

SPATIAL ANALYSIS OF ECONOMIC AND MONETARY TRENDS: AUSTRIA VS. CZECH REPUBLIC

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HOW/WHY THIS TOPIC?

This topic explores the economic and monetary differences between Austria and the Czech Republic. Despite their shared borders and EU membership, these countries have distinct economic structures and policy choices. Austria's service oriented economy contrasts with the Czech Republic's manufacturing driven model, offering a unique opportunity to analyze how diverse approaches impact growth, trade and monetary stability.

VARIABLE SELECTION (2021)

Employment(1000 persons)by nuts 3 region:

The total number of employed persons in thousands within each NUTS 3 region. Employment refers to all persons aged 16 and over engaged in productive activity within the production boundary defined by the System of National Accounts.

GDP at current market prices(millions of euros) by nuts 3 region:

GDP at market prices, representing the final value of all goods and services produced in a region. It is measured at current prices, without adjusting for inflation.

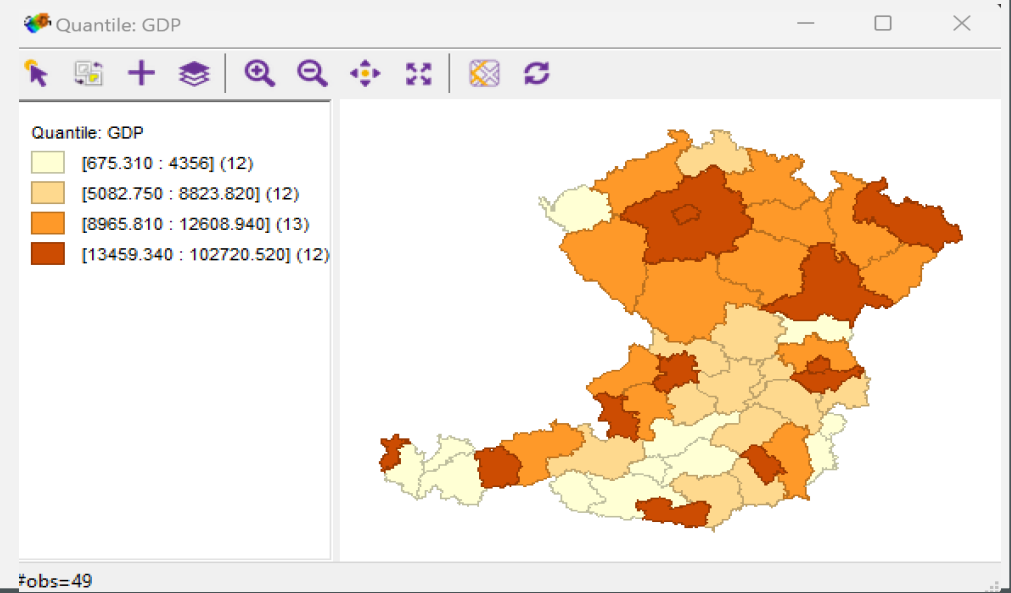
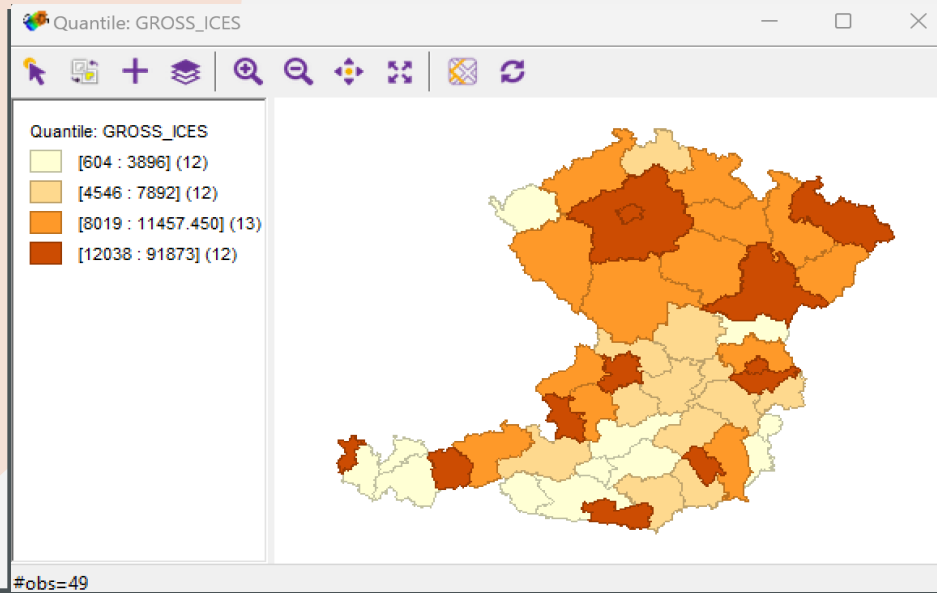
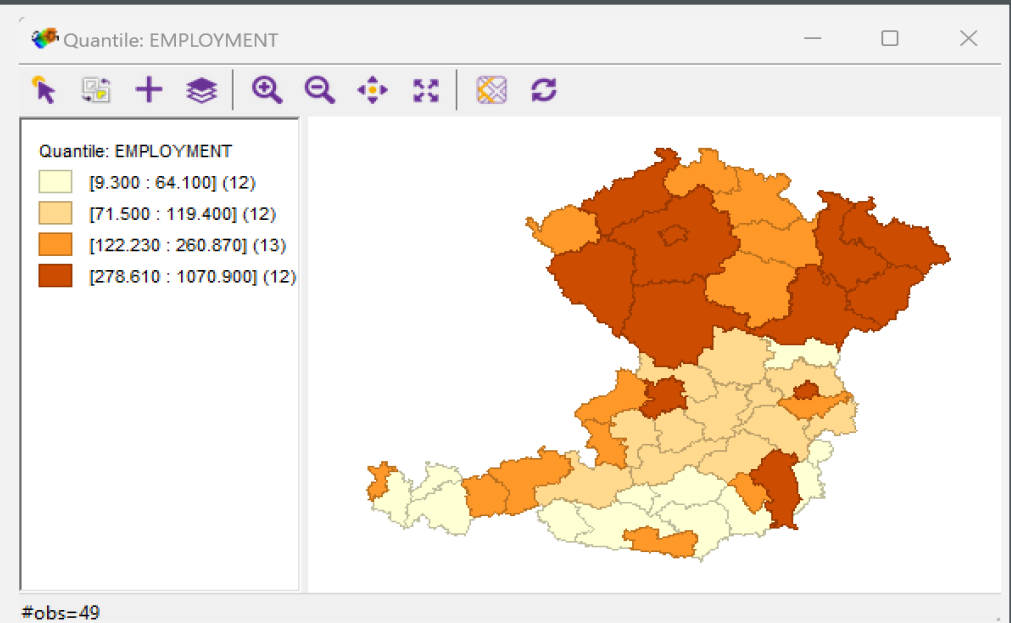
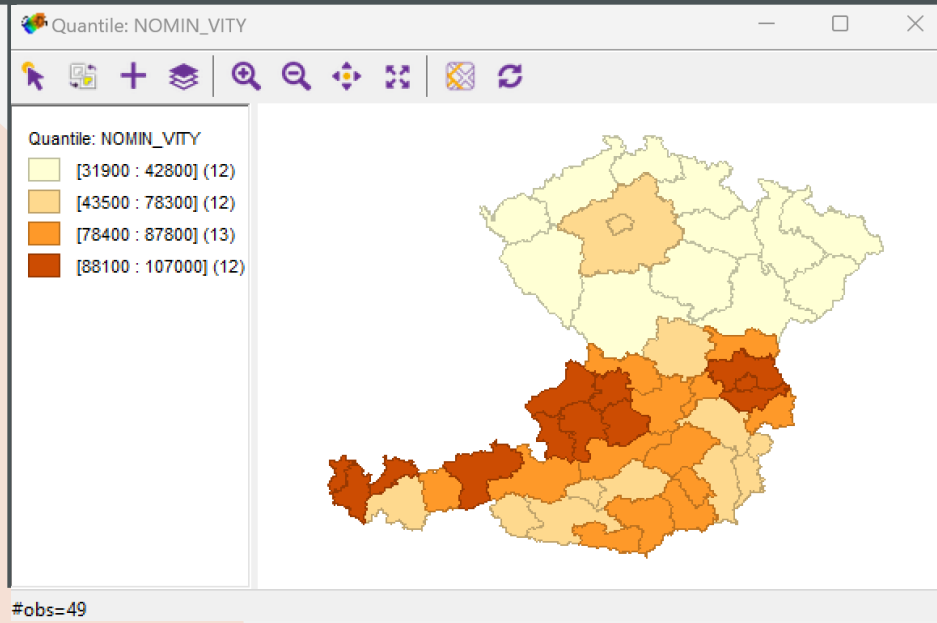
Nominal labor productivity(euros per employed person) by nuts 3 region:

