualitative*

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