

Abstract

By adopting a semiparametric approach, the 'traditional' regional knowledge production function is innovatively developed in three complementary directions. First, the model is augmented with region-specific time trends, as in the so-called random growth model, which is often adopted in a policy evaluation framework to account for endogeneity due to selection of unobservables. Second, the nonparametric part of the model relaxes the standard linearity assumption regarding the effect of R&D and human capital. Finally, the assumption of homogeneity in the effects of R&D and human capital is also relaxed by explicitly accounting for the differences between developed and lagging regions. Our findings highlight strong nonlinearities and threshold effects, complex interactions, and shadows effects that cannot be uncovered using standard parametric formulations.

JEL classification: C23, C14, O32, R11

Keywords: Random growth, Semiparametric models, Regional knowledge production function, Europe.