Nominal labor productivity is calculated as GDP at current market prices divided by total employment (per employed person). It reflects the average output per worker, in nominal terms.

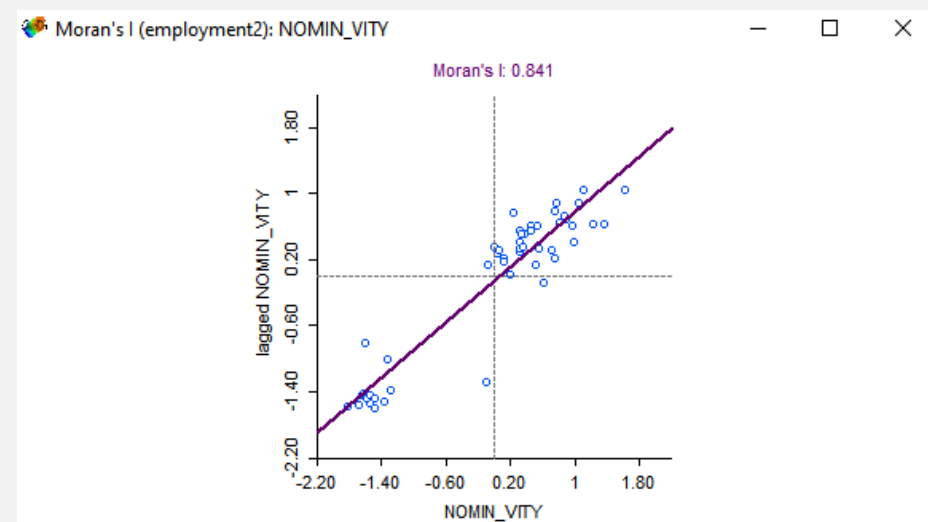
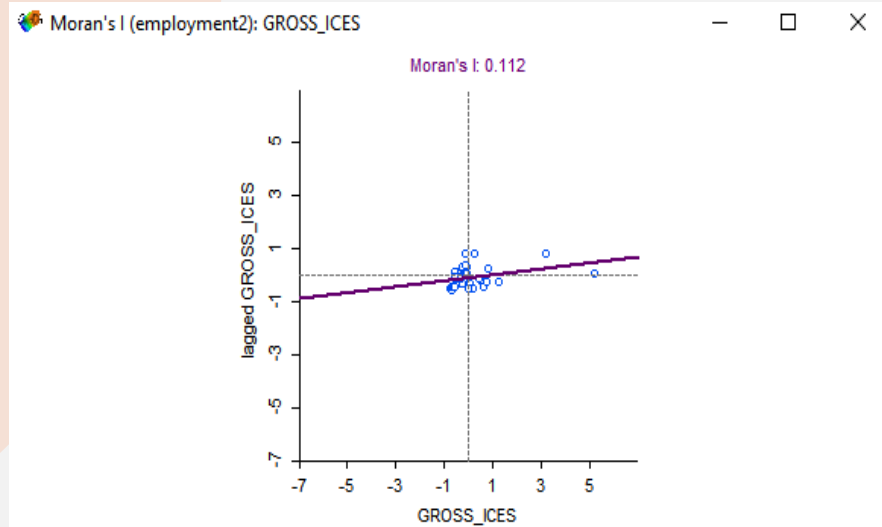
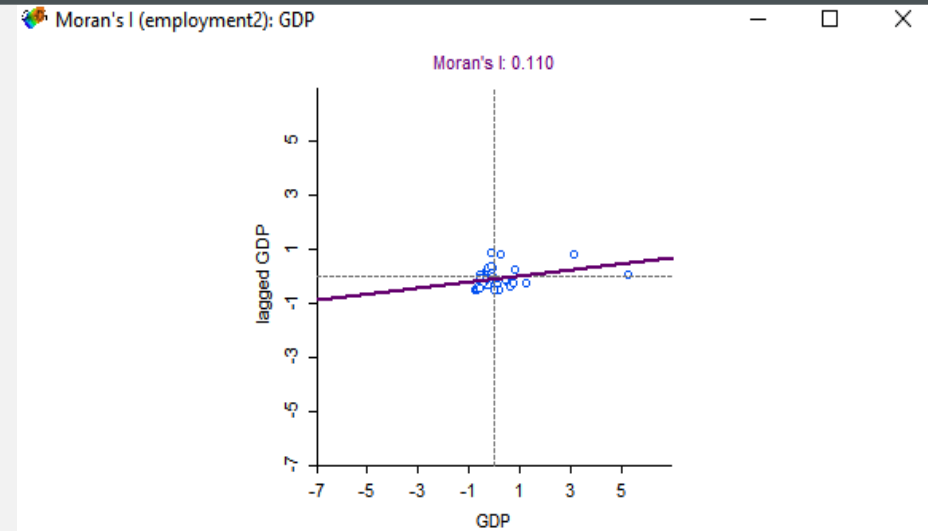
