

Aisre Conference, 2017

**Analysis of the Regional Disparities in Russia
through STATIS methodology**

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Cagliari, September 2017

Outline

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The aim

The aim of this presentation is to analyse the regional imbalance of Russia (2005-2013) applying a dynamic multivariate factorial analysis method (STATIS –French acronym of ‘Structuring Three-way data sets in Statistics’-).

The background

- The last decades have been characterized by a marked change of the economic and political geography of the European continent. As regards the Central and Eastern European countries, after the **economic transition** from a planned to a market economy they have been exposed to other potential sources of structural change such as the **accession to the UE** of most of them and the **opening to world trade**.
- Looking at what happened in the old Europe after the creation of the European Union, an increasing interest has focused in particular the analysis of the causes of the socio-economic differences among the regions. In fact, despite the belief that a broader area of free trade would be a necessary and sufficient condition for economic welfare to spread uniformly among countries, the reality has proved that disparities among regions have been significantly greater than those among countries.
- Therefore, the literature that has analysed the convergence-divergence processes has paid increasing attention to the institutional mechanisms regulating the labour market, as well as to the characteristics of the labour supply and demand and their dependence on spatial factors (Niebhur 2002). The underlying hypothesis is that the
- **structural change has strong spatially asymmetric impact on local labour markets.**
- (Blanchard and Katz 1992; Decréssin and Fatas 1995; Obstfeld and Peri 1998).

Regional disparities in Russia

- In this presentation we want to analyse Russian regions. We decided to apply the STATIS method that is a well suited statistic methodology to the study of multidimensional phenomena like regional disparities because the regions (cases) can be analysed on the basis of a set of indicators (variables) that change over the years (time).
- STATIS enables the Russian regions to be 'read' on the basis of factors that sum up their main socio-economic characteristics, to group them into homogeneous clusters, and to examine their temporal dynamics.
- It can therefore be used to estimate whether structural features favour the formation of clusters of regions and whether these display a tendency to converge either to a single structure or instead to a multiplicity of socio-economic structures.
- On this basis, it is then possible to investigate a number of issues: among them, what criteria could be used in defining regional or national policies or what institutional arrangement could better favour the development of a region

$${}_tX_{i,j}$$

The STATIS Method I

- This is a dynamic multivariate method which allows analysis of multidimensional (multiway) phenomena expressible in the form of three-way matrices: cases (regions) i , variables j , time t .

$${}_tX_{i,j}$$

- The method has been developed by Escoufier (1985), and has found numerous applications in economics, in Italy as well (D'Ambra 1986; Fachin and Vichi 1993; Tassinari and Vichi 1994). Moreover, it has already been used to explain the dynamics of disparities among the Italian provinces (Amendola et al. 1997) and the European regions (Amendola et al. 2006)

The STATIS Method II

- The analysis moves through three phases: **interstructure**, **compromise** and **intrastructure**
- The output from the **interstructure** phase describes the structure of the T matrices in a vectorial space smaller than T . In our case this is reduced to two dimensions but still maintains a good similarity to the initial representation.
- The **compromise** phase consists in the estimation of a synthesis matrix which yields a representation, in the two-dimensional space identified, of the characteristic indicators and of the average positions of the regions in the time-span analysed (2005-2013).
- The result of the **intrastructure** phase is a representation of the trajectories followed by the individual regions in the same period of time.

variables

Table 1

Variables used in the STATIS analysis

N	Proxy	Variable	Measure	Acr.
1	Regional Economic performance indicator	Per capita Gross Domestic Product	GDP per capita in price 2005 Correct for the consumer' Purchasing Powe	GDP
2	Agglomeration factors	Urban density	Share of Urban Population	URB
3	Labour Supply	total activity rate	Active popiulation/population aged over 15	ACR
4	Labour demand	employment rate	employed/population aged over 15	EMR
5	Gap between Labour and Supply	Unemployment rate	Unemployed/Active population	UNR
6	Indicator of the demographic pressure	Share of population below 15 years	Population below 15 years/Population	YOU
7	Productive structure of the regional economy	percentage employment in agriculture	employed in agriculture/ total employed	AGR
8		percentage employment in industry	employed in industry/total employed	MAN
9		percentage employment in traditional services	employed in retail trade, hotels and non-market services TRA /total employed	
10	Human Capital indicator	Share people with high education	Population with tertiary education/population 15-64 aged	SHE

