Non-technical summary for 'Identification and Inference under Narrative Restrictions'

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It is important for central bankers and macroeconomists more generally to understand how the economy evolves in response to different kinds of macroeconomic 'shocks' (e.g. unexpected changes in monetary policy). However, estimating the response of the economy to shocks is difficult because it requires disentangling the effects of the specific shock from the effects of other shocks hitting the economy. Macroeconomists often do this using econometric models called structural vector autoregressions. Roughly speaking, these models decompose the correlations among a group of macroeconomic variables so that the components can be interpreted as the effects of different shocks.

Traditionally, researchers have carried out these decompositions by making assumptions about how the economy works, which are known as 'identifying restrictions'. For example, restricting the model so that inflation doesn't increase following an unexpected increase in the policy rate may allow us to learn about the effects of monetary policy on output. This is an example of a 'sign restriction' because we are restricting the sign of the inflation response to a tightening in monetary policy.

Recently, it has become common to replace or augment traditional sign restrictions with a new type of identifying restriction. These new restrictions involve making assumptions about the nature of the shocks that have been driving macroeconomic outcomes during particular historical episodes. Because these restrictions force the model's predictions to be consistent with economic narratives, they are referred to as 'narrative restrictions'.

To give a specific example, it is widely believed that the appointment of Paul Volcker as Chairman of the Federal Open Market Committee led to a largely unexpected tightening in US monetary policy in October 1979. By making sure that models of US monetary policy are consistent with the narrative that the 'monetary policy shock' in this period was positive and that most of the observed tightening in monetary policy was due to this shock, we might be able to better estimate the macroeconomic effects of US monetary policy.

While these new restrictions have been applied widely in a variety of contexts, there has been little work on their theoretical properties. There has also been little work on the properties of approaches to statistical inference – methods for quantifying statistical uncertainty about estimates – when using these restrictions. This paper considers these aspects. We highlight some issues with existing approaches to inference that have been used when implementing these restrictions and propose an approach that overcomes these issues.

We use our approach to estimate the effects of monetary policy on output in the United States using different types of sign and narrative restrictions. We find that imposing narrative restrictions based only on the Volcker episode does not allow us to draw strong conclusions about the effects of monetary policy on output. However, imposing a richer set of narrative restrictions based on more historical episodes does. Estimates obtained under this richer set of restrictions provide strong evidence that output falls following an unexpected tightening of monetary policy. We also show that, in this example, narrative restrictions related to the sign of the monetary policy shock are not particularly informative. To draw strong conclusions, it is necessary to impose restrictions on the contribution of the shock to observed changes in the federal funds rate.