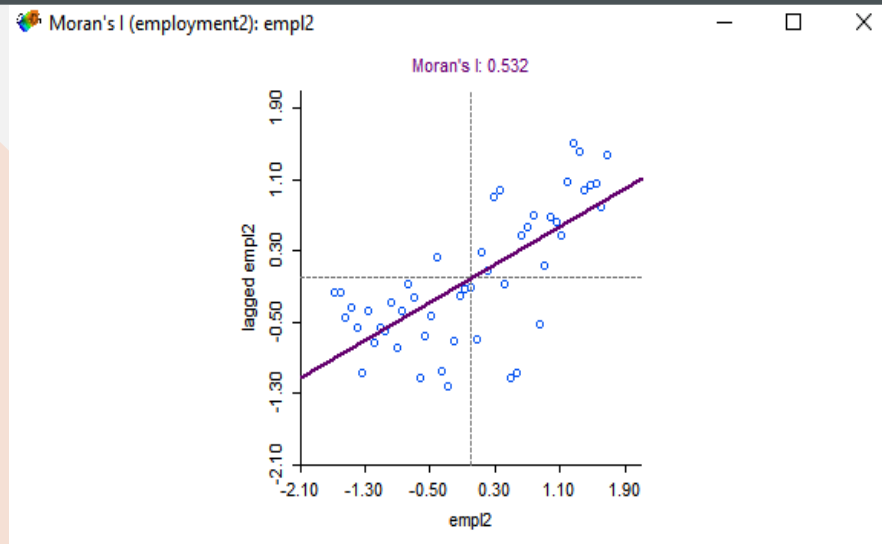
Gross value added at basic prices(millions of euros) by nuts 3 region:

GVA is the measure of the value of goods and services produced in a region, net of intermediate consumption, at basic prices (excluding taxes and subsidies on products).

