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How do extreme climate events affect farm food production? An analysis from Brazil

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Abstract

Agriculture expansion in Brazil has continuously grown for the last three decades, at least. Such expansion has affected indigenous communities living in forest areas and the environment, also increasing climate change effects. From a global perspective, there is evidence of the relevance of these effects on the agricultural sector itself: between 2003 and 2013, most damages from extreme climate events like droughts and floods were suffered by the global agricultural sector. In the same way, most of these damages took place in developing countries. Considering this view, developing countries with strong agricultural sectors were considered relevant case studies. In this sense, this work aims at analysing the incidence of extreme climate events and how they affect farm food production in Brazil, under a multi-hazard assessment approach and correlation analysis. To do this, the losses from extreme climate events and their implications on the agricultural sector were explored. Results indicate that changes generated by agricultural expansion at the country level have had a positive economic outcome but with strong impacts on traditional communities and the environment. In addition, negative effects resulting from natural disasters and extreme climate events showed greater losses in economic and infrastructural terms in the last years of the study. In sum, the economic trade-off between the increasing agricultural expansion and the corresponding long-term environmental and economic impacts is negative, which suggests a counterproductive effect of agricultural expansion for the future of agriculture itself. The study suggests the adoption of solutions based on technology for productivity growth and the adoption of risk management strategies as policy recommendations.

Keywords: Agricultural expansion, Brazil, extreme climate events, farm food production.