

## Statistical Methods for Economists – Week 4

### (Questions and Tasks)

The topic: *Correlation Analysis*

- 1.) What is the aim of the correlation analysis?
- 2.) How do we define Pearson's correlation coefficient?
- 3.) What values can Pearson's correlation coefficient take?
- 4.) How do we define Spearman's rank correlation coefficient?
- 5.) What values can Spearman's rank correlation coefficient take?
- 6.) Explain the difference between the two coefficients.
- 7.) Find Pearson's correlation coefficient for the data in Table 1.
- 8.) Find Spearman's rank correlation coefficient for the data in Table 2, where two experts ranked six cities with respect to quality of life.
- 9.) How can we use function CORREL in Excel for Spearman's rank correlation coefficient?
- 10.) Evaluate statistical significance of correlations coefficients from Problems 7 and 8.

Table 1. Investment and production of selected industrial companies.

| Investment<br>(mil. Euro) | Production<br>(mil. Euro) |
|---------------------------|---------------------------|
| 142                       | 6.28                      |
| 138                       | 5.86                      |
| 165                       | 6.42                      |
| 112                       | 5.00                      |
| 152                       | 6.48                      |
| 148                       | 6.39                      |
| 142                       | 6.31                      |
| 124                       | 6.20                      |
| 172                       | 6.51                      |
| 169                       | 6.52                      |

Table 2. Quality of life.

| Rank | Expert 1 | Expert 2 |
|------|----------|----------|
| 1    | New York | Paris    |
| 2    | Paris    | Beijing  |
| 3    | Beijing  | New York |
| 4    | Tokyo    | Tehran   |
| 5    | Delhi    | Delhi    |
| 6    | Tehran   | Tokyo    |