SPATIAL REPRESENTATION



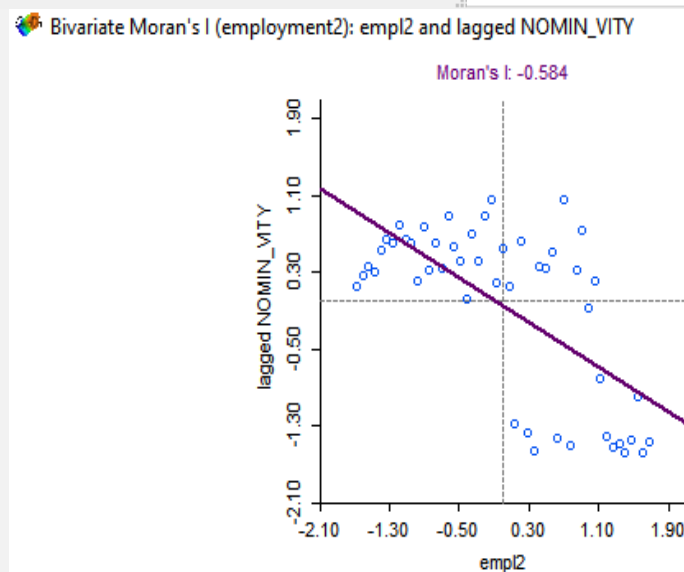
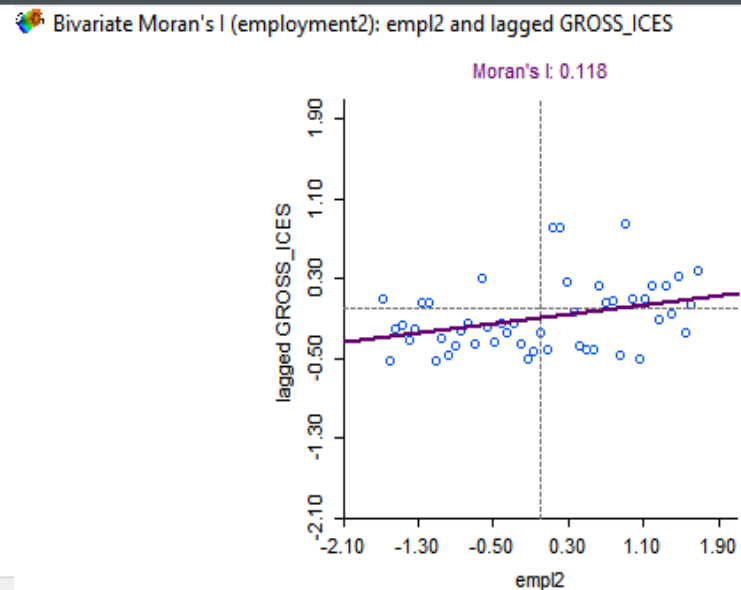
GLOBAL UNIVARIATE AUTOCORRELATION METHOD



