# STATISTICAL ANALYSIS OF PRODUCTION ACTIVITY DEVELOPMENT OF INDUSTRIAL ENTERPRISES

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**Abstract:**
The volume of industrial production and the change processes of industry-specific sectors during the years 2010-2022 were evaluated based on statistical analysis. The trends of their change are expressed in graphs. An econometric model based on trend models of total production and consumer goods production in Kashkadarya region's industrial enterprises and the effect of industrial production on Kashkadarya region's GDP was built, and forecasts were made on this basis. Conclusions and suggestions are given based on the conducted statistical analysis and forecasts.

**Keywords:** Industrial enterprises, volume of industrial production, foreign investment, volume of export, volume of import, volume of Gross regional product, statistical analysis, trend models, coefficient of determination and forecasting.

Today, it is necessary to emphasize that not only as a rapidly developing field in the industrial sector, it is steadily increasing the volume of exports, attracting foreign investments, modernizing production processes and fundamentally updating them technically and technologically.

In recent years, the production volume of industrial enterprises in our country has been growing at a rapid pace, and the share of the country in the gross domestic product has increased significantly. According to statistics, the share of this sector in GDP is 26-27 percent, and in employment is 13 percent[1].

It is known that today many statistical studies have been carried out in foreign countries on the economic potential of industrial enterprises, their components, and indicators of its evaluation. But at the scale of our country, it is urgent to give scientifically and practically based proposals on the

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[1] Information of the State Statistics Committee of the Republic of Uzbekistan.

evaluation indicators of industrial enterprises and the mechanisms of increasing economic potential, which fully cover the specific development features of the real sector of the economy.

Therefore, it is appropriate to scientifically form indicators on the organizational and economic essence, composition, and specific characteristics of development of industrial enterprises and reveal their economic essence theoretically.

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**table 1 The volume of industrial production and economic indicators of related industries of Kashkadarya region in 2010-2022[2]**

| years | Industrial production volume, bln. soum | Production volume of consumer goods, bln. soum | Number of enterprises with foreign investment, pcs | Export volume, mln. US dollar | Import volume, mln. US dollar | Gross regional product volume, bln. soum |
|---|---|---|---|---|---|---|
| 2010 | 4957,50 | 651,70 | 45 | 355,80 | 148,80 | 6944,10 |
| 2011 | 5043,60 | 815,60 | 45 | 462,30 | 118,40 | 8858,90 |
| 2012 | 6076,43 | 947,80 | 44 | 343,10 | 407,70 | 10872,10 |
| 2013 | 6849,42 | 1498,20 | 51 | 335,30 | 430,20 | 12308,30 |
| 2014 | 7194,74 | 1520,50 | 45 | 297,44 | 309,43 | 14631,10 |
| 2015 | 8721,94 | 2094,30 | 44 | 269,66 | 468,01 | 17247,70 |
| 2016 | 9632,20 | 2577,20 | 46 | 239,02 | 525,12 | 20163,90 |
| 2017 | 10945,86 | 2549,20 | 54 | 226,32 | 370,55 | 21597,30 |
| 2018 | 14529,52 | 2891,70 | 85 | 270,77 | 494,97 | 26554,10 |
| 2019 | 20360,06 | 3904,00 | 192 | 366,07 | 458,72 | 32399,30 |
| 2020 | 14612,31 | 4480,30 | 220 | 196,50 | 347,70 | 35605,30 |
| 2021 | 18771,85 | 4660,90 | 237 | 270,00 | 295,70 | 42560,20 |
| 2022 | 22814,67 | 4763,10 | 254 | 303,40 | 244,10 | 49520,80 |
| 2022/2010 | 4,602 | 7,309 | 5,644 | 0,853 | 1,640 | 7,131 |
| 2022/2021 | 1,215 | 1,022 | 1,072 | 1,124 | 0,825 | 1,164 |

If we analyze the production volume of industrial enterprises of Kashkadarya region in the years 2010-2022 and the economic indicators of related industries presented in Table 1, the volume of industrial production in the region in 2022 will increase by 4,602 times compared to 2010, and by 1,215 times

[2] Information from the Kashkadarya Regional Statistics Department.

