European Journal of Economics, Finance and Business Development
**ISSN (E):** 2938-3633
Volume 1, Issue 3, June 2023

# Use of Econometric Model in Forecasting Gross Regional Product

Usmanov Akramjon Ahmadjonovich
Candidate of Economics, Docent, Fergana Polytechnic Institute,
Fergana, Uzbekistan

**Abstract**

This article focuses on the process of forecasting, which is one of the main directions of economic research. Definitions given by a number of economists to the terms forecast and forecasting were observed and personal opinions expressed by the author. In addition, the importance of econometric models in the process of forecasting is justified, and this is justified by the example of the object selected for research.

**Keywords**: Operational decision, econometric model, random events, trend, approximation, forecast, forecasting, tendency, analysis, correlation, regression, systematic analysis, induction, deduction, gross domestic product, time series.

## INTRODUCTION

At the time when the market economy is constantly developing, representatives of all sectors of the economy are required to make operational decisions in the course of their activities. This, in turn, requires the use of modern methods in this process, knowledge of changes in the world economy, achievements, and a scientific approach to their development. Most of the new methods that have emerged are based on econometrics. Therefore, it is impossible to make effective decisions without a thorough knowledge of econometrics and a full understanding of its practical significance [1,2,3].

Industry expertsimportant features are that they make decisions when the information is incomplete and insufficient. The main reason for this is that economic processes are constantly under the influence of unforeseen random events. Analyzing data in such cases is part of econometrics

requires special methods consisting of aspects [4,5].

### Literature Revive

Prognosis is a scientifically based prediction of the future state of the object and the ways of its implementation and the time of its implementation. The process of developing forecasts is called forecasting. One of the main areas of forecasting is economic forecasting.

The term prognosis and forecasting have been known for a long time, and a number of scientists have carried out sufficient scientific research in this regard. One of the main areas of forecasting is economic forecasting. "Economic forecasting" is considered a scientific-economic science, its object is the process of extended reproduction, and its subject is scientific research on the legality of economic objects that can be worked on and the development of economic forecasts.

"Economic forecasting" is mainly based on the achievements of economic science in the field of the law of social development and the accuracy of the trends of socio-economic and science-technological development achievements in the conditions of the market economy.

In the development of "Economic forecasting" and in increasing the efficiency of the developed forecasts, the science "Prognostics" that studies the rules of making forecasts of various objects, and the science "Economic prognostics", which is a part of it, plays a major role. Among the economists who carried out scientific research in this direction are V.N. Mosina and D.M. Kruka, I.V. Morozova, Parsadanov G.A., Egorov V.V., S.I. Ojegov, I. Bestuzhev-Lada can be included. Among the Uzbek economists, TSUE professors S.G. Gulomov, A. Abdullaev, N.M. Nosirov and others can be taken. In their work, they defined the forecast as follows. Prognosis is a scientifically based prediction of the future state of the object and the ways of its implementation and the time of its implementation [5,6,7,8].

And I. Bestujev-Lada defined the term forecast in his scientific research as follows: "Forecast is a scientifically based judgment about the possible future state of the studied object and alternative ways and times of its creation."

In our opinion, summarizing the above, the forecast can be defined as follows. A forecast is a conclusion of a scientific study aimed at determining the law of its change, based on an in-depth analysis of the conditions of the studied object in the previous period, and to tell the state of the next period based on this law. And the process of scientific research is called forecasting.

**Methodology**

The methods of induction and deduction, targeted development, systematic approach, systematic and comparative analysis, graphic representation, evaluation, abstraction, and correlational and regression analysis were widely used in order to develop scientifically based conclusions and recommendations based on the detailed analysis of the problem raised in the scientific article, systematization of the analysis results.

**Results and Discussion**

Based on the above definitions given to the terms forecast and forecasting, we can say that the role of macroeconomic analysis and forecasting in increasing the effectiveness of the country's economic policy in the current economic globalization process is incomparable.

It is known that economic growth in all regions plays a key role in ensuring economic stability of the country. This requires correct forecasting of the gross domestic product indicator and selection of a scientifically based strategy.

This is closely related to the level of accuracy of the forecast obtained as a result of the forecasting process for the selected period. This, in turn, is based on the econometric model selected for direct forecasting and the level of completeness and accuracy of the information used in its construction. Because if this requirement is not fulfilled, the statistical significance of the econometric model used in forecasting is lost, its general quality decreases and the absolute error of the received forecast increases. In this economic study, we try to describe the use of time series and its econometric model in determining the forecast indicator of the gross regional product of the selected object.

