

ANNEX C

Indexes and formulas

Gini index

Definition: Regional disparities are measured by an unweighted Gini index. The index is defined as:

$$GINI = \frac{2}{N-1} \sum_{i=1}^{N-1} |F_i - Q_i|$$

where N is the number of regions, $F_i = \frac{i}{N}$, $Q_i = \frac{\sum_{j=1}^i y_j}{\sum_{i=1}^n y_i}$ and y_i is the value of variable y

(e.g. GDP per capita, unemployment rate, etc.) in region j when ranked from low (y_1) to high (y_N) among all regions within a country.

The index ranges between 0 (perfect equality: y is the same in all regions) and 1 (perfect inequality: y is nil in all region except one).

Interpretation: The index assigns equal weight to each region regardless of its size; therefore differences in the values of the index among countries may be partially due to differences in the average size of regions in each country.

Spearman correlation coefficient

Definition: The Spearman correlation coefficient is a measure of association between two variables to test whether the two variables covary, that is to say whether as one increases the other tends to increase or decrease. The two variables are converted to ranks and a correlation analysis is done on the ranks. The Spearman correlation coefficient varies between -1 and 1 and the significance of this is tested in the same way as for a regular correlation.

In this publication, for each country three Spearman correlation coefficients are computed between the TL2 regional values of a certain variable (for example, mortality rate, municipal waste, labour force with tertiary educational attainments, etc.) and the share of population in the TL2 regions living, respectively, in predominantly urban (PU), intermediate (IN), or predominantly rural (PR) TL3 regions.

Specialisation index

Definition: Specialisation is measured according to the Balassa-Hoover index, which measures the ratio between the weight of an industry in a region and the weight of the same industry in the country:

$$BH_i = \frac{Y_{ij}/Y_j}{Y_i/Y}$$

where Y_{ij} is total employment of industry i in region j , Y_j is total employment in region j of all industries, Y_i is the national employment in industry i , and Y is the total national employment of all industries. A value of the index above 1 shows specialisation in an industry and a value below 1 shows lack of specialisation.

Interpretation: The value of the specialisation index decreases with the level of aggregation of industries. Therefore, the specialisation index based on a 1-digit industry (e.g. manufacturing) would underestimate the degree of specialisation in all 2-digit industries belonging to it (e.g. textile, chemistry, etc.).

Age-adjusted mortality rates

Definition: The age-adjusted mortality rate of a region i is defined as the sum over the age group g ($g = 1, \dots, G$) of the product of the mortality rate in the age group g and the share of the standard population in the same age group.

$$MR_i = \sum_{g=1}^G M_{g,i} * P_{g,Std}$$

where MR_i is the age-adjusted mortality rate in region i , $M_{g,i}$ is the mortality rate in the g -th group of the region, and $P_{g,Std}$ is the share of the standard population in the age group g .



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