

Working papers economy - Heterogeneous Effects of Weather Shocks on Food Prices in a Country with Diverse Agriculture

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How can climate change affect food prices? This paper examines how extreme changes in precipitation and temperature have differentiated effects on wholesale food prices in Colombia. The results show that average climatic conditions across the country explain most of the observed price fluctuations. The study also finds considerable heterogeneity across crops, highlighting the need for adaptation policies that address the specific climate risks faced by each of them.

Publication Date: Monday, 14 of September 2026 **Approach**

Climate change is expected to increase the frequency and intensity of extreme weather events, with potentially significant effects on agricultural production, food prices, and inflation. This issue is particularly relevant for developing countries, where households allocate a larger share of their income to food, and where increases in food prices have stronger impacts on wellbeing, poverty, and food security. This paper examines how extreme changes in precipitation and temperature affect wholesale food prices in Colombia, a country characterized by high geographic and agricultural diversity. Using data on prices, supply networks, and weather conditions for 40 crops traded across 20 wholesale markets during the 2015-2022 period, the study analyzes the transmission of climate shocks to food prices.

Contribution

This study contributes to the literature by proposing a methodology that leverages Colombia's agricultural and geographic diversity to identify heterogeneous effects of climate variability on food prices. In particular, the paper distinguishes between "local" effects, associated with weather changes in the production areas supplying a specific product to a given wholesale market, and "global" effects, which capture the country's average climate conditions in each period. This distinction makes it possible to assess whether prices respond primarily to localized disruptions in specific producing regions or to large-scale climate events affecting broad areas of the country, such as those associated with El Niño and La Niña episodes.

Results

The findings show that global effects account for most of the observed variation in food prices, while local effects are smaller and often not statistically significant. This suggests that when climate shocks simultaneously

affect large producing regions, the ability of domestic markets to offset supply losses through production from unaffected areas is limited. During El Niño episodes, price increases are mainly associated with widespread high temperatures and below-average precipitation. In contrast, during La Niña episodes, excess of precipitation and lower temperatures play the predominant role. The paper also finds substantial heterogeneity across crops, partly explained by farm- and production-level characteristics such as access to electricity, artificial water sources, credit, and technical assistance. These results suggest that adaptation policies should be tailored to the specific climate risks faced by each crop.

Fuente: <https://www.banrep.gov.co/en/publications-research/working-papers-economics/heterogeneous-effects-weather-shocks>