Non-technical summary for 'Shock-percentile Restrictions for SVARs'

By Matthew Read

What did I set out to do?

Economists often strive to understand what causes big changes in the economy. For example, uncertainty tends to rise during recessions – but is uncertainty the *cause* of recessions, or a *result* of them? To answer questions like this, we use models that separate different 'shocks' that drive economic ups and downs. A shock is an unexpected event that disrupts the economy, such as a sudden oil shortage or an unexpected change in interest rates.

One common framework for this is the **structural vector autoregression (SVAR)** model, which studies patterns in economic data like inflation. To make sense of these patterns, SVARs need assumptions – called **identifying restrictions** – that help us figure out which shocks caused what. The challenge is finding assumptions that are both credible and useful.

A popular approach assumes that a shock during a specific historical event was 'large'. For example, some researchers assume the 1987 Black Monday stock market crash involved a large uncertainty shock. But it is difficult to come up with a bound (or threshold) to define exactly what a 'large' shock is. To address this difficulty, researchers have used a 'simulation-based' procedure to come up with these bounds. My paper argues that the procedure is somewhat arbitrary, which can make the results less credible.

To improve on this practice, I propose **shock-percentile restrictions**. Instead of coming up with an exact bound for a shock, we assume the shock was large compared to shocks occurring in other periods. An example would be to assume that the Black Monday episode involved an uncertainty shock that was larger than 75 per cent of uncertainty shocks occurring in the sample period.

What did I learn?

My key findings include:

1. Using a simple model and simulations, I show that these new restrictions can provide useful information about the effects of shocks.

2. Applying these restrictions to US data, I find similar results to traditional methods; for example, positive financial uncertainty shocks tend to reduce economic activity. While the new approach gives less precise numbers, it is more credible.

3. Adding shock-percentile restrictions to a model of US monetary policy strengthens evidence that output falls after interest rates rise, especially in the short term.

Overall, these exercises suggest shock-percentile restrictions provide a useful way to study economic shocks.

What was my key takeaway?

Estimating the effects of macroeconomic shocks using numeric bounds is difficult and often somewhat arbitrary. Shock-percentile restrictions offer a better alternative when we know a shock was relatively large but do not know its exact size. This method can help economists draw more credible conclusions about the forces that shape the economy.