

Abstract of the Article
"Econometric Forecasting of the Machine-Building Area
Taking into Account the Factors of Influence"
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To overcome the crisis processes and implementation of a wide range of structural reforms in Ukraine's economy scientifically grounded, thoughtful and balanced regulation becomes extremely important. Among the tools used to control unstable processes in the state economy and the region, an important place belongs to the econometric modeling and forecasting.

A significant contribution to the practical use of mathematical modeling in economics, made the following scientists: B. Burkinskyy, Vitlinsky V.V., Hrabovetsky B.Ye., Zdrok V.V., Lepa N.N., S.V. Prokopov, E. Slutsky and others.

We conducted simulation index of production engineering, taking into account the impact of production machinery and equipment, electrical and electronic equipment, vehicles and equipment. This method uses econometric modeling. The result is an econometric model:

$$y = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \varepsilon, \quad (1)$$

y - index of production engineering;

x1 - the index of production machinery and equipment;

x2 - the index of production of electrical and electronic equipment;

x3 - index of vehicle equipment.

Using equation (1) and statistics (Table 1), we obtain an econometric model of the form:

$$y = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \varepsilon \quad (2)$$

To check model adequacy the coefficient of determination is determined by the formula [5, s.180]

$$R^2 = 1 - \frac{\sum_{t=1}^T (y_t - \hat{y}_t)^2}{\sum_{t=1}^T (y_t - \bar{y})^2}.$$

The coefficient of determination of the obtained model (2) is equal to $R^2 = 0,95$, which is a high rate (model explains 95% of the variance in the variable) and evident. It's of the compliance of the model to reality.

The adequacy of the model built by Fisher criterion is also verified. In order to receive an econometric model (1) the value of the F-statistics Fisher $F(3,3) = 19,9$. Built econometric model is adequate and can be used for

modeling the researched process. Using the model (2) let's conduct research elasticities index of production engineering and manufacture of machinery and equipment x_1 , electrical and electronic equipment x_2 , vehicles and equipment x_3 . The coefficient of elasticity shows how many percent change in value y , while x will change to 1% (in this case $i=1,2,3$). Elasticities coefficients for each of the factors are as following: $E_1=0,14$ - for the factor x_1 , $E_2=0,78$ - for the factor x_2 , $E_3=0,02$ - for the factor x_3 .

The analysis of elasticities shows that the production of electrical and electronic equipment at this stage does much greater impact on output of engineering products in the whole region than production machinery and equipment and production of vehicles and equipment. With the growth index of electrical and electronic equipment at 10% volume index of production engineering will increase by 7.8%. However, with increasing index of machinery and equipment at 10% volume index of production machinery will increase only by 1.4%. A similar situation occurs with the third factor. With an increase in the index of vehicles and equipment at 10% volume index of production machinery will increase only by 0.2%.