

Seminar Paper Topic Pitch

The Determinants of Economic Growth in Europe. A Regional Analysis.

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Jesús Crespo Cuaresma, Gernot Doppelhofer & Martin Feldkircher (2014): *The Determinants of Economic Growth in European Regions*.

- Panel dataset of 255 NUTS-2 regions, 48 variables, 1995-2005.
- BMA approach:
 - 1 Baseline model of cross-section of European Union regions;
 - 2 Baseline model plus country fixed effects;
 - 3 Baseline combined with a spatial autoregressive (SAR) structure.

Jesús Crespo Cuaresma, Gernot Doppelhofer & Martin Feldkircher (2014): *The Determinants of Economic Growth in European Regions*.

- Panel dataset of 255 NUTS-2 regions, 48 variables, 1995-2005.
- BMA approach:
 - ① Baseline model of cross-section of European Union regions;
 - ② Baseline model plus country fixed effects;
 - ③ Baseline combined with a spatial autoregressive (SAR) structure.
- The convergence process **between** European regions is dominated by the catching-up process of regions in ‘new’ EU members in CEE countries, whereas convergence **within** countries is mostly a characteristic of regions in ‘old’ EU states.

Research Question

The aim of the paper is to update the research focus of Crespo Cuaresma et al. (2014) [1] and expand it by including regions of EU candidates, too. These are 10 countries with 71 regions overall.

- | | |
|----------------------------------|-------------------------------|
| 1 Republic of Serbia (4 regions) | 6 Albania |
| 2 Bosnia and Herzegovina | 7 Turkey (26 regions) |
| 3 Montenegro | 8 Georgia (11 regions) |
| 4 Kosovo | 9 Ukraine (24 regions + Kyiv) |
| 5 North Macedonia | 10 Moldova |

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Including additional regions allows in comparison to the original paper to:

- Capture asymmetries in growth determinants between EU and non-EU countries;
- Gain insights into convergence trend process;
- Avoid spatial gaps;
- Better identification of spatial spillover and centrality;
- Assess robustness of growth patterns observed in Crespo Cuaresma et al. (2014) [1]: 1995–2005 vs. 2000s–2019.

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Regional Coverage

Population threshold as per Eurostat NUTS regulation ¹:

Level	Minimum	Maximum
<i>NUTS-1</i>	3,000,000	7,000,000
<i>NUTS-2</i>	800,000	3,000,000
<i>NUTS-3</i>	150,000	800,000

Some non-EU countries did not adopt NUTS-2 Statistical Regulation, thus:

- Kosovo, North Macedonia, Montenegro, **Albania**, BiH, Moldova → singular NUTS-2 region.
- Serbia, Ukraine, Turkey, Georgia → multiple NUTS-2 region.

¹More information [here](#).

Sources: Eurostat/Ardeco, Espon, WIIW, National Statistical Offices.
Variables can be divided into several thematic groups:

- Factor accumulation and convergence;
- Human capital;
- Technological innovation;
- Sectoral structure and employment;
- Infrastructure;
- Socio-geographical.

Time span from early 2000s - 2019.

Paper uses the 3 BMA Model specification as in Crespo Cuaresma et al. (2014) [1] which can all be nested within a general SAR model of the form:

$$\gamma = \alpha \iota_N + \rho W_\gamma + X_k \vec{\beta}_k + \epsilon \quad (1)$$

- γ is an N-dimensional column vector of stacked growth rates of income per capita for N regions;
- ι_N is an N-dimensional column vector of ones;
- $X_K = (x_1, \dots, x_k)'$ is a matrix whose columns are stacked data for k explanatory variables;
- $\vec{\beta}_k = (b_1, \dots, b_k)'$ is the k-dimensional parameter vector corresponding to the variables in X_K ;
- W first-order queen contiguity matrix with inverse distance weights;
- ρ is a scalar indicating the degree of spatial autocorrelation;
- ϵ is an error term which may contain country specific fixed effects.