INTERPRETATION

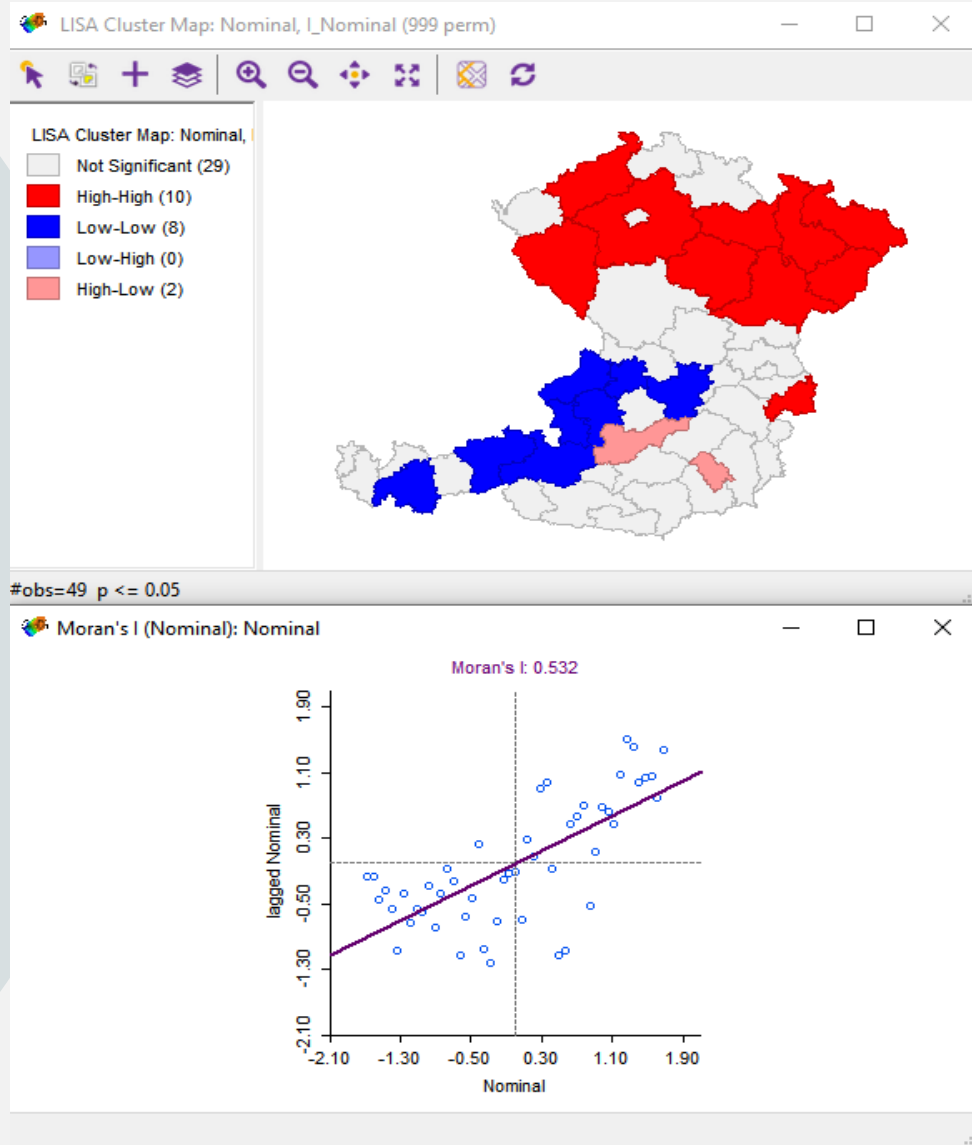
- There is a positive spatial autocorrelation in employment levels between neighboring regions in Austria and Czech Republic.
- The Moran's I statistic for GDP is 0.110. This value indicates a weak positive spatial autocorrelation in GDP levels between neighboring regions in Austria and Czech Republic.
- Based on the Moran's I statistic of 0.112, there is a weak positive spatial autocorrelation in Gross Value Added at Basic Prices (GVA) between neighboring regions in Austria and Czech Republic.
- Based on the Moran's I statistic of 0.841, there is a strong positive spatial autocorrelation in Nominal Labour Productivity (NLP) between neighboring regions in Austria and Czech Republic

GLOBAL BIVARIATE AUTOCORRELATION METHOD



- **Positive Spatial Autocorrelation:** The positive Moran's I values in the first two plots suggest a clustering effect, where regions with similar employment levels tend to cluster together geographically. This could be attributed to various factors, such as shared economic histories, geographical proximity, and similar industrial structures.
- **Negative Spatial Autocorrelation:** The negative Moran's I value in the third plot indicates a checkerboard pattern, where regions with high values of one variable are adjacent to regions with low values of the other. This pattern might be influenced by factors like border effects, policy differences, or contrasting economic development trajectories between the two countries.

LOCAL UNIVARIATE AUTOCORRELATION METHOD



INTERPRETATION

LISA Cluster Map

The LISA cluster map provides insights into the spatial patterns of NLP at the local level. Here's how to interpret the different clusters:

High-High (red): Regions with high NLP are clustered together. This indicates a positive spatial autocorrelation, where neighboring regions also have high NLP.

