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ECONOMETRİC EVALUATİON OF PARAMETERS OF THE PRODUCTİON FUNCTİON ON THE EXAMPLE OF AZERBAİJAN'S ECONOMY

Summary

The trend of economic developmentari's practical directionatlarinin?acenturyanot doneasi economic-political methods, as well as econometric modelsashrmamethods tadue to implementation hayais held until, as a result, this is also specialahaohataowns For this reason daappropriate production functions vatheir parametlari's econometric methods yearaanalyzedaeffective mit's pride.Recently, the macroeconomic analyzes carried out in the Republic of Azerbaijan are based on empirical approaches rather than methods tested in the world experience and showing the truth with more concrete results, used in making economic and political decisions. Without diminishing the effect of the scientific works of these researchers, it is necessary to emphasize that in these studies, the econometric analysis of the impact of oil revenues on the economy of the Republic of Azerbaijan, including the favorable use of oil revenues, has not been studied in general..

Key words: **Production function, method of squares, GDP, analysis**

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The structure of production functions and the approaches used in empirical evaluation can be divided into 4 main groups:

- Standard parametric least squares method - estimation (in linear case or when introduced to this model) or maximum accuracy method - estimation (in general case);
- The parametric maximum correctness method or the method of moments within the framework of SFA (Stochastic Frontier Analysis = stochastic frontier analysis) was evaluated; part-smooth non-parametric (cloudy) evaluation of the production function;
- Calibration (choosing the parameter that accurately reflects the values of all the variables of the model in the main period.

The standard parametric least squares method and the method of maximum accuracy - estimators are quite often encountered in empirical studies due to their relative simplicity in statistical evaluation. So, if the production function is linearized with parameters, then the parameters of the estimated model can be obtained based on the estimation of linear regression. For example, when using the Cobb-Douglas type production function, they mostly apply the logarithmic form of the model. However, this approach has significant limitations.

First of all, the volume of production resources is strongly correlated among themselves, which creates the problem of multicorrelations. However, there is no guarantee that a modification model and corresponding variable replacement will be found that can completely solve this problem. (3)

Secondly, within this project, the effect of rate variation or the use of production resources is not taken into account.

Analiz

The elasticity of production volumes obtained by using this approach is not less in cases where negative or excessively high prices are encountered (for example, the article by I.L. Kiviyuk contains a comprehensive summary of the works devoted to the estimation of Cobb-Douglas type production functions for the CIS countries [1, page 305]). The mentioned conditions, despite their high statistical significance assessed by basic statistical criteria, raise questions about their theoretical validity and reliability. Thus, it is appropriate to use this approach only in the evaluation of production functions that maintain homogeneity if the production resources of the production function are used at an unchanged rate. The imperative to note the difference in the degree and effectiveness of the use of production resources is one of the reasons for the development of stochastic frontier analysis methods, parametric evaluation of models. This approach is suitable for the comparative evaluation of the efficiency of production facilities with the same production technology and the use of the same resources for the production of the same homogeneous product. However, it is not convenient in the study of non-homogeneous objects, as well as in the case of a single object, especially when there is a lack of suitable observations. (5)

Calibration of model parameters acts as an alternative to econometric methods. It is relevant when there are not enough observations to ensure the statistical reliability of the obtained values. The advantage of calibration is its attention to the theoretical foundations of the model. Unlike econometric models, this feature allows deeper relationships to be considered and revealed. In addition, the use of calibration is particularly important in estimating models that are likely to contain unobserved variables. Only the calibration model has some disadvantages, for example, the dynamics are not taken into account at the necessary level, and it is highly dependent on the results of the evaluation with the selected and appropriate functional forms for the description of the production object. M. Grossinini (4) also gives a detailed analysis of this approach.

Thus, the existing approaches do not effectively solve the problem of registration of single objects that do not have a basis of comparison of the production function in the empirical assessment of the utilization rate of the production factor of the unobservable variable.

In practice, during the construction of applied economic-mathematical models that explain many different relationships, the researcher is often forced to evaluate systems of simultaneous equations that require a combination of the approaches listed above. In connection with this, the question arises about the appropriateness of further development and synthesis of econometric and calibration approaches. This is especially relevant for empirical studies of the Russian economy, as there are relatively short time series that limit the applicability of standard econometric estimation methods of aggregate production functions.