compared to 2021. we can see that it has increased. In addition, we analyzed the dynamics of changes in the number of enterprises with foreign investment, the volume of export of industrial products and the volume of import of industrial products in the region (Fig. 1). According to the results of the analysis, the number of enterprises with foreign investment will increase by 5,644 times compared to 2010 in 2022, 1,072 times compared to 2021, the volume of industrial products import in 2022 will increase by 1,640 times compared to 2010, 0,825 times compared to 2021, the volume of industrial products export in 2022 2010 we can see that it has increased by 0.853 times compared to 2021 and by 1.124 times compared to 2021, which is definitely a positive result.
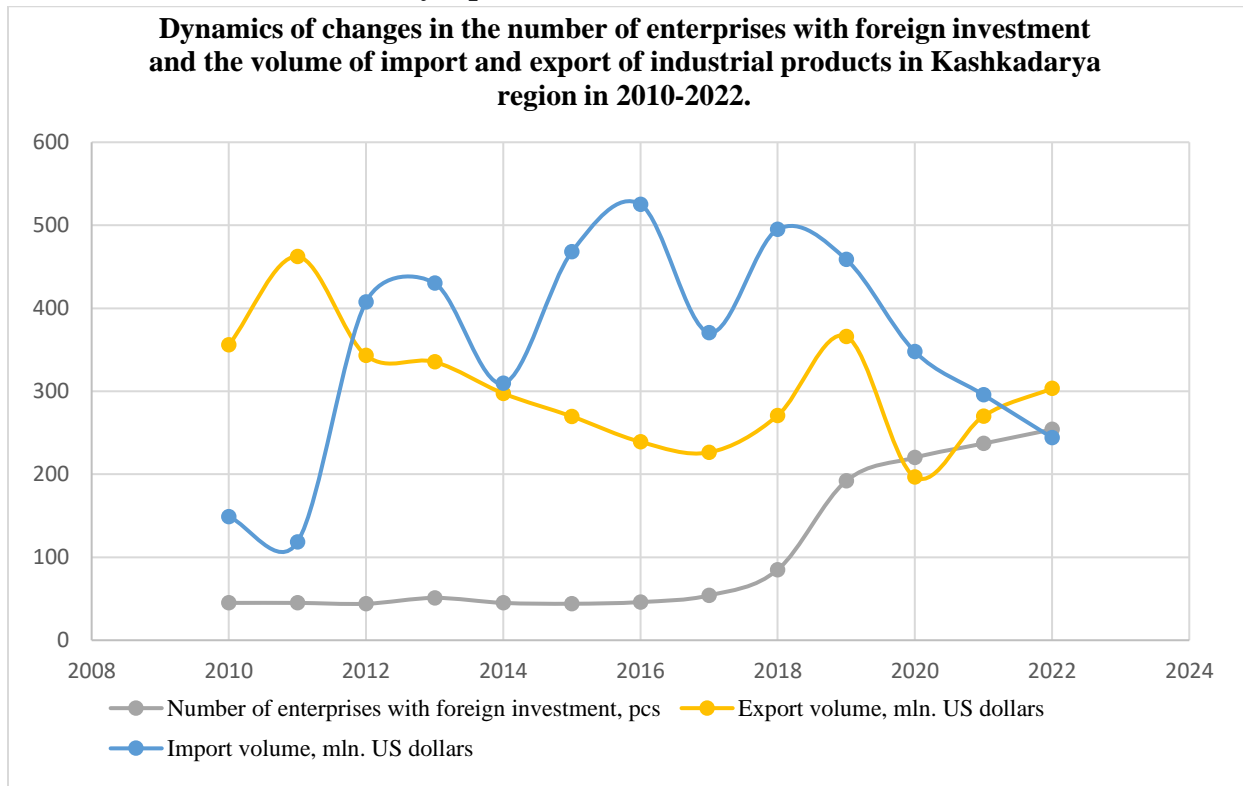


**Figure 1. Dynamics of changes in the number of enterprises with foreign investment and the volume of import and export of industrial products in Kashkadarya region in 2010-2022.**