Low-Low (blue): Regions with low NLP are clustered together. This also indicates a positive spatial autocorrelation, where neighboring regions have similarly low NLP.

High-Low (pink): Regions with high NLP are surrounded by regions with low NLP. This indicates a negative spatial autocorrelation.

Low-High (not present in this map): Regions with low NLP are surrounded by regions with high NLP. This also indicates a negative spatial autocorrelation.

Not Significant (grey): Regions that do not belong to any of the above clusters.

In this specific case, the map shows a significant number of High-High and Low-Low clusters, indicating a strong positive spatial autocorrelation in NLP.

In this specific case, the map shows a significant number of High-High and Low-Low clusters, indicating a strong positive spatial autocorrelation in NLP. This suggests that factors influencing NLP, such as technological advancements, industry structure, and labor market conditions, tend to cluster geographically.

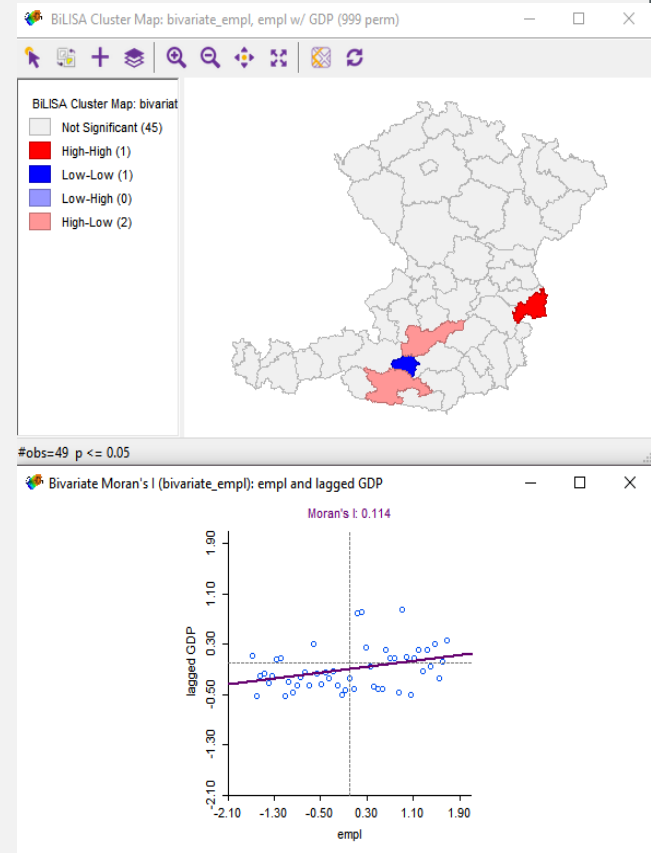
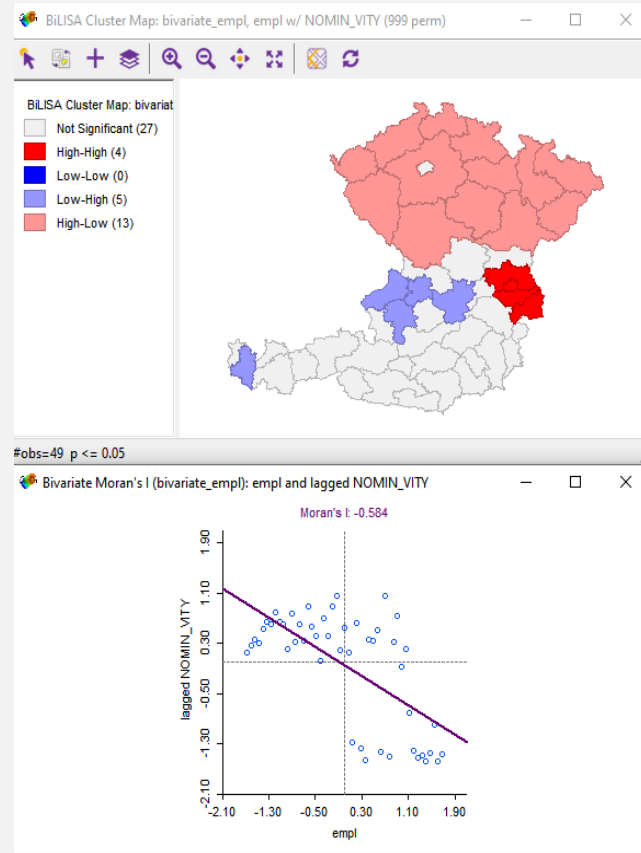
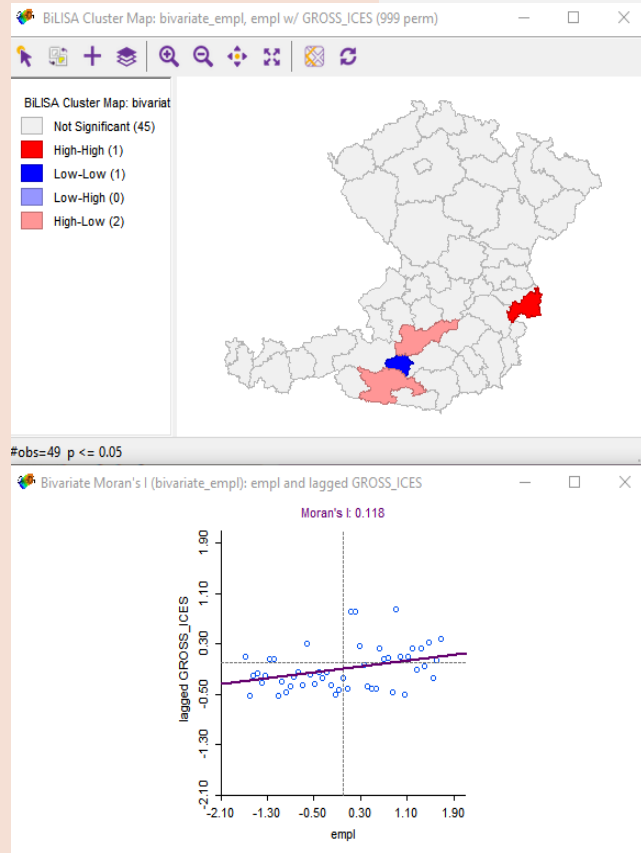
INTERPRETATION

