CENTRE FOR MACROECONOMICS

Economic and Social Research Council

The Transmission of Keynesian Supply Shocks

CFM-DP2021-16

Ambrogio Cesa-Bianchi[1,2,3] and Andrea Ferrero[2,3,4]

[1]Bank of England, [2]Centre for Economic Policy Research, [3]Centre For Macroeconomics, [4]University of Oxford

Can sectoral supply shocks trigger an aggregate demand shortage? Suppose the economy consists of two sectors: cinemas and popcorn. When a negative supply shock hits cinemas, the price of movie tickets increases. If popcorn is a complement to cinemas, its demand falls as does its price. The overall effect on aggregate prices is therefore ambiguous. If complementarities are sufficiently strong, aggregate prices can fall as a result of the negative sectoral supply shock. Guerrieri et al. (2020) label these shocks, and the mechanism underlying their transmission, "Keynesian supply shocks".

Aggregate data is unsuitable for disentangling traditional *aggregate demand* shocks vs *Keynesian supply* shocks because both imply the same sign restrictions on the response of aggregate data – i.e., positive comovement between output and prices. We thus use sectoral data to isolate the two. True aggregate demand shocks should move quantities and prices in the same direction in all sectors, whereas the two variables should instead move in opposite directions in the sectors that are directly hit by Keynesian supply shocks. (e.g., cinemas in our previous example).

We formalize this intuition in a multi-sector VAR model where sectoral output and inflation load on a vector of unobserved common factors. Our data covers 64 sectors of the US economy from 2005Q1 to 2019Q4. We proceed in three steps. First, we proxy the common factors by means of cross-sectional averages of the sectoral data, i.e. with aggregate output and inflation. Second, with a standard sign restriction approach, we extract a structural shock from the common factors that leads to positive comovement between aggregate output and inflation. We label such shock "demand-like", as its effects might be the result of truly aggregate demand shocks as well as sector-specific shocks with aggregate effects. Third, we estimate the *sectoral loadings* on the aggregate demand-like shock. The loadings, which capture the impact response of each sector's output growth and inflation to the aggregate demand-like shock, are the key objects of interest of our analysis.

While sectoral output and prices typically comove in response to aggregate demand-like shocks – mimicking the behaviour of their aggregate counterparts – in about 40% of cases the sectoral loadings imply that prices increase when output falls. Our interpretation is that standard shock identification techniques that impose restrictions on aggregate data misclassify shocks: some aggregate demand-like shocks are likely to be the consequence of a sectoral supply shock with strong complementarities at play.

The distinction between “true” aggregate demand shock vs Keynesian supply shocks matters, even though both lead to a contraction in output and inflation. If Keynesian supply shocks are quantitatively relevant, monetary policy is less likely to face trade-offs between output and inflation. An additional implication is that policymakers could respond more aggressively to shocks, even when uncertain about their nature.