Based on the trends in the production volume of industrial enterprises, the volume of production of consumer goods in industrial enterprises, and the volume of regional gross product of the Kashkadarya region in 2010-2022, we built their trend models (Fig. 2).
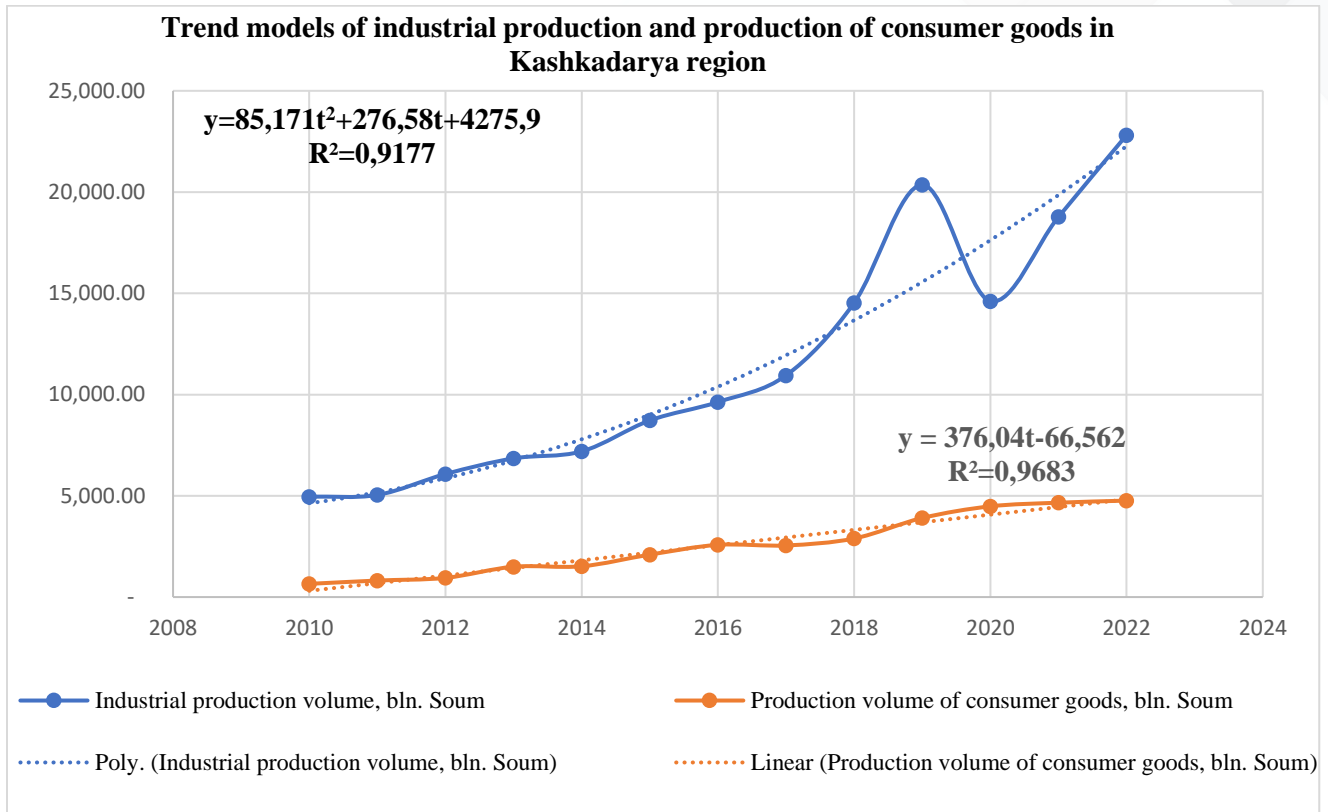
**Trend models of industrial production and production of consumer goods in Kashkadarya region**

$$y=85{,}171t^2+276{,}58t+4275{,}9$$
$$R^2=0{,}9177$$

$$y = 376{,}04t-66{,}562$$
$$R^2=0{,}9683$$

Legend:
- Industrial production volume, bln. Soum
- Production volume of consumer goods, bln. Soum
- Poly. (Industrial production volume, bln. Soum)
- Linear (Production volume of consumer goods, bln. Soum)

**Figure 2. Trend models of total production and production volumes of consumer goods in industrial enterprises of Kashkadarya region.**