Let's move on to the description of our proposed approach: to estimate the parameters of the aggregate (combined) production function, to use the basic funds in different degrees, which can be used to estimate both macroeconomic and regional or field production functions. (4)

Equilibrium model of the use of capital production funds in different degrees.

The microeconomic basis of our proposed approach is the producer model, which maximizes income by taking into account the technological relationships between the volume of production factors (production resources) used and the volume of the produced product. To formalize these relationships, the production function is traditionally used, which assumes full and optimal use of production factors (neoclassical approach). However, the above-mentioned neoclassical assumptions are not realized in practice. Thus, the full use of the main production funds is not achieved by using changes in the composition of working time within the dynamics of the reserves of the main production funds, labor force - production volumes. The "inelasticity" of production factors is the limited awareness of decision-makers, the use of production resources at different intensities, etc. The possibility of optimal (maximum efficiency) use of production factors due to such factors is the object of criticism. These conditions lead to the development of approaches in which technological relationships are also recorded for the description of the production area. For this purpose, the dimensions of production resources and their optimal use can be combined in a single integral feature - the level of utilization of production resources.

In the framework of this study, let's look at two factors of production: capital production funds and labor force. Let us also assume that the lag from the moment of investment in fixed capital to its transfer to fixed production assets is greater than or equal to 1 period(s) *xt* – *t*the volume of product production during the period; λt – the rate of operation of the main production funds during t; Kt-1 – volume of main production funds at the end of period t-1;

Horse— employment rate of employees during t; Lt – average size during t

(or stock of working time) ; εt – – other factors affecting the volume of product production in time t.

However, for the purpose of evaluation, let's assume that it is an invariable measure, despite the fact that the employment of the labor force working in the production of the product depends on part-time employment, protests, vacations. This assumption is reasonable because the size of the labor force, unlike the capital stock of production, can easily change during the year due to changes in economic conditions. The level of the labor force used for comfort for all periods t

*Horse*Let's count as = 1. If scientific and technical progress is made to the production function of the factor, this possibility can be eliminated by introducing an additional sub-model. This submodel*A*models the meaning, in this case,*Horse·Lt*size can be called the effective labor size as in economic development models.

This allows not to differentiate the main production funds according to their composition within the framework of the considered model. A similar assumption was made regarding the labor force. The introduction of a variable into the model requires the modification of production costs of fixed production assets. It would be correct to assume that the main production fund is used at a certain levelλt will require additional non-reimbursable costs,*c*λ(λ*t*,*Kt*-1) let's determine the size of the values compared with the function, increasing with both arguments and decreasing with λt. (5)

It was appropriate to present the measure of total production costs (TCt) as the sum of fixed capital operating costs, labor costs, and tax payments in this ratio (2):

$$TCt(xt,Lt,\lambda t,Kt\text{-}1) = ct(xt)\cdot xt + \tau t(xt)\cdot xt +$$
$$+ (rt+D)\cdot PKt\text{-}1\cdot Kt\text{-}1 + W(Lt)\cdot Lt + PKt\cdot c\lambda(\lambda t,Kt\text{-}1),\ (2)$$

Ct – *t*special production costs of intermediate products and services during the period; τt – a specific measure of full taxation of production and income in the period t; real average interest rate during rt -t period D - depreciation rate of main production funds; PKt – the price level of the main production assets at the end of period t

Wt– the average amount of the total costs of the wages of 1 working employee in the period t.

By including current costs of production funds (rt + D) in the model, it is possible to get away from considering the questions related to the repetition of the main production funds. In this case, the producer determines the total discounted income over an infinite number of periods with this ratio (3):

$$\pi = \sum_{t=1}^{\infty} \delta^{t-1}[(P_t - c_t - \tau_t)x_t - (r_t + D)PK_{t-1}K_{t-1} - $$
$$- W_t(L_t)L_t - PK_t c_\lambda(\lambda_t, K_{t-1})] \xrightarrow[K_t, L_t, \lambda_t]{} \max, \qquad (3)$$

δ – discounted multiplier (0 < δ < 1); Pt - the average selling price of the produced product during the period t t.