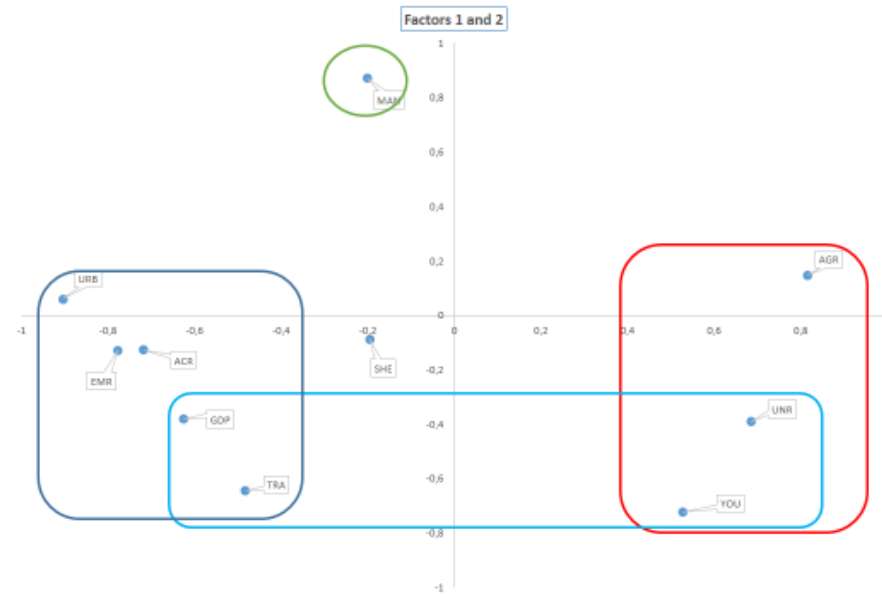
Regions and time span

- Regions: 75
- Years: 2005-2013

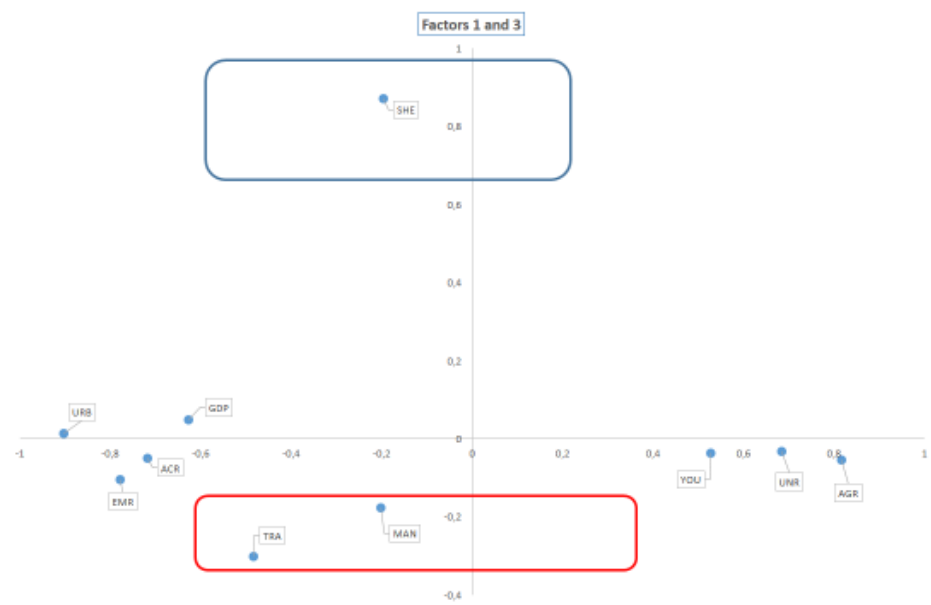
Factors

Table 2 Eigenvalues and inertia percentages of the factorial axes			
Axis	Eigenvalue	Variance explained	Cumulated variance explained
1	4.16198	40.62	40.62
2	2.12571	20.75	61.37
3	.941978	9.19	70.56
Source: Our calculations on ?????			