European Journal of Economics, Finance and Business Development
**ISSN (E):** 2938-3633
Volume 1, Issue 3, June 2023

Table 1. Growth dynamics of gross domestic product (GDP) in Andijan region.

| Years | GDP |
|---|---|
| 2000 | 242.3 |
| 2001 | 282.6 |
| 2002 | 546.3 |
| 2003 | 677.1 |
| 2004 | 804.9 |
| 2005 | 1121.1 |
| 2006 | 1513.2 |
| 2007 | 1965.3 |
| 2008 | 2231.2 |
| 2009 | 2819.8 |
| 2010 | 4497.3 |
| 2011 | 6183.4 |
| 2012 | 7623.8 |
| 2013 | 9918.6 |
| 2014 | 11872.3 |
| 2015 | 13914.0 |
| 2016 | 16115.6 |
| 2017 | 19753.0 |
| 2018 | 27017.7 |
| 2019 | 33581.3 |
| 2020 | 38008.5 |
| 2021 | 43332.5 |
| 2022 | 54464.0 |

It should be noted that it would be a mistake to call any time series a dynamic series. A given sequence is called dynamic if each of its levels is directly related to its previous and subsequent levels. In most cases, economic research deals with dynamic series. The array we quoted above is an example of a dynamic array. In order to find the forecast value of the studied indicator using such lines, it is necessary to create an econometric model based on its values.

To create the model, we first create a graph using the MICROSOFT EXCEL program.

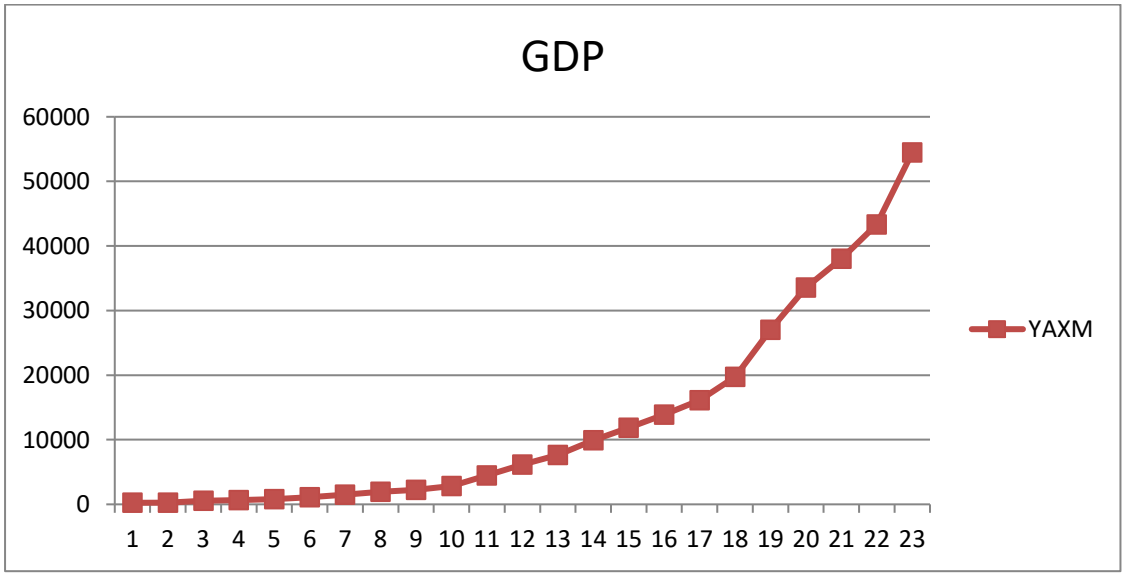


Fig. 1. GDP

European Journal of Economics, Finance and Business Development
**ISSN (E):** 2938-3633
Volume 1, Issue 3, June 2023

It is necessary to select a function suitable for it using the MICROSOFT EXCEL program for approximation using a structured graph. For this purpose, we compare the coefficients of determination, which express the degree of interdependence of variables in the functions selected for approximation. For this purpose, we make the following table, which consists of the values of the coefficient of determination determined by the program.

Table 2. Table of values of coefficient of determination corresponding to selection functions for approximation.

| Selected functions | Expression | Determination ($R^2$) values |
|---|---|---|
| Linear | $Y = a_0 + a_1 X$ | 0.7854 |
| Exponential | $\mathbf{y' = e^{x+bx}}$ | 0.9896 |
| Level | $Y = a_2 X^2$ | 0.9806 |
| logorhymic | $\mathbf{y' = a + b\ lnx}$ | 0.483 |
| polynomial | $y = a_0 + a_1 x + a_2 x^2 + \ldots + a_n x^k$ | 0.9804 |

It can be seen from the data that the exponential function is the most suitable among the functions selected for approximation, because the coefficient of determination corresponding to it is equal to 0.9896 and is the largest among the coefficients. It can be represented graphically in the following form:

