

Price Risk and Technological Influence in Cotton Supply in Tanzania

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ABSTRACT

The study examines the influence of price risk and technology on short- and long-run cotton supply responses in Tanzania using 2000–2023 data. A Nerlovian partial adjustment model is applied to capture the dynamic nature of farmers' production decisions, incorporating lagged prices, adjustment speed, and price risk variables. Cotton supply is analyzed in terms of output, yield, and area planted, with maize prices included to reflect cross-price effects from competing crops. The findings indicate that cotton supply is weakly responsive to price changes in the short run, with an own-price elasticity of 0.218, reflecting limited immediate adjustment. Long-run responsiveness is considerably higher (0.703), suggesting gradual adjustments through land allocation, input use, and production practices. Negative cross-price elasticities with maize in both the short and long run indicate substitution effects, though statistically insignificant. Price risk from competing crops consistently reduces cotton supply, reflecting farmers' aversion to volatility. The adjustment coefficient shows that 30.8% of adjustment occurs within one year, requiring about 4.3 years to reach 95%. The findings underscore the importance of stabilizing producer prices and promoting technological adoption to revitalize Tanzania's cotton sector.

Keywords: Cotton supply response, Price risk, Technological advancements, Nerlovian adjustment model, Price elasticity

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