

Climate Change and Maize Yield in Kenya: An Econometric Analysis

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ABSTRACT

The agricultural sector plays a critical role in the Kenyan economy; it contributes to about 30 percent of the country's GDP and employs over 40 percent of total population. One of the critical crop produced in Kenya is maize. Maize production forms a critical base to food security, employment, income generation, poverty alleviation, as well as economic growth and development. However, maize production has greatly fluctuated leaving about 40 percent of population food insecure. Maize crop production largely depends on climate variables and is highly sensitive to climate change. Thus, it is important to understand the effects of the changing temperature and rainfall patterns, to which this study contributes by analyzing the marginal effects of climate change on maize yield. The study utilized data for the period between 1970 and 2014, gathered from government publications, Kenya Meteorological Department and FAOSTAT. The study adopted an econometric modeling approach. The study findings show that climate change has adverse effects on maize yield. In addition, the study finds a nonlinear relationship between maize yield and climatic variables. However, the direction and magnitude of the effects vary depending on the season. Hence, there is need to elevate the potential of rain fed agriculture in the midst of the risks posed by climate change. The study recommends harvesting and efficient use of water to support rainfed agriculture and provides ground for government action in establishing measures towards mitigation and adaptation to climate change. As well, climate change affects the optimal requirements for crop growth and development, at various stages and thus policies targeting non-rain fed agriculture could be most appropriate.

Keywords: Maize Yield, Temperature, Rainfall, Temperature Variability, Rainfall Variability and Climate Change.