Expansionary and Contractionary Technology Improvements

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Abstract

What drives business cycles? This paper examines the effects of expansionary technology shocks (shocks that increase labor productivity and factor inputs) as opposed to contractionary technology shocks (shocks that increase labor productivity, but decrease factor inputs). We estimate these two shocks jointly based on a minimum set of identifying restrictions in a structural VAR. We show that most of the business cycle variation of key macroeconomic variables such as output and consumption is driven by expansionary technology shocks. However, contractionary technology shocks are important to understand the variation in labor productivity and production inputs. In addition, these shocks trigger different reactions of certain variables, which can help explain why existing evidence on technology shocks does not deliver clear results. We provide an interpretation of these two shocks in a simple DSGE model with managerial technology, which is consistent with our identifying restrictions. Here, expansionary shocks are conventional TFP shocks, while we think of contractionary shocks as process innovations which change the nature of the production function. We provide a microfoundation for these shocks based on shifts in the productivity distribution of firms.

(joint with Zeno Enders)