Depicting a sketch of the change trend of the total volume of products produced in the industrial enterprises of Kashkadarya region during the years 2010-2022, a trend model was created based on this and evaluated according to the evaluation criteria (Fig. 2). When the coefficient of determination of the created trend model is equal to $R^2=0.9177$, $F_{his}=141.85$, $t_{his}=10.22$ (when $t_{jad}=2.1314$, $F_{jad}=2.4034$), We have chosen the regression equation of the form $y=85.171t^2+276.58t+4275.9$. In this way, we selected the regression equation of the total production volume of consumer goods in the industrial enterprises of Kashkadarya region in the form of $y=376.04t-66.562$.
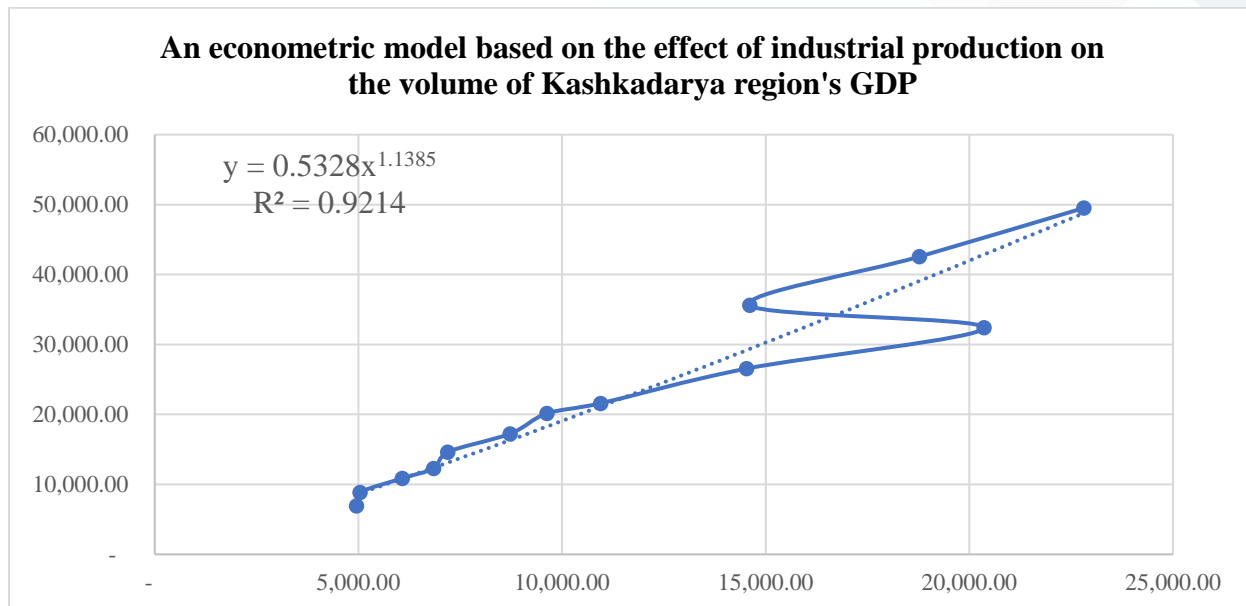
**An econometric model based on the effect of industrial production on the volume of Kashkadarya region's GDP**

$$y = 0.5328x^{1.1385}$$
$$R^2 = 0.9214$$

**Figure 3. An econometric model based on the effect of industrial production on the volume of Kashkadarya region's GDP.**

In Figure 3, while studying the effect of the production volume of industrial enterprises on the increase of the Gross Territorial Product of Kashkadarya region, a double correlation and regression analysis was performed between them. we chose the equation

**Table 2 Forecast of Kashkadarya region's industrial production, production of consumer goods in industry, and industrial production**

| years | Industrial production volume, bln. soum | Production volume of consumer goods, bln. soum | Gross regional product volume, bln. soum |
|---|---|---|---|
| 2022 | 22814,67 | 4763,10 | 49520,80 |
| 2023 | 24841,536 | 5197,998 | 53761,93315 |
| 2024 | 27588,075 | 5574,038 | 60579,47813 |
| 2025 | 30504,956 | 5950,078 | 67923,47865 |
| 2026 | 33592,179 | 6326,118 | 75802,99749 |
| 2023/2022 | 1,09 | 1,09 | 1,09 |
| 2026/2022 | 1,47 | 1,33 | 1,53 |

The analysis of the forecast results presented in Table 2 shows that the total production volume of industrial enterprises of Kashkadarya region will increase by 1.09 times by 2023 compared to 2022, and by 2026 by 1.47 times, total consumer goods in industrial enterprises of the region production

volume will increase by 1.09 times by 2023 compared to 2022, and by 1.33 times by 2026, as well as by 1.09 times by 2023 compared to 2022, and by 2026 by 1.53 times. is predicted to increase.

**Summary**

Modeling the complex economic potential of industrial enterprises serves as an effective tool for making management decisions. For this, it is appropriate to develop econometric models for forecasting the complex economic potential of the enterprise based on the complex economic potential of the enterprise and the main target indicators system of its evaluation mechanism

It is possible to introduce the method of linear optimization model and regression methods using quantitative methods of the economic potential of enterprises. It is necessary to analyze the trends of industrial enterprises and increase their competitiveness on the basis of strategic management.

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