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From Heatwaves to Cold Spells: How Extreme Temperature Events Shape Inflation in Germany

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Abstract

In this paper, we employ a novel methodology to extract temperature surprise shocks for hot and cold extreme weather events from granular satellite weather data for Germany. We use these shocks to estimate how macroeconomic variables, particularly food and energy prices, respond to such shocks. We address the following questions: How do the reactions of individual price components to temperature shocks differ, and in what ways do these responses collectively influence the trajectory of overall inflation? Are there differences between the hot and cold extremes? Do prices respond in a linear way, or are there nonlinear influences such as calendar seasons or the size of the shock? Does transmission to renewable energy sources, such as wind or solar energy, shift our results in a particular way?

Keywords: shock construction, granular weather data, energy prices, food prices, temperature shocks, business cycle, climate change, monetary policy

JEL: C32, E32, E52, Q54

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