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Estimating General Equilibrium Spillovers of Large-Scale Shocks

Kilian Huber, Assistant Professor, Chicago Booth

By estimating spillovers among groups of firms and households, this paper offers improvements to how economists can employ (quasi-)experimental methods to estimate how large-scale financial and business shocks affect directly treated firms and households in a model.

In recent decades, researchers in economics and finance have increasingly adopted experimental and quasi-experimental methods to study the effects of large-scale economic and financial shocks. These methods compare a group of firms or households that are directly exposed to a given shock to an unexposed control group, and which allow the researchers to estimate whether the shock caused any differences in outcomes between treated and control groups.

A shortcoming of these quasi-experimental methods is that they typically do not measure the total effect of a shock. Most studies exclusively estimate the effect of direct treatment, which captures only part of the total effect. The remaining part is driven by spillover effects from directly exposed firms and households to other firms. Firms and households do not experience business or financial shocks in a bubble, in other words, but rather in relation to other households or firms that may have not directly experienced the shock.

These spillovers operate through what economists call general equilibrium channels, including price and wage changes, agglomeration forces, and input-output networks. For instance, researchers interested in the effects of fiscal stimulus might compare firms that receive fiscal support to firms that do not. If stimulus causes directly exposed firms to increase hiring, wages in local labor markets might rise, which affects all firms in the region.

Estimating spillovers is key for researchers because it helps them understand which general equilibrium channels need to be included in economic models, and whether micro data estimates are informative about higher levels of aggregation. For example, consider the economic shocks and the policy responses of the Great Recession or the current pandemic. In such cases, many firms and households are simultaneously affected, so general equilibrium forces are likely large and operate through many different channels.

Huber's contribution in this paper is threefold:

- First, he outlines how researchers can estimate spillovers operating among firms and households that are connected in some way, for example firms in the same region, sector, or network.
- Second, he highlights three issues that can introduce mechanical bias into spillover estimates: multiple types of spillovers, measurement error, and nonlinear effects. Or to put it simply: spillovers are complicated. For instance, spillover estimates are biased when researchers do not account for the fact that spillovers may operate simultaneously across multiple groups, such as when a shock to firms generates spillovers both onto firms in the same region and same sector.
- Third, Huber proposes practical solutions to these estimation challenges, such as instrumental variables, testing for heterogeneous effects, and flexible functional forms.

Building models that closely approximate reality is important for researchers as they try to determine the effects, in this case, of economic shocks and the policies prescribed to address them. By estimating spillovers directly, researchers can contribute to the development of realistic general equilibrium models and, thus, improve their understanding of the connection between micro data and aggregate outcomes. While seemingly abstract, these improvements in models can make important contributions to our understanding of how the economy works.

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