

Annex

Identifying the determinants of regional performances

GDP per capita (in logarithms) can be written as:

$$\frac{GDP}{Population} = \frac{GDP}{Employment} + \frac{Employment}{Labour\ force} + \frac{Labour\ force}{Population}$$

GDP per capita = Productivity + Employment rate + Activity rate

Therefore, the difference in GDP per capita between a give metropolitan region and the average of all metropolitan regions is equal to:

$$\begin{array}{ccccccc} \text{Difference in GDP per} & = & \text{Difference in} & + & \text{Difference in} & + & \text{Difference in} \\ \text{capita} & & \text{Productivity} & & \text{Unemployment} & & \text{Activity rates} \\ & & & & \text{rates} & & \end{array}$$

Decomposition of differences in productivity

Average labour productivity in region i is equal to a weighted average of sectoral productivity:

$$1. \quad \frac{GDP_i}{E_i} = \sum_j \frac{E_{ij}}{E_i} * \frac{GDP_{ij}}{E_{ij}}$$

where j indicates the sector.

From-the-average difference in productivity can be decomposed as:

$$2. \quad \left(\frac{GDP_i}{E_i} - \frac{GDP}{E} \right) = \sum_j \left(\frac{E_{ij}}{E_i} - \frac{E_j}{E} \right) * \frac{GDP_j}{E_j} + \sum_j \frac{E_{ij}}{E_i} * \left(\frac{GDP_{ij}}{E_{ij}} - \frac{GDP_j}{E_j} \right)$$

The first term on the right-side of the equation measures the proportion of the difference in productivity due to regional specialisation.

Decomposition of differences in activity rates

Activity rate in region i is equal to a weighted average of activity rates by age groups:

$$3. \quad \frac{LF_i}{P_i} = \sum_j \frac{P_{ij}}{P_i} * \frac{LF_{ij}}{P_{ij}}$$

where j indicates the age group.

From-the-average-difference in activity rates can be decomposed as:

$$4. \quad \left(\frac{LF_i}{P_i} - \frac{LF}{P} \right) = \sum_j \left(\frac{P_{ij}}{P_i} - \frac{P_j}{P} \right) * \frac{LF_j}{P_j} + \sum_j \frac{P_{ij}}{P_i} * \left(\frac{LF_{ij}}{P_{ij}} - \frac{LF_j}{P_j} \right)$$

The first term on the right-side of the equation measures the proportion of the difference in activity rates due to the age-profile of the regional labour population.

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