

ACCURACY RESEARCH OF THE CAPACITY METHOD FOR ANALYZING RARE EVENTS FROM UNCERTAINTY WITHIN THE PROCESS OF EVENT FORMATION (Part 1)

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The study determines the influence of uncertainty within the consumption process of the rare events formation on the accuracy of restoring the original consumption function from the rare events data using the capacity method. The function is restored from a sequence of integrals observed with an error using a cubic integral smoothing basis spline. In the first experiment in this part of the study, the influence of the error in the observations on the accuracy of the function reconstruction is determined. In the second experiment, the influence of the random spread during the check of the stock level is determined, and in the third experiment, the influence of the spread in the dates of the events on the actual observation error and on the error in restoring the original function is determined.

Experiments have shown that the uncertainty within the process of the events formation affects only on the error in observations, which affects linearly on the error of the restored function. A model of this linear relationship is built. At the same time, a large observation error leads to the appearance of noise on the restored function. A mechanism for removing this noise by increasing the smoothing coefficient in the process of restoring the function from integrals is proposed.

Keywords: rare events, capacitive method, consumption process, consumption rate, recovery, regression, integral spline, error, accuracy.

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