Structural Break Analysis

In This Issue

1. Learn how to identify and model structural breaks to see if they are indeed statistically significant

A structural break tests whether the coefficients in different datasets are equal, and this test is most commonly used in time-series analysis to test for the presence of a structural break. A time-series dataset can be divided into two subsets and each subset is tested on one another and on the entire dataset to statistically determine if indeed there is a break starting at a particular time period. The structural break test is often used to determine whether the independent variables have different impacts on different subgroups of the population, such as to test if a new marketing campaign, activity, major event, acquisition, divestiture, and so forth has an impact on the time-series data. Suppose the dataset has 100 time-series data points, you can set various breakpoints to test, for instance, data points 10, 30, and 51 (this means that three structural break tests will be performed on the following datasets: data points 1-9 compared with 10-100; data points 1-29 compared with 30-100; and 1-50 compared with 51-100 to see if indeed at the start of data point 10, 30, and 51, whether there is a break in the underlying structure). A one-tailed hypothesis test is performed on the null hypothesis (Ho) such that the two data subsets are statistically similar to one another, that is, there is no statistically significant structural break. The alternative hypothesis (Ha) is that the two data subsets are statistically different from one another, indicating a possible structural break. If the calculated p-values are less than or equal to 0.01, 0.05, or 0.10, this means that the hypothesis is rejected, which implies that the two data subsets are statistically significantly different at the 1%, 5%, and 10% significance levels. High p-values indicate there is no statistically significant structural break.

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