Impacts of Rainfall Shocks on Tea Production: Evidence from Plantations of Uva Region

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Tea is a major perennial plantation crop in Sri Lanka because of its significant contribution to the national economy. Tea plants are generally grown in rainfed systems and rainfall pattern and distribution are key factors on the variability of tea production. In recent years, there has been an increase in the frequency of extreme weather events. According to the Sri Lanka country report on climate change, it was reported that the extreme rainfall events will increase as a result of climate change. This study estimates the impact of rainfall shocks on tea production of Uva region based on monthly panel data from 12 different tea estates in Uva region over a 19-year period (2000-2018). The fixed-effect model was chosen for the analysis based on the Hausman specification test. The deviation of the monthly average rainfall from the long term mean in the respective period was used to define positive and negative rainfall shocks. Tea production was regressed along with weather and non-weather variables as predictors. The diagnostics checks were done and cross-sectional time series feasible generalized least squares regression results were used for the interpretation. A statistically significant relationship between rainfall shocks and tea production was seen in the Uva region. Results revealed that both positive and negative rainfall shocks negatively affect tea production. Thus, the impact of negative rainfall shocks was higher than the impact of positive rainfall shocks on tea production.

Keywords: Climate change; FGLS regression; Panel data; Rainfall shocks; Tea production