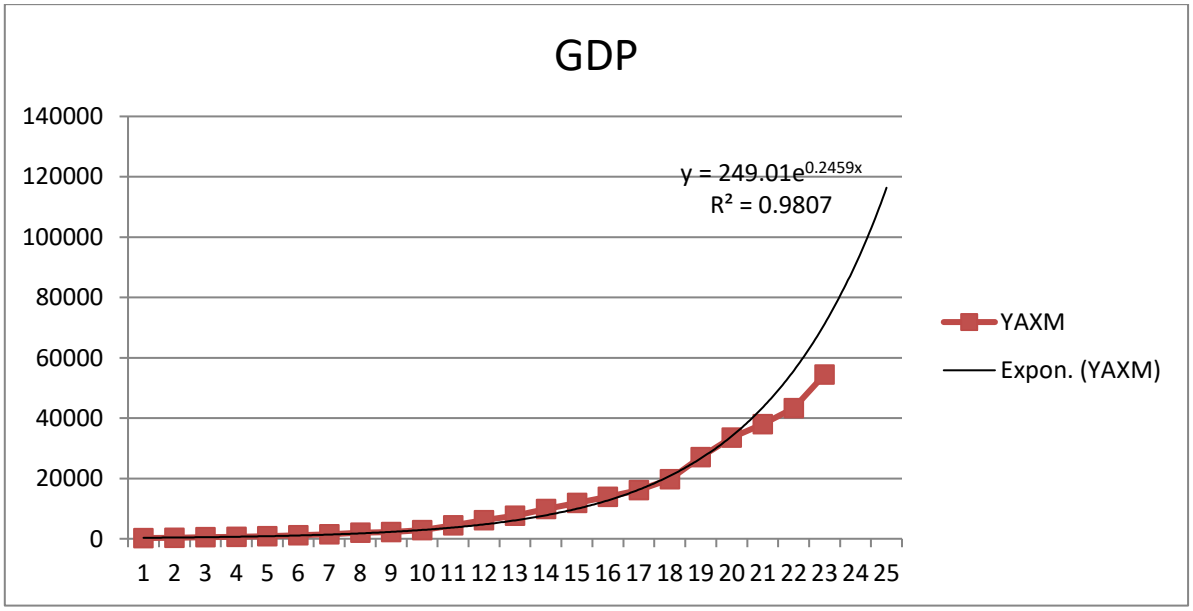


Fig. 2. GDP

Based on the situation in the picture, we can say that we can forecast the GNP of Andijan region using the regression equation of the form u = 249.01 e0.2452x.

**Conclusions and Suggestions**

At the end of our research, we can conclude that

In the current globalization process of our economy, the most important factor in determining the strategy of each economic entity is to determine the high accuracy forecast of the activity results or its economic indicators. This, in turn, depends on the statistical significance of the econometric model built on the basis of statistical data on this indicator, the level of reliability of the coefficients involved in its composition. The accuracy of the information used in the creation of such models depends on the correct selection of methods used in the process of processing waves and, of course, on the skill of the forecaster.

This kind of econometric models can be used to forecast not only macro-economic, but also micro-level indicators, and this gives an opportunity to determine the future strategy of the company. At the same time, the forecast determined for the company makes it necessary to determine the forecast of the market and competitors' activity indicators. In addition, creating forecasting models of the studied indicator and determining the forecast using it requires the use of double and multi-factor econometric models. This requires a systematic approach to the economic object.

**Used Literature**

1. Рахмоназаров, П. Й., & Халилов, А. (2018). Пути совершенствования организацией управления эколого-экономическими системами территории. *Актуальная наука*, (11), 26-28.
2. Rakhmonazarov, P., & Akhunova, M. (2019). Theoretical aspects of sustainable development of regional economic ecosystems and assessment methods. *Scientific and Technical Journal of Namangan Institute of Engineering and Technology*, *1*(8), 136-143.
3. Rakhmonazarov, P. Y., & Usmonov, A. A. (2021). Analysis of ecological indicators of territories. *Innovative Technologica: Methodical Research Journal*, *2*(10), 1-9.
4. Рахмоназаров, П. (2020). Устойчивое развитие экономико-экологических систем на региональном уровне и их оценка. Экономика И Образование, 1(3), 214–217. https://inlibrary.uz/index.php/economy_education/article/view/4445
5. Yigitalievich, R. P., & Ahmadjonovich, U. A. (2021). The Economic Environmental Systems And Their Effective Management. *The American Journal of Management and Economics Innovations*, *3*(09), 6-13.
6. Rakhmonazarov, P. Y. (2022). Ҳудудларда иқтисодий-экологик тизимларни бошқариш самарадорлигини ошириш механизмлари. *Nazariy va amaliy tadqiqotlar xalqaro jurnali*, *2*(4), 75-82.
7. Rakhmonazarov, P. (2022). Ҳудудларнинг иқтисодий - экологик тизимларини бошқариш самарадорлигини ошириш: монография, DOI: 10.5281/zenodo.6750455 ISBN:10.978- 9943-7707-6-8.
8. Rakhmonazarov, P. Y. (2022). Ҳудудларда иқтисодий-экологик тизимларни бошқариш самарадорлигини ошириш механизмлари. *Nazariy va amaliy tadqiqotlar xalqaro jurnali*, *2*(4), 75-82.