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ECONOMETRIC MODELS, THE ESSENCE OF THEIR USE AND THE NEED FOR ECONOMETRIC ANALYSIS

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Annotation
In this article, the researcher presented her opinion on the need, relevance and importance of the economic analysis of econometric models. The choice of factors in creating econometric models, the resulting and influencing factors were also discussed. The main groups of models used in the forecasting and analysis of economic systems are shown.

Keywords: econometrics, econometric model, factor, resulting factor, influencing factor, econometric analysis, regression, correlation.

Econometrics is a self-contained science, an introductory and complex economic science, and the field of study includes quantitative aspects of economic processes and processes, to est quantitative relationships between economic variables, called econometric models. The econometric model uses the following types of variables:

- Dependent, endogenous variable Y, which produces the result, is partially fixed, controlled and planned, reflects the final result and the level of performance in the economic system. The process of forming the value of these variables is influenced by a number of other variables and factors representing the activity of the system. The dependent variable that gives the result acts as a function in the regression analysis, and the value of this function is determined by means of independent variables (in which the independent variables act as arguments to the function). The resulting variables have the characteristic of scholasticity, that is, constant randomness.
- The free exogenous variable X is characterized by the property of registration and reflects the conditions that ensure the moderate functioning of the economic system. Free ecogenic variables in a certain sense determine the value of dependent (initial) variables. X-variables also have partial controllability, that

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is, only part of them is controlled. The reason variables of this type are described as exogenous is that their value can be determined by the system outside of the analysis. X variables are also called factorial symptoms. In regression analysis, free exogenous X-variables are considered as a function, and Y-variables that generate the result are considered as arguments to this function. X-variables have the property of partial randomness, and can also be stable. It is assumed that in any structure of econometric models, the meaning of one or more endogenous variables is explained. In an economic system, explanatory variables are called predetermined variables and act as arguments and factors. Most of the predefined variables are formed under the influence of exogenous and endogenous variables. Since the equation of the analyzed econometric model includes the initial value of endogenous variables, these variables are described as "given" (more precisely, they are considered as known information in advance).

Quantifying the relationships of variables in an econometric model provides the basis for predicting adequate and reliable results. However, it should be noted that the possibility of a certain level of error in such an estimate cannot be ruled out.

Econometric models are successfully used to study and explain the essence of existing practical processes. A model built and tested on the basis of certain values of clarifying (explaining) variables is used to predict the prospects for using dependent variables that form the results, or a set of values of specifying (explaining) variables is used to refine the function of dependent variables.

There are three main groups of models used in forecasting and analyzing economic systems:

- time series model;
- regression models with one equation;
- system of simultaneous equations.

A time series model is essentially a model that is related to time through resulting symptoms. These include:

- growth curve models - trend models;
- flexible models;
- autoregressive and unstable mean value models.

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These types of models can be used to solve problems such as forecasting sales volume and demand for a product, as well as short-term forecasting of interest rate increases.

Any indicator can be taken as an independent variable, for example, indicators reflecting the activity of an enterprise or the price of a security.

Depending on the type of function (X1, X2, X3, ... Xk), the models are divided into linear and non-linear. Depending on the number of factors included in the model, the models are divided into single-factor ones, i.e. paired regression model, and multivariate, i.e. multiple regression model.

As a process, econometric modeling is carried out in several stages. Experts divide it into the most important stages - formation, analysis, parameterization, identification and validation.

The purpose of econometric modeling is to analyze the economic object or process that is supposed to be investigated, predict its performance, aspects of development under different values of exogenous variables by expressing the characteristics of randomness in them, and also develop management decisions.

When choosing economic variables, it is necessary to theoretically substantiate each variable, and it is recommended that their number be not too large, at least several times less than the number of observations.

It is important that the explanatory variables do not have a functional and organic correlation. Because this case can make it difficult to estimate the parameters of the model, that is, it can lead to the appearance of values of little practical importance.

“It is advisable to use different methods for selecting variables, in particular the practice of sequential selection of variables.

1. A dummy variable can be used to assess the influence of personality characteristics (eg gender, education, etc.). However, in any case, the inclusion of one variable or another in the model ensures the quality of the analysis of the object under study.

2. Analysis stage: at this stage, the essence of the object under study is determined, the process of forming information that existed before the start of the modeling process is analyzed, and a priori information is formalized.

3. Parametrization stage: direct modeling is carried out, that is, the general view of the model is selected and the internal relationships in its content are clarified.

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The main task to be solved at this stage is the choice of the form of the function f(X) in the econometric model, in particular, the determination of the possibility of using the linear model as a reliable and simple model. An important problem inherent in this stage of econometric modeling is the problem of model specialization. Including,

-expression of observed relationships and relationships in mathematical form;

- determination of the composition of exogenous and endogenous variables;

- show the initial conditions of the model and its limitations.

The level of resolution of the model specialization problem determines the success of all econometric modeling.

4. Information stage: the values of the observed economic variables and the necessary statistical information are collected. Observation of economic variables can be carried out both with the participation of the researcher and without him.

5. At the identification stage, a statistical analysis of the model and an assessment of its parameters are carried out..

6. The validation step checks the validity of the model. That is, it is checked how successfully all stages of modeling have been completed (issues related to specialization, identification and identifiability of the model), as well as the level of compliance of the constructed model with the modeled object or process. [63].

To apply the above steps to the process of econometric modeling, it is necessary to create a system of indicators that includes all data about the object under study, as well as external factors that can affect the value of each indicator. it will be necessary to form a list of internal factors.

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