THE REGULARIZATION OF THE PROBLEM OF CONSTRUCTION OF CAPITAL PRODUCTION FUNCTIONS ON INVESTMENT DATA [1]

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A method for the construction of standard production functions (PFs), which have effective capital (EC) as one of factors, was suggested in [1], for the case when production statistics contains investment data instead of capital ones. Estimation of a PF's parameters uses a capital dynamic equation defined by investments as well as a depreciation and coefficient of investment mastering. The PF's parameters and ones of dynamic equation are being estimated with an initial value of EC simultaneously. The functions are being constructed in subsequently complicating classes starting from the simplest Cobb and Douglass one. In general case, the new Least Square estimation problem of the extended parameters collection is an ill-conditioned nonlinear programming problem which demands usage of effective optimization techniques and a regularization on the base of additional information. In the referred paper a special variant of the continuation method [2] was suggested which can overcome complexity of nonlinear minimization.

The work [3] develops the approach of [1] in the next respects. A coefficient of the realizability of investments is introduced in the dynamics equation. This coefficient represents a ratio of really used capital investments which is less of one because of corruption. As an additional means for overcoming of computational complexities the transform to the index form of PFs is used [4]. Also a regularization method for the complex parameter estimation is suggested, which uses an expert information about the dynamics factors and a stabilization of the transition from an estimated PFs' class to a more complex one. Results of realization of the proposed model and techniques to real data for some regional Russian economies will be presented.

REFERENCES

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