In order to facilitate the equilibrium analysis, we additionally consider the following probabilities:

1) the production function can be continuously differentiated according to the volume of production factors and their degree of development

2) the average level of special costs and taxes does not depend on the volume of the produced product

3) the cost of the main production funds changes along with the price of the product produced there

4) the enterprise accepts the market price as an exogenous variable during this period

5) the enterprise accepts the nominal wage as an exogenous variable

6) amortization of the main production funds is carried out by the linear method

Within these probabilities, we obtain the equilibrium characteristics determined by the first-order maximization conditions of the sum of the producer's disintegrated income. The quantity of employed workers during optimization is expressed by the ratio (4) of the first order, the utilization rate of the main production funds by the ratio (5), and the volume of the main production funds by the ratio (6):

$$\partial x_t / \partial L_t = W_t / (P_t - c_t - \tau_t), \qquad \forall t \tag{4}$$

$$\partial x_t / \partial \lambda_t = 1/(P_t - c_t - \tau_t) PK_t \times [\partial c_\lambda (\lambda_t, K_{t-1})] / \partial \lambda_t, \quad \forall t \tag{5}$$

$$\sum_{k=0}^{1/D} (1 - k \cdot D) \cdot (\partial x^e_{t+k} / \partial K_{t+k-1}) = \sum_{k=0}^{1/D} \delta^k \cdot (1 - k \cdot D) \cdot 1/(P^e_{t+k} - c^e_{t+k} - \tau^e_{t+k}) \times$$
$$\times [PK^e_{t+k-1} \cdot (r_{t+k} + D) + PK^e_{t+k} \cdot \{\partial c_\lambda (\lambda_{t+k}, K_{t+k-1})\} / \partial K_{t+k-1}] \qquad \forall t, \tag{6}$$

where e is the index*t*duringcorresponding to the variable at the time of decision makingexpected resultmeans

Ratios (4)-(6) show that producers will increase (decrease) the rate of utilization of the main production funds and the number of employed workers until the increase in net income is ensured.

The first two of the derived first-order terms (coefficients (4) and (5)) do not contain intertemporal effects and are determined for each time period separately and independently of the meaning of other time period variables. This facilitates the use of those ratios in obtaining the values of the parameters. The third of the obtained first-order terms (ratio (6)) had intertemporal effects and is based on the registration of the dynamics of demand and costs in the future, which fundamentally complicates its estimation in the production function. Note that during the calibration of the analog of the ratio (4) production functionIt is often used to estimate the β parameter.

The obtained equilibrium characteristics of the producer allow to proceed to the evaluation of the parameters of the production functions, taking into account the use of the main production funds at a variable rate. In general, our proposed approach is universal for many continuously differentiable production functions.

Estimation of parameters of Cobb-Douglas type production functions with variable rates of basic production funds. Let's assume that the production facility*Wt*,*Lt*,*Pt*,*ct*, τt,*xt*,*PKt*,*Kt*-1,*t*= 1,..,*T*which includes the meanings of its variables*T*has an observation. The meanings of these variables for macro and meso levels can be determined based on official statistics.

In Cobb-Douglas-type functions, the ratio (1) is assumed from the beginning*Horse*= 1, and if we assume that the values of parameters α and β do not change over time, and if we take into account that the main production funds are used at a variable rate, and it can be written as ratio (7):

$$x_t = x_0 \cdot (\lambda_t \cdot K_{t-1})^\alpha \ \ L_t \ , \tag{7}$$

*x*0 – scaling parameter.

For obtaining empirical values of parameters of production functions*c*λ(λ*t*,*Kt-1*) function requires specialization. The cost of supporting the utilization rate of fixed production assets is an unobserved measure at some level and is a major problem in the current situation. As a result, the selection of a specific type of this function can only be based on theoretical considerations. In the framework of this article, we do not dwell on the issues of justification of the concrete type of this function and use the dependence shown by the ratio (8) as an example of this function:

$$c_\lambda(\lambda_t, K_{t-1}) = c_0 \cdot \lambda_t^{\gamma} \cdot K_{t-1}. \quad (8)$$

To reduce the "gorge" effect, we assume c0=1 during the next optimization.

When the size of the main production funds increases, the ratio (8) gives the possibility of an increase in the costs of supporting the level of utilization of the main production funds. Thus, after changes in ratios (4) and (5), they can be converted into ratios (9) and (10), respectively:

$$\beta_t = (W_t \cdot L_t)/(P_t - c_t - \tau_t) \cdot x_t, \quad (9)$$

$$\alpha_t = \frac{\gamma \cdot c_0 \cdot \lambda_t^{\gamma} \cdot PK_t \cdot K_{t-1}}{(P_t - c_t - \tau_t) \cdot x_t} \quad (10)$$

αt and βt– according to variables in time t,are the obtained values for parameters α and β. αt and βt.

