

Climate Risk and Firms' R&D Investment: Evidence from China

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Abstract

Risk is an important factor affecting enterprise innovation, and climate risk, as an important part of natural risk, is bound to have an impact on enterprise R&D investment. However, less has explored whether and how climate risk affects firms' R&D investment. This paper fills in the above gap. In addition, current research mainly used a measurement indicator of country-level climate risk to study the climate risks' economic impact on corporate behavior. However, each country has different institutional systems, policies, and national conditions. It is difficult to eliminate country-specific interference from the above mentioned impact when using cross-country samples. Thus, the paper uses annual mean temperature, annual mean precipitation, annual mean relative humidity, and annual sunshine duration of China's prefecture-level cities, to design a measurement indicator of regional climate risk. This study investigates the influence of regional climate risk on firms' R&D investment based on the data of 15,569 firm-years in China from 2008 to 2022. The results show that climate risk reduces firms' R&D investment. We further examined the mediating effect of cash holdings and management shareholdings on the relationship between climate risk and firm R&D investment. It is found that cash holdings and management shareholdings alleviate the negative impact of climate risk on firm R&D investment, which shows climate risk reduces firms' R&D investment by reducing the innovation ability of firms and inhibiting the innovation motivation of managers. Further analysis based on the Chinese institutional environment also suggests that the impact of the regional climate risk on firms' R&D investment is particularly evident in non-state-owned firms and those firms with no political connection and low government subsidies, indicating that government intervention can effectively mitigate the negative impact of regional climate risk on corporate R&D investment. This paper constructs a metric for regional climate risk and, by studying the relationship between regional climate risk and firms' R&D investment, reveals the impact and mechanism of regional climate risk on corporate innovation activities, expanding the scope of climate risk's influence at the micro level and enriching the research scope of factors influencing firms' R&D investment.

Keywords

Climate Risk, Firms' R&D Investment, Cash Holdings, Management Shareholdings, China's Institutional Environment