

How Physical Risks Affect Business Performance

Svetlana Popova* Andrei Sinyakov† Natalia Turdyeva‡

Tuesday 6th January, 2026

Preliminary and incomplete, please do not cite

Abstract

This paper studies the impact of physical climate risks on the performance of Russian non-financial firms. Using a novel dataset that combines granular meteorological information from AISORI weather stations and ERA5-Land reanalysis with firm-level financial data, we provide the first causal evidence on how extreme weather events affect firms in Russia. Our identification strategy takes advantage of the variation within the firm and local weather shocks, focusing on temperature, precipitation, and wind extremes.

We find that average weather conditions have limited effects on firm outcomes, while exposure to extreme temperature events leads to statistically significant declines in productivity and sales. The negative effects are nonlinear and heterogeneous between industries, with manufacturing and service firms being particularly vulnerable. These results are robust across alternative weather data sources and definitions of extremes.

As a next step, we plan to extend the analysis by exploiting granular payment data to study how climate shocks propagate through inter-firm networks and supply chains, shedding light on systemic spillovers and adaptation mechanisms.

JEL: D22, L25, Q51

Keywords: Physical climate risks, Firm performance, Extreme weather

*Bank of Russia, Research and Forecast Department; email: popovasv@cbr.ru.

†Bank of Russia, Research and Forecast Department

‡Bank of Russia, Research and Forecast Department; email: turdyevana@cbr.ru.