Ratios (9) and (10) show that the optimal size of the demand for workers and the use of fixed assets depend on the parameters βt and αt. Since we assume that the parameters β and α are invariant, the inconsistencies of ωt and ξt appear during the evaluation:

$$\omega_t = \beta - \beta_t, \quad (11)$$

$$\xi_t = \alpha - \alpha_t, \quad (12)$$

α and β are the required parameters of the production functions.

Note also that ratio (7) allows to give a ratio for determining the size of λt (ratio (13)):

$$\lambda_t = (x_t / x_0 \cdot K_{t-1}^{\alpha} \; L_t^{\beta})^{1/\alpha}. \quad (13)$$

Thus, the problem of estimating the parameters of the production function is the minimization of the sum of the squares of the discrepancies ωt and ξt, taking into account the ratios α, β, γ , и x0 brings the set of parameters.

$$E = \sum_{t=1}^{T} [(\zeta_t / \alpha)^2 + (\omega_t / \beta)^2] \longrightarrow \min! \quad (14)$$

Let's apply our proposed approach to the assessment of the macroeconomic production function of the Russian economy, taking into account the use of the variable rate of the main production funds. The assessment is based on Rosstat's figures for 2005-2017 (table 1).Based on these indicators, let's determine the indicators of the variables for the next evaluation (table 2). Note that the size Wt·Lt reflects the wages of salaried workers, and the size (Pt – ct – τt)·xt – reflects the wages of salaried workers, the net income of the economy and the sum of indicators of net mixed income. In order to compare the prices, the dimensions of the variables xt, Kt-1, Lt, and PKt, were scaled, the size of which for 2010 is considered equal to 1.

The solution of the inconsistency problem (9)-(14) formed above requires the dimensions of the sought parameters of the production function andcosts to support the rate of utilization of the main production fundshelps to obtain the function (relationships (15) and (16) respectively).

$$x_t = 2{,}74 \cdot (\lambda_t \cdot K_{t-1})^{0{,}959} \; L_t^{0{,}587}, \quad (15)$$

$$c_\lambda(\lambda_t, K_{t-1}) = \lambda_t^{1{,}052} \cdot K_{t-1}. \quad (16)$$

The obtained values demonstrate high statistical significance for parameters α and β. Thus, the ratio of the average size to the standard error (equal to 0.034) for the estimation of the α parameter is 28.1, and for β -20.8 (the standard error is equal to 0.028). The dynamics of the obtained values of αt and βt are shown in figure 1.

Table 1.

Cobbe-Douglas-type production function used in the estimation of the Russian economy during 2005-2017 dynamics of macroeconomic indicators

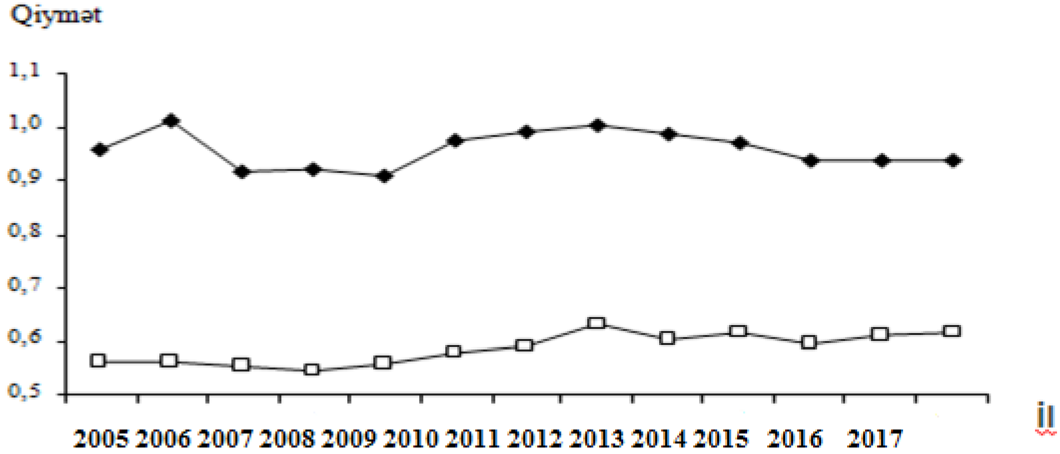
Year	The index of the physical volume of clean emissions compared to the previous year in %	The index of the physical volume of the IDF as of the end of the previous year, %	Annual average number of people employed in the economy, million people.	At the end of the year, the volume of the EIF with full accounting value, trillion rubles	Payment of wages of salaried workers, trillion rubles	Net income and mixed income of the economy, trillion rubles.
2010	n/a	101.0	65,574	26,333	5,065	3,920
2011	107.6	101.3	65,979	32,173	6,231	4,864
2012	108.0	101.6	66,407	34,874	7,845	6,307
2013	105.7	101.9	66,792	41,494	9,474	7,887
2014	108.9	102.4	67,174	47,489	11,986	9,545
2015	108.8	103.1	68,019	60,391	15,526	11,387
2016	105.0	103.6	68,474	74,441	19,560	13,499
2017	92.6	103.2	67,463	82,303	20,412	11,921
2018	105.0	103.0	67,577	93,186	22,996	15,094
2019	104.3	104.0	67,727	108,001	27,763	17,372
2020	103.8	104.0	67,968	121,269	31,223	21,097
2021	101.8	104.3	67,901	133,522	34,269	21,829
2022	100.8	103.7	67,813	147,430	37,119	23,127

