

Growth, heterogeneous technological interdependence, and spatial externalities: Theory and Evidence*

K. Miranda[⊥], M. Manjón-Antolín[‡], and O. Martínez-Ibañez[‡]

[⊥] Department of Statistics, Universidad Carlos III de Madrid

[‡] QURE-CREIP Department of Economics, Rovira i Virgili University

Abstract

We present a growth model with spatial interdependencies in the heterogeneous technological progress, physical capital and stock of knowledge that, under certain conditions, yields a growth-initial equation that can be taken to the data. We then use data on EU-NUTS2 regions and a correlated random effects specification to estimate the resulting spatial Durbin dynamic panel model with spatially weighted individual effects. QML estimates support our model against simpler alternatives that impose a homogeneous technology and limit the sources of spatial externalities. Likewise, our results indicate that rich regions tend to have higher (unobserved) productivity and are likely to stay rich because of the strong time and spatial dependence of the GDP per capita. Poor regions, on the other hand, tend to enjoy productivity spillovers but are likely to stay poor unless they increase their saving rates.

Keywords: correlated random effects, Durbin model, economic growth, spatial panel data

JEL Classification: C23, O47

*This research was funded by grants ECO2014-55553-P, ECO2016-78652 (Ministerio de Economía y Competitividad) and ECO2018-88888-P (AEI/FEDER, UE) and 2014FI.B00301 (Agaur, Generalitat de Catalunya). We thank seminar participants at UCLouvain Saint-Louis and the 6th Workshop in Industrial and Public Economics (Universitat Rovira i Virgili) for useful comments. Usual caveats apply.