

Could changes in Fed's interest rates affect pollution and the environment?

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The actions of a country, like the U.S., are not restricted to its borders. For example, a positive shock in the Federal Reserve's monetary policy may cause adjustments in the whole system, including the carbon emissions of the other regions. Credit: Florida Atlantic University

Can monetary policy such as the United States Federal Reserve raising

interest rates affect the environment? According to a new study by Florida Atlantic University's College of Business, it can.

Using a stylized dynamic aggregate demand-aggregate supply (AD-AS) model, researchers explored the consequences of traditional monetary tools—namely changes in the short-term interest rate—to the environment. Specifically, they looked at how monetary policy impacts CO₂ emissions in the short and long run. The AD-AS model conveys several interlocking relationships between the four macroeconomic goals of growth, unemployment, inflation and a sustainable balance of trade.

For the study, researchers also used the Global Vector AutoRegressive (GVAR) methodology, which interconnects regions using an explicit economic integration variable, in this case, bilateral trade, allowing for spillover effects.

Joao Ricardo Faria, Ph.D., co-author and a professor in the Economics Department within FAU's College of Business, and collaborators from Federal University of Ouro Preto and the University of São Paulo in Brazil, examined four regions for the study: U.S., United Kingdom, Japan and the Eurozone (all the European Union countries that incorporate the euro as their national currency).

In addition, they used data from eight other countries to characterize the international economy. Their method explicitly models their interplay to assess not only the domestic impact of a policy shift, but also its repercussion to other economies.

Results of the study, published in the journal *Energy Economics*, suggest that the impact of monetary policy on pollution is basically domestic: a monetary contraction or reduction in a region reduces its own emissions, but this does not seem to spread out to other economies. However, the findings do not imply that the international economy is irrelevant to

determining one region's emissions level.

"The actions of a country, like the U.S., are not restricted to its borders. For example, a positive shock in the Federal Reserve's monetary policy may cause adjustments in the whole system, including the carbon emissions of the other regions," said Faria.

The approach used in this study considered the U.S.'s own dynamics as well as the responses of other economies. Moreover, analysis of four distinct regions allowed researchers to verify and compare how domestic markets react to the same policy.

The study also identified important differences across regions. For example, monetary policy does not seem to reduce short-run emissions in the U.K., or long-run emissions in the Eurozone. Moreover, the cointegration coefficient for Japan is much larger than those of the other regions, suggesting strong effects of [monetary policy](#) on CO₂ emissions. Furthermore, cointegration analysis suggests a relationship between interest rates and emissions in the long run.

Statistical analyses also suggest that external factors are relevant to understanding each region's fluctuations in emissions. A large fraction of the fluctuations in domestic CO₂ emissions come from external sources.

"Findings from our study suggest efforts to reduce emissions can benefit from internationally coordinated policies," said Faria. "Thus, the main [policy](#) prescription is to increase international coordination and efforts to reduce CO₂ emissions. We realize that achieving coordination is not an easy endeavor despite international efforts to reduce carbon emissions, such as the Paris Agreement. Our paper highlights the payoffs of coordinated policies. We hope it motivates future research on how to achieve successful coordination."

More information: Luccas Assis Atílio et al, Does monetary policy impact CO₂ emissions? A GVAR analysis, *Energy Economics* (2023).
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