Table 2.

Indicators of variables used in the estimation of Cobbie-Douglas type production functions for the Russian economy in 2005-2017

Year	Xt	Kt-1	Lt	PKt	Wt	PK t
2010	**1,00**	**1,000**	**1,000**	**1,000**	**0.564**	**0.345**
2011	**1,07**	**1,010**	**1,006**	**1,206**	**0.562**	**0.349**
2012	**1,16**	**1,023**	**1,013**	**1,287**	**0.554**	**0.412**
2013	**1,22**	**1,040**	**1,019**	**1,502**	**0.546**	**0.426**
2014	**1,33**	**1,059**	**1,024**	**1,679**	**0.557**	**0.464**
2015	**1,45**	**1,085**	**1,037**	**2,071**	**0.577**	**0.459**
2016	**1,52**	**1,118**	**1,044**	**2,464**	**0.592**	**0.460**
2017	**1,41**	**1,159**	**1,029**	**2,640**	**0.631**	**0.405**
2018	**1,48**	**1,196**	**1,031**	**2,902**	**0.604**	**0.421**
2019	**1,55**	**1,231**	**1,033**	**3,234**	**0.615**	**0.435**
2020	**1,61**	**1,281**	**1,037**	**3,492**	**0.597**	**0.449**
2021	**1,63**	**1,332**	**1,035**	**3,686**	**0.611**	**0.438**
2022	**1,65** **2**	**1,389**	**1,034**	**3,925**	**0.616**	**0.424**

Figure 1. Dynamics of αt and βt values received in 2005-2017



Source: Grassini M. Problems of application of computational models of general equilibrium for forecasting of economic dynamics // Problems of forecasting. 2018. No. 2. pp. 35-58.

According to the obtained values, the dynamics of the net output of the Russian economy depends significantly on both the main production funds and their utilization rate (equal to α parameters, with an elasticity of 0.959) and on the employed workforce. In order to provide a significant increase in investment activity and the introduction of new production technologies, the productivity of the workforce is inevitable. At the same time, there may be a certain short-term increase in the growth rate of the Russian economy in the coming years. Figure 2) if we take into account the rate of use of the main production funds in 2014 and the dynamics of the Russian economy in 2015-2016, it is known that it is lower than the rate in 2009.

Figure 2. Dynamics of the prices of the loading rate of the main production funds of the Russian economy in 2005-2017

Source: Grassini M. Problems of application of computational models of general equilibrium for forecasting of economic dynamics // Problems of forecasting. 2018. No. 2. pp. 35-58.

It should be noted that the absolute measures of the utilization rate of the main production funds obtained in Figure 2 should be treated with caution, since they are due to the presence of an unambiguous variable x0 and an uncertainty factor, which are mutually dependent on the ratio λ1 (see: ratio (provided that 130 t=1) they can change place compared to the real measurements, so the change dynamics of this indicator is more informative and reliable.

Thus, in the period of 2005-2011, the utilization rate of the main production funds in the Russian economy increased more than 1.5 times (Figure 2) and was accompanied by the rapid development of the investment activity of the real sector of this economy. Later, in 2014, under the influence of the global financial crisis, this indicator decreased sharply and increased insignificantly after 2016-2017. Since 2012, the rate of utilization of the main production funds has started to decrease, and this coincides with the rapid decrease in investment activity and the weakening of the growth rate of the Russian economy. The mentioned situations allow us to hypothesize about the effect of changes in the utilization rate of the main production funds on the dynamics of investments in fixed capital.

