Uni ct ECONOMIA E IMPRESA

Seminar

Thursday, 12 November 2026, 12:00

Room 7 - Palazzo delle Scienze

(Corso Italia 55, Catania)

Spatially constrained cluster-wise regression: methods and applications 2022-2026

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Spatial heterogeneity is a central issue in regression analysis: the relationship between a response and its covariates often varies across territories in ways that administrative boundaries or ex-ante zoning fail to capture. This seminar reviews a research line developed between 2022 and 2026 on spatial regimes, i.e. contiguous groups of units that share the same functional relationship, estimated jointly with geography in a single step.

The talk starts from SkaterF (Vidoli, Pignataro and Benedetti, 2022), a spatially constrained cluster-wise regression algorithm that extends the Skater procedure (Assunção et al., 2006) by cutting a minimum spanning tree according to the residual sum of squares of an OLS model. It then presents two applications and one extension. The first maps industrial districts in the Italian footwear industry (Canello et al., 2025). The second combines the method with quantile regression, using a local goodness-of-fit measure (Koenker and Machado, 1999), to identify regimes at the cost frontier of Italian municipalities (Vidoli, Sacchi and Sanchez Carrera, 2025). The extension moves from associational to causal regimes: spatial clusters are estimated directly on the heterogeneity of the Difference-in-Differences treatment effect (Vidoli, under review), illustrated with the "China shock" on US local labour markets (Autor, Dorn and Hanson, 2013), with parallel-trend diagnostics in the spirit of Rambachan and Roth (2023).

The methods are available in the R package SpatialRegimes (CRAN), with an interactive Shiny app, while the SpatialDiD package is under development.

References

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