The Non-linear Impact of Temperature on Firms' Performance: Impacts, Mechanisms, and Coping Strategies.

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Abstract

This paper examines the impact of weather conditions on firm performance in non-heat- and heat-sensitive industries in Slovakia. Combining data on the universe of firms from 2013 to 2023 and data on temperature and precipitation in the panel framework, we find that the firm-level annual sales, revenue, and profit losses associated with a 1℃ increase are remarkable, especially in heat-sensitive industries. We go beyond a traditional impact analysis and test mechanisms behind the firms' performance and weather relationship. Our results suggest that the main mechanism is the firm's total factor productivity decline due to temperature increase. To cope with the adverse impact of temperature, firms in non-heat-sensitive industries use bank loan and accrued expense strategies. At the same time, these strategies are not utilized by firms in heat-sensitive industries, most likely due to lower access to those instruments. Given the global warming and increasing severity and frequency of extreme weather events, our findings imply significant future economic losses for the Slovak economy in the short- and mid-term periods. These results highlight the importance of accounting for weather conditions and planning the adaptation and mitigation measures for future economic and business development by both firms and financial institutions.