To test this hypothesis, we have built a pair of regression equations, where the dependent variable is the annual investment of the main capital It)∂(and the independent variable is the increase in the utilization rate of the main production funds of the previous year (λt)∂(. Both variables were measured in shares. The evaluation of this equation was presented in the ratio (17) according to the data of Rosstat in 2009-2010:

$$\partial I_t = 0{,}053 + 4{,}451 \cdot \partial\lambda_t$$
$$(0{,}008) \quad (0{,}384)$$

The obtained regression equation had a high coefficient of determination - 93.1% and high significance of coefficient values (standard errors of coefficients are shown in round brackets in (17)), the standard error of the regression equation was equal to 0.028. The first-order autocorrelation residuals with the Darbin-Watson criterion (DW = 1.26) enter the uncertainty region with . The dynamics of the actual growth rate of investments of the main capital of the Russian economy based on the ratio (17) and their prices (Figure 3) are presented [6]. The ratio (17) allows to fairly accurately reproduce the dynamics of fixed capital investments based on the utilization rate of the main production funds for the Russian economy within the considered period. The dynamics of investment growth at comparable prices.

Our proposed approach is based on the utilization rate of the main production funds in the verified Cobbie-Douglas type for the production function and the corresponding modification of the microeconomic example (problem) of the producer's behavior, and it allows to expand the microeconomic bases of the modeling of the production area.

As a result, the empirical values obtained by us show the important role of the main production funds in the dynamics of the net economic output of Russia and the degree of their actual use. A certain reserve of increasing the utilization rate of the main production funds existing in the Russian economy will be exhausted rather quickly compared to 2011, and this will require a significant increase in investment activity and the introduction of advanced production technologies for a significant increase in labor productivity.

In our opinion, the high statistical dependence of the dynamics of fixed capital investments on the change in the utilization rate of the main production funds is of some interest and indicates the need to expand the approaches to modeling this investment area.

However, there are issues that require further research, including the following:

- Searching for a more successful form of the function of maintaining the utilization rate of the main production funds at a certain level, and at the same time checking the universality of this function;
- Testing the proposed approach on a large population of the country and at the meso level;
- Microeconomic modification of the capital model taking into account the obtained results
- Construction of general economic models and supply-side and other macroeconomic models, investment using the apparatus of production functions in the equilibrium of the calculation of the utilization rate of the main production funds of the proposed approach.

The obtained results can be used in researches, they can be used as a part of the methodological bases of extensive researches in the production field of the economy dedicated to the development of general economic equilibrium models, to the analysis of stochastic boundaries of the production function, to the acquisition of empirical values and parameters of the production functions.

Production function- shows the dependence of a company on the amount of products it can produce within the cost of the factors used

Q = f (x1, x2 ... xn)

Q = f (K, L)

where Q is the value of the issue

x1, x2 ... xn- the volume of applied factors

K- the size of the capital factor

L- the size of the labor factor

Thus, a firm that spends an amount of x can produce an output of q. The production function establishes a relationship between these quantities. Here, as in other lectures, all volume values are flow-type values: the volume of resource costs is measured in units of units per unit time, and the volume of output is measured in terms of the number of units of output per unit time.

$$q = f(x) \qquad (1)$$

The production function of the form (30.1), which determines the dependence of the volume of production on the volume of unit resource costs, can be used only for illustrative purposes. It is also useful when the consumption of only one resource can vary and the cost of all other resources is assumed to be constant for one reason or another. In these cases, interest is the dependence of production volume on the price of a variable factor.

Significantly more diversity arises when considering the production function based on the volume of the two consumption stocks:

$$q = f(x 1 , x 2) \qquad (2)$$

A given production function implies that the producer captain and capital can change the price of labor and output will not change. For example, in agriculture in developed countries, labor is highly mechanized, that is, there are many cars (capital) per worker. On the contrary, in developing countries, the same volume of output is provided by a large amount of work with little capital. This allows the construction of an isoquant.

The result

In general, the production function has the following characteristics:

1 There is a limit to the increase in production that can be achieved with a stock increase and other resources constant. For example, for a constant increase in the amount of capital and land in agriculture, sooner or later there comes a point when the increase in output stops.

