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Investment-Specific Technological Changes: The Source of Long-run TFP Fluctuations*

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Abstract

Technological innovations originating in the capital–producing sector may spillover to the rest of the economy and enhance aggregate TFP in the long-run. This paper assesses the quantitative importance of investment-specific technological changes in long-run movements in aggregate TFP. To this end, we construct a two-sector business cycle model where an IST diffusion process influences long-run movements in aggregate TFP via spillover. We then establish the linkage between the primitive shocks of the model and two shocks that can be identified from a VAR approach: one shock accounting for the long-run movement in aggregate TFP and the other accounting for the long-run movement in the inverse of the relative price of investment. We show analytically that the correlation of these two long-run shocks can be fruitful in distinguishing the quantitative importance of IST innovations in long-run movements in aggregate TFP. Using post-war U.S. data, we find that these two long-run shocks identified by the MFEV approach are almost perfectly collinear. Moreover, these two shocks can explain a significant, and surprisingly similar, fraction of the business-cycle fluctuations in other important macro variables. Our findings suggest that embodied technological changes is an important driver of long-run movements in aggregate TFP.

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