The Moran's I scatterplot complements the LISA cluster map by providing a visual representation of the overall spatial autocorrelation. The positive slope of the regression line and the clustering of points around the line confirm the strong positive spatial autocorrelation in NLP.

The strong spatial autocorrelation in NLP has several implications:

Policy implications: Understanding the spatial patterns in NLP can help policymakers design targeted interventions to promote productivity growth in specific regions or clusters of regions. For example, policies aimed at boosting innovation, skills development, or infrastructure investment could be prioritized in regions with high NLP potential.

LOCAL BIVARIATE AUTOCORRELATION METHOD



INTERPRETATION

The maps and plots show a strong positive spatial autocorrelation between employment and gross value added at basic prices. This means that regions with high employment tend to have high gross value added at basic prices, and vice versa. This suggests that factors driving economic activity, such as industry structure and technological advancements, are spatially clustered.

The BiLISA cluster map and Bivariate Moran's I scatterplot show a negative spatial relationship between employment and Nominal Labour Productivity (NLP). This means that regions with high employment tend to have low NLP, and vice versa. This suggests that factors driving employment and NLP might have opposite effects on each other spatially.

The BiLISA cluster map and Bivariate Moran's I scatterplot show a weak positive spatial relationship between employment and GDP. This means that regions with high employment tend to have high GDP, and vice versa. However, the relationship is not very strong, as indicated by the Moran's I statistic of 0.114. This suggests that while there is some spatial correlation between the two variables, other factors may also play a significant role in determining regional economic patterns.



THANK YOU!