2 Resources complement each other, but within certain limits, their exchange is possible without a decrease in production. For example, manual labor can be replaced by using more machines and vice versa.

Manufactured products cannot be created from nothing. The production process involves the use of various resources. The number of resources includes everything necessary for production activity - raw materials, energy, labor, equipment and places.

To describe the behavior of the company, it is necessary to know the product that we can produce using this or that amount of resources. A company produces a homogeneous product, the amount of which is tons, units, meters, etc. We will take into account that it is measured in years. The dependence of the product that a company can produce on the basis of the amount of resource costs is called the production function.

Conclusion

However, the enterprise can use different methods of production process, different methods for organizing production, so the amount of output obtained from the same costs of resources can be different. Company managers should reject low-yielding production options if more output is obtained for the same cost of each resource. Likewise, they should reject options that require at least one rule that does not increase the efficiency of the product and reduces the cost of other resources. Options rejected for these reasons are called technically ineffective.

Your company manufactures refrigerators. To prepare the body, you need to cut the cast iron. Depending on how the standard iron sheet is drawn and cut, you can cut more or less of it; Therefore, for the production of a certain number of refrigerators, more or less standard iron sheets will be required. At the same time, the consumption of all other materials, labor, equipment, and electricity will remain unchanged. Such a production option, which could be improved by cutting the forging more efficiently, is technically inefficient and should be rejected.

*Technically efficient*are production options that cannot be developed by increasing the production of products that are available or by increasing the production of products that reduce the costs of inputs without increasing the use of resources or increasing the production costs of other resources. The production function considers only technically efficient options. Its value is the largest amount of product that the enterprise can produce with the consumption of a certain resource.

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Azərbaycan iqtisadiyyatı timsalında istehsal funksiyasının parametrlərinin ekonometrik qiymətləndirilməsi

Xülasə

İqtisadiyyat sahəsinin tərəqqi meyillərinin praktik istiqamətlərinin müəyyən edilməsi iqtisadi-siyasi üsullar, həmçinin ekonometrik modelləşdirmə metodlarının tətbiq olunması hesabına həyata keçirilir ki, nəticədə bu da xüsusi əhəmiyyətə sahibdir. Bu səbəbdən də uyğun istehsal funksiyaları və onların parametlərinin ekonometrik metodlar ilə təhlil edilməsi qüvvədə olan mövzudur. son zamanlar Azərbaycan Respublikasında həyata keçirilən makroiqtisadi təhlillər dünya təcrübəsində sınanmış və daha konkret nəticələrlə həqiqəti göstərən, iqtisadi-siyasi qərarların qəbul edilməsində istifadə edilən üsullardan daha çox empirik yanaşmalara əsaslanır. Bu tədqiqatçıların elmi əsərlərinin effektini azaltmadan vurğulamaq mütləqdir ki, bu araşdırmalarda neft sahəsindən qazanılan gəlirlərinin

Azərbaycan Respublikasıiqtisadiyyatına göstərdiyi təsirinin ekonometrik təhlili, o cümlədən neft gəlirlərindən əlverişli istifadə edilməsi kimi məsələlər ümumi şəkildə tədqiq edilməmişdir.
Açar sözlər: İstehsal funksiyası, kvadratlar üsulu, ÜDM, analiz

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ЭКОНОМЕТРИЧЕСКАЯ ОЦЕНКА ПАРАМЕТРОВ ПРОИЗВОДСТВЕННОЙ ФУНКЦИИ НА ПРИМЕРЕ ЭКОНОМИКИ АЗЕРБАЙДЖАНА

Резюме

Определение практических направлений тенденций развития экономики осуществляется за счет применения экономических и политических методов, а также методов эконометрического моделирования, что, как следствие, имеет особое значение. По этой причине соответствующие производственные функции и их параметры анализируются эконометрическими методами. В последнее время макроэкономический анализ, проводимый в Азербайджанской Республике, основан на эмпирических подходах, а не на методах, проверенных мировым опытом и показывающих истину с более конкретными результатами, используемых при принятии экономических и политических решений. Не умаляя влияния научных работ этих исследователей, необходимо подчеркнуть, что в этих исследованиях эконометрический анализ влияния нефтяных доходов на экономику Азербайджанской Республики, в том числе благоприятного использования нефтяных доходов, не имел изучались в целом.
Ключевые слова: Производственная функция, метод квадратов, ВВП, анализ.