The measurement of the growth stability

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There are different scientific works, where Spearman's coefficient is used as a characteristic of growth stability. It is reasonable thought to make some remarks about several coefficients, derived from Spearman's coefficient for the first time in our works.

In Afanasiev (1983) we suggested to measure growth (change) stability by Spearman's coefficient, because it reflects the value of levels' changing through its rank. The levels of time series should be ranked in order of increasing to calculate the Spearman's coefficient. It means that every level of the time series gets a rank, equal to sum of corresponding ranks, divided by the number of its equal values.

The values of coefficient vary from -1 to +1. The interpretation is following: if the level of every year is bigger than previous one, then the ranks of year number and time series level coincide, and Spearman's coefficient is equal to +1. It signifies the fact of growth stability of time series levels, the continuity of growth. The coefficient is equal to null if the growth is absolutely unstable. The coefficient is closer to -1 as much as the decrease of variable is stable.

We have suggested an alternative formula for the coefficient of growth stability, which reduces the amount of calculations. Spearman's coefficient gets an absolutely new function and cannot be interpreted here as a "covariation" between the time and time series levels. The advantage of the rank correlation coefficient is that time series should not be transformed to stationary form, because the transformation is enough complex and full of mistakes procedure.

It should be noted, that the volatility can be present even if the growth stability is 100%. The disadvantage of the coefficient is its low sensitivity to changes of growth speed. It can show a stable growth when average increase of a variable differs from null not significantly.

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