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ECONOMY

Climate Change May Deeply Wound Long-Term U.S. Growth, Richmond Fed Paper Finds



Rising temperatures lead to more extreme weather damage that boosts costs, a Fed paper notes. Trailers sit in Big Pine Key, Fla., for those displaced by Hurricane Irma. PHOTO: BLOOMBERG NEWS

By Michael S. Derby

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Rising temperatures resulting from global warming are likely to slow U.S. economic growth significantly in the decades ahead, according to a paper published recently by the Federal Reserve Bank of Richmond.

Projected increases in average U.S. temperatures “could reduce U.S. economic growth by up to one-third over the next century,” wrote the authors, Riccardo Colacito of the University of North Carolina, Bridget Hoffmann of the Inter-American Development Bank and Toan Phan of the Richmond Fed.

The researchers looked at how rising temperatures, especially those that are above normal for a given time of the year, have affected economic activity for clues about how projected future

warming will influence growth.

They noted the shifts regional economies experience when the seasons change. Growth slows during hotter-than-normal summer weather and picks up once cooler autumn temperatures arrive. Hotter summers hit harder than warm autumns, they note. A one degree Fahrenheit increase in average summer temperatures reduces growth at the state level by 0.15 to 0.25 percentage points, for example.

The authors say rising temperatures reduce growth in many different ways. But generally, an increasingly hotter environment makes many activities, not just outdoor work, harder to do. The more temperatures rise—and most scientists expect that to happen if no action is taken to stop global warming—the bigger the impact will be, they write.

Factory output falls during temperature surges, the paper notes. Construction and agricultural activity slow down, and retail sales can be hit by delayed or scuttled shopping trips.

Worker productivity ebbs and even air conditioning's power to mitigate the effects can be outstripped by rising heat. The paper says climbing temperatures weigh on worker health levels.

Rising temperatures lead to more extreme weather damage that boosts reconstruction and insurance-related costs.

Adapting to climate change—such as constructing buildings that can withstand rising waters—diverts investment from more productive uses.

The paper notes one of the few industries that benefit from a rise in average temperatures is energy utilities, which represent a relatively small part of overall economic output.

The paper doesn't address the benefits some areas could see from rising temperatures, like the possibility of increased economic activity in places where it is now curbed by cold weather.

The authors relied on climate data provided by the Nature Conservancy's online Climate Wizard data tool, which offers historic and projected climate information.

The authors acknowledge uncertainty about the likely path of temperatures, and say bigger or smaller rises in average temperatures can lead to notably different economic outcomes.

Their economic estimates rest on an assumption that average temperatures rise and there's no active effort to reverse or mitigate the factors leading to an overall hotter environment.

Their projections partly reflect the emergence of the southern U.S. as a major contributor to national economic growth. As overall temperatures rise, they'll hit that already warm zone hard.

In an interview, Mr. Colacito noted changes in temperature trends are “very persistent,” which increases the odds that sustained rises in temperatures will have dramatic effects on the economy.

Mr. Colacito said one aim of the paper was to see if climate shifts will affect the U.S. economy, since most research has focused on the likely impacts on developing nations.

He said he started his work “agnostic” about what he’d find.

Most scientists attribute global warming to the world’s reliance on fossil fuels, which pump carbon into the Earth’s atmosphere, causing it to trap more heat.

Many global leaders have sought to put in place agreements such as the 2015 Paris climate accord to slow the pace of temperature increases. President Donald Trump has said he would withdraw the U.S. from the agreement in an effort to boost the nation’s industry and independence.

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