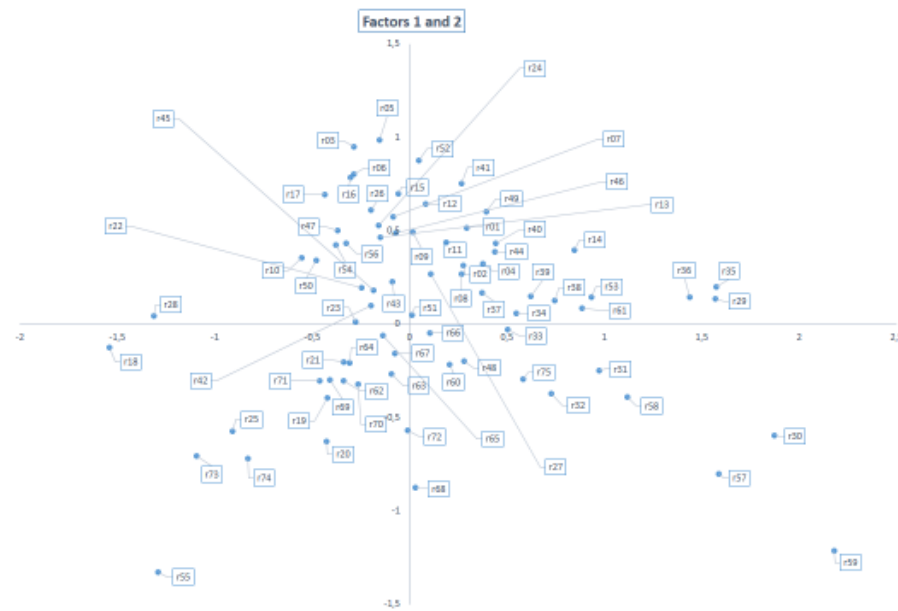
Factor 1 and 2: Variables



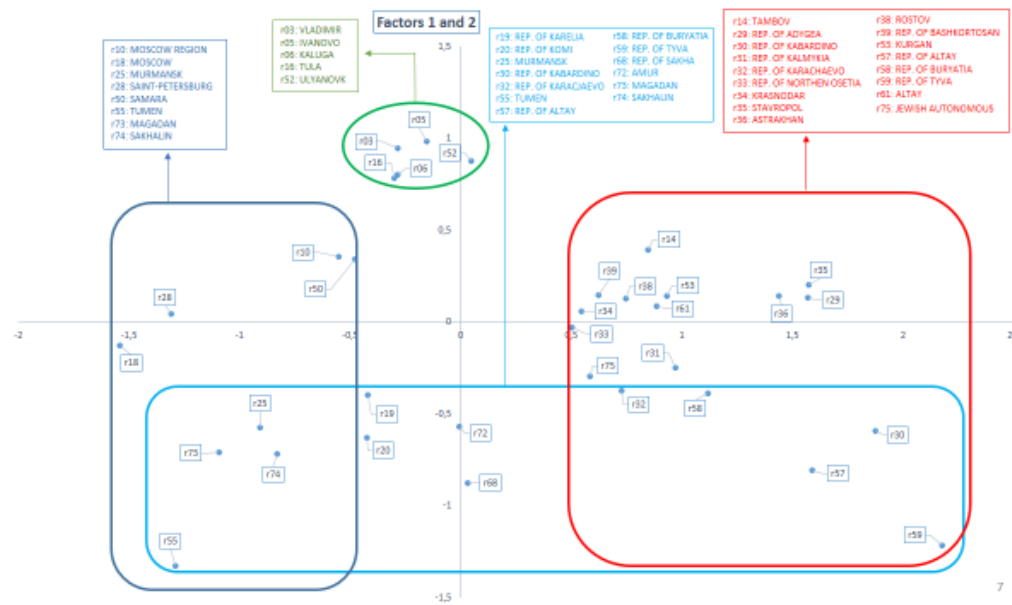
Factor 1 and 3: variables



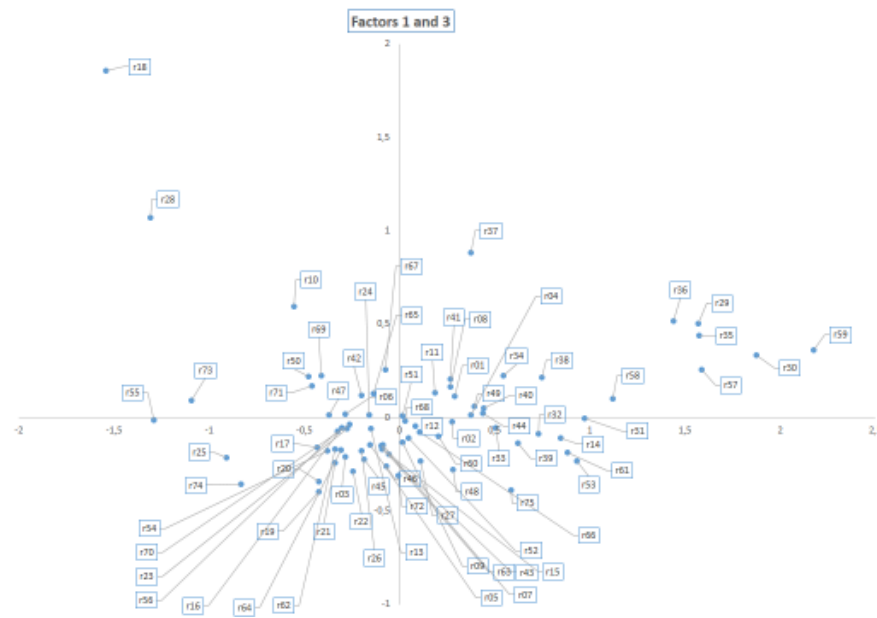
Factor 1 and 2: regions



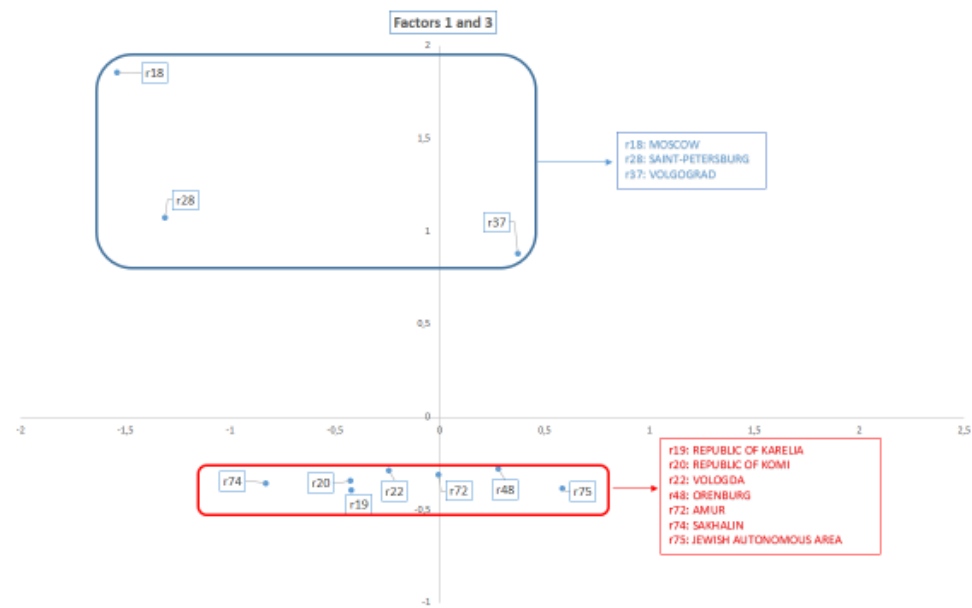
Factor 1 and 2: regions



Factor 1 and 3: regions



Factor 1 and 3: regions



Intrastructure-Trajectories

- A further interesting output of STATIS method is the intrastructure phase that allows to analyse the temporal trajectories followed by individual regions along the factorial axes and which highlights certain characteristics of the regional dynamic.
- 1) analysis of the convergence/divergence of the regions (or groups of them) towards the factorial axes.
- 2) The analysis of the cyclical or persistence characteristics of the trajectories

Very preliminary conclusions

- The results of the analysis confirm the thesis that the Russian economy is a diversified reality, influenced by structural phenomena concerning labour market characteristics, sectoral composition, and localization factors.
- This make it unlikely that integration processes – although accelerated by the enlargement of markets and their greater efficiency – will give rise to the hoped for levelling of economic development in the near future.
- Factors that drive regional development are: Urbanization (and therefore a richer labour market), Industry and human capital.