

# Extreme heat impacts firms' stock value, study finds

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Climate change is making business and investors sweat.

Research from the University of California, Davis, finds episodes of extremely hot weather lead to declines in [market value](#). This is especially true in the South and Southeast, and for [small firms](#)—which lost an average of more than \$17 million in the month following the hot weather.

"These findings of a negative market response imply that the equity market recognizes but underprices weather-related climate risk," said Paul Griffin, an accounting professor at the UC Davis Graduate School of Management.

The study, to be published in the December issue of *Weather and Climate Extremes* and available online now, is one of the first to examine and quantify the impact of physical climate risk on corporate market values. Griffin will present the work at the Yale Initiative on Sustainable Finance Symposium: State of ESG Investing on Nov. 8.

Griffin teamed up with David Lont from the University of Otago's School of Business in Dunedin and Martien Lubberink from Victoria University of Wellington's Business School, both in New Zealand, to conduct the research.

They used National Oceanic and Atmospheric Administration data on thousands of heat events—from what is considered "extreme" by local standards to weather disasters with a cost of \$1 billion or more—between 2003 and 2017. Then, by layering the timing and geography of these events with the main location of public companies' operations, Griffin and his associates were able to measure the equity markets' response.

The researchers found equity markets experienced a 0.42 percent loss in the first 20 days after the beginning of a heat wave and about 0.68 percent in longer heat waves. Investor losses grew to 1.38 percent for

costlier events.

The most exposed firms lost 1 to 2 percent of their market value.

The researchers found a more negative response from investors in the most recent years of the study period and an increase in the volatility of returns after the first day of a heat event. So they concluded that while investors are increasingly incorporating an assessment of weather-related climate risk in pricing future equity returns, that risk is still underpriced.

"Barring more drastic action to curb and disclose corporate emissions," Griffin notes, "if asset prices continue to underprice extreme weather climate risk, this could have devastating future [market](#) consequences."

The study also shows that [climate](#) risk is local. Smaller firms were more vulnerable to losses from events in their region than were the big firms with operations in different locales. Ironically, the researchers wrote, the larger firms have been shown to generate higher emissions.

A leading authority on accounting, [financial information](#) and disclosures, Griffin has recently published research on [how firms' environmental ratings reduce analyst coverage](#) and [the disclosure of climate risk by fossil fuel firms](#).

**More information:** Paul Griffin et al. Extreme high surface temperature events and equity-related physical climate risk, *Weather and Climate Extremes* (2019). [DOI: 10.1016/j.wace.2019.100220](https://doi.org/10.1016/j.wace.2019.100220)

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