***Did Carbon emissions behave differently in the 2020 recession than in past recessions?***

Xueting Jiang, Australian National University, Xueting.Jiang@anu.edu.au

David I. Stern, Australian National University, david.stern@anu.edu.au

## Overview

The 2020 COVID-19 driven recession saw a sharp drop in carbon dioxide emissions as transportation and some other energy uses were curtailed. This was an unusual recession – past recessions were driven primarily by changes in investment and central bank policies, while this one was driven by a pandemic. Was the behavior of carbon emissions in this recession different to that in past recessions? If so, what does that teach us about the relationship between carbon emissions and economic activity?

## Methods

We will use time series models estimated on monthly U.S. GDP (Brave *et al*., 2019) and carbon emissions data to explore how emissions fall in recessions and rise in booms. Data are available from 1973 on for carbon emissions and 1960 for GDP. We will build on the literature on an asymmetric response of emissions to falls and rises in GDP (e.g. Sheldon, 2017). Monthly data is needed to investigate the sharp 2020 recession.

## Results

This research is in progress and so results are pending. Based on preliminary work, we expect to find that the response was quite similar, raising questions about the drivers of emissions.

## Conclusions

We hope this research will be a first step to a deeper understanding of the drivers of emissions changes in recessions.

## References

Sheldon, T. (2017) Asymmetric effects of the business cycle on carbon dioxide emissions, *Energy Economics* 61: 289-297.

Brave, S. A., R. A. Butters, and D. Kelley (2019) A new “big data” index of U.S. economic activity, *Economic Perspectives, Federal Reserve Bank of Chicago* 2019/1.