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The priors for the regression model provided in Equation (1) are elicited by using multiple structures in order to flexibly incorporate various sources of uncertainty and information:

- **Non-informative prior** on the parameters common in all models, α and σ ;
- **G-prior**, scaled by a factor related to the sample size and the number of explanatory variables (Benchmark prior) for $\vec{\beta}_k$;
- **Beta prior** distribution for ρ ;
- **Binomial-beta prior** distribution for the model space.

The posterior distributions is obtained using Markov Chain Monte Carlo method adapted to *strong heredity principle*.

Robustness checks:

- multicollinearity (dilution prior);
- distance decay parameter alternatives;
- unconstrained Durbin Model.

Remarks:

- R Code Packages: `bma` and `bsreg` packages. [2]

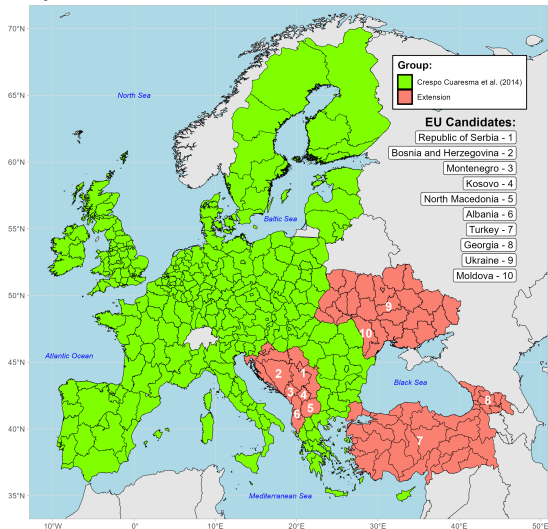
Thank you for your attention!

- [1] J. Crespo Cuaresma, G. Doppelhofer, and M. Feldkircher. The determinants of economic growth in european regions. Regional Studies, 48, February 2009.
- [2] N. Kuschnig. Bayesian spatial econometrics: a software architecture. Journal of Spatial Econometrics, 3, May 2022.

Area of Research

Area of Research

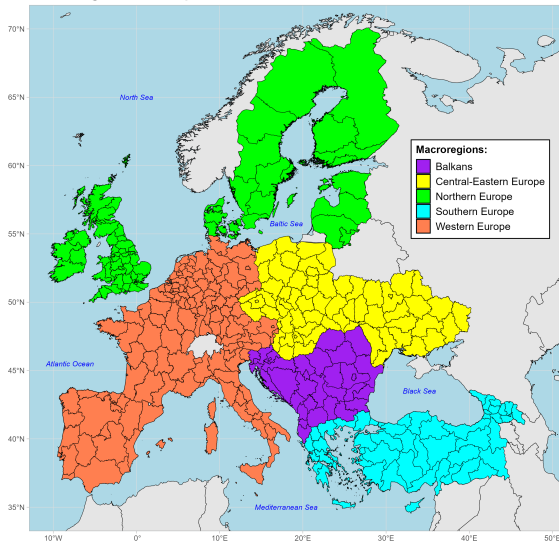
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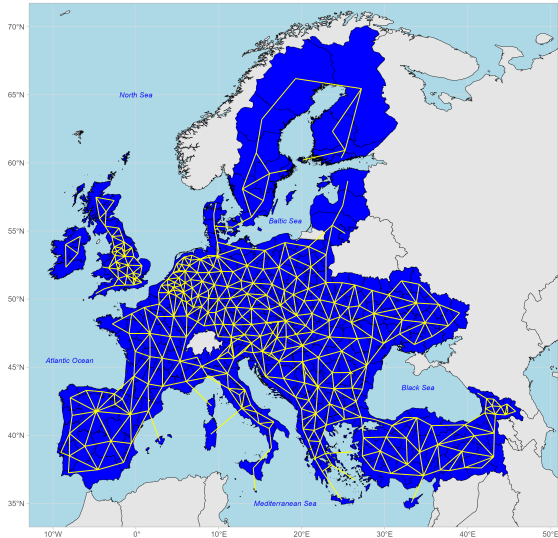
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