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INFLUENCE OF THE VOLUME OF INDUSTRIAL PRODUCTION IN UZBEKISTAN ON THE IMPORT TREND

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diversification, modernization, industrial cooperation, import, export, localization, import substitution, industrial output, correlational analysis, econometric modeling.

ANNOTATION

The main goal of the scientific research is to study the interaction of industrial production in Uzbekistan with the volume of imports, and statistical data for the period of 2010-2021 were used in the research. First, a summary of the scientific articles on the topic was shown, and an econometric model was used to conduct the research. During the research, a multi-factor correlation-regression analysis was conducted and a model was created. Fisher test and Durbin-Watson test were used. In the results of scientific research, it was found that there is no connection between industrial production and import. At the end of the article, proposals and conclusions are given on the rapid development of industrial production and reduction of imports.

Introduction. Today, one of the priority goals of developed and developing countries is to achieve price stability, sustainable economic growth, as well as to improve the lifestyle and purchasing power of the population. Currently, industrial production is an important branch of the economy. Also, the changes taking place in the world are directly reflected in the industrial sectors. In recent years, the industry of Uzbekistan has developed rapidly, and by this indicator, our country's economy is taking its place among developed countries. Due to this, domestic production is expanding, export potential is increasing, import substitutes are increasing, and it is no exaggeration to say that this is causing the demand for imports to decrease.

Industry forms the basis of expanded reproduction and provides industrial growth. Industry refers to a set of industries (factories, factories, mines, mines, power stations, farms) that produce raw materials, energy, materials, fuel and other products and serve society. Deeply involved in the global value chain, small economies and industrial production rely on imported materials. Production of import substitution products is a difficult experience for the economy of any country. Import substitution refers to policies that eliminate imported goods and promote local production in domestic markets.

In recent years, an active investment policy has been carried out in our country, and as a result of the liberalization of foreign trade and currency operations, a real market economy based on healthy competition is developing. The development of the industry, which is considered an important branch of the economy, at the level of international standards, increasing the competitiveness of products on the world market, and expanding the variety of products remain our main goals.

Increasing the level of localization of the production of finished products, components and materials based on industrial cooperation is one of the important aspects of the stable and consistent development of the economy, reducing its dependence on external factors, and accelerating the implementation of new effective technologies in production processes.

In the course of our research, the opportunities of the branch enterprises of the Ministry of Economy and Finance were studied in detail, and as a result, in 2017, due to the organization of the production of products produced by local manufacturers and new types of products that replace imports, 1.1 billion. more than $ or the possibility of reducing imports by 23%. In 2020-2021, a targeted program aimed at the localization of production was developed, according to which, in 2020, 26.4 trillion will be allocated within 1396 projects. soums (including 674 in the regions, 4.1 trillion soums), in 2021, 37.6 trillion within the framework of 1644 projects. soums (including 787 projects in the regions, 6.1 trillion soums) of localized industrial products were produced, and the average degree of localization was 60-85 percent.

In 2017-2019, high activity in investments and foreign trade had a stimulating effect on the growth of industrial production volumes by 1.24 times, and their share in the GDP increased from 24.1 percent to 33.2 percent [1]. In addition, according to the data of the State Statistics Committee, in January-July 2021, the export of the foreign trade turnover of Uzbekistan amounted to 8.1 billion US dollars, while the import amounted to 13.4 billion US dollars.

The relevance of the topic is that we can see that large-scale measures are being implemented in our country to increase the production volume and expand the types of industrial products, to satisfy the demand of the population for consumer goods. Also, measures to liberalize foreign trade, reduce various tariff and notary restrictions, and eliminate monopoly are being implemented step by step in our country. Also, by diversifying the geography of foreign trade, types of products and raw materials, as well as retailers and supplying countries, practical measures are being taken to ensure sustainable economic growth, satisfy the population's demand for food products, and ensure price stability.

Decree of the President of the Republic of Uzbekistan dated June 9, 2021 "On additional measures to increase the industrial potential of the regions"[2] was adopted. In accordance with the decree PF-6244, on the basis of attracting existing natural and economic resources, using the potential of districts (cities) and using their relative advantages, identifying industries that are the "drivers" of local industry development, expanding and deepening the internal and inter-industry cooperation relations of industries, globalizing enterprises to attract to production chains and establish the cooperation export of manufactured products to third countries, as well as to create conditions for the attraction of private and foreign investments and modern technologies that ensure the production of quality and competitive products, small industries and issues of effective use of special economic zones and coordination of activities, training of professional personnel for local industrial enterprises taking into account modern trends, wide use of training programs were considered.

Literature review. The analysis of scientific sources shows that economists have encountered many disputes and different views have emerged on the relationship between industrial production and the volume of imports. Some economists commented in their scientific articles that there is a long-term relationship between industrial production and import volume, while other economists assessed that industrial production has a positive effect on import volume. We can find out to what extent the above opinions are correct in the following studies.

[1] https://lex.uz/docs/-4964633

[2] https://lex.uz/docs/-5449564

In the analyzed scientific article, Sergey Vladimirovich Dudnichenko studied the problems of import regulation in the modern industrial policy of Russia, as well as the latest trends in the development of the domestic and world economy, based on this, he developed new proposals and came to the following conclusions. In the process of studying the factors that stop the production and as a result of the analyzes conducted by the dissertation student, the most common obstacle to the growth of the production volume in the II quarter of 2005 was found to be the low internal demand by the enterprises. Based on the empirical estimates of the import demand function, the following result was obtained: "According to the conclusions obtained from the theoretical models in developed countries, the income elasticity of imports is higher than in developing countries, and the price elasticity of imports, on the contrary, is lower in developed countries than in developing countries."[3].

In addition, the author says that the current situation in the field of foreign trade in the Russian Federation requires serious state intervention, the Russian production structure, which defines a certain structure of foreign trade, should become an object of reform, and therefore, the new industrial policy can achieve the set goals. They came to the conclusion that in order to develop the industry and achieve its stability, it is necessary to increase the investment of national enterprises and develop a general rating.

Economist Shishkina Olga Vladimirovna conducted her research on the development of national industry in the context of expanding foreign trade relations. During his research, he studied the relationship between industrial production and foreign trade activities, the development of trade policy elements that help to increase the country's economic security and the growth of local industry based on interdependence. That is, it is aimed at analyzing the interaction of industrial and trade policy and the influence of the state's export-import potential on the development of the national industrial base. The results of the conducted analysis showed that in modern Russia, the supply of consumer goods through import made an average of 72%. This indicated the possibility of reducing the economic security of the country and increasing the industrial production potential. In this regard, the author came to the conclusion: "It is necessary to develop the elements of the customs policy aimed at the development of our own production base."[4].

Yuriy Simachev, Mikhail Kuzik, Nikolai Zudin conducted research on import dependence and import substitution in the Russian manufacturing industry and business prospects. In the article, they empirically analyzed the dependence of Russian industrial companies on imports, as well as the possibilities and interests of switching to local products and technologies, and made their suggestions. The purpose of the research was to increase the volume of these products in local production enterprises of import substitution products, and considering the level of production of these enterprises, its competitiveness with foreign products was studied. A study was conducted considering the motivations for technology preference. That is, it helped to determine the main situation of internal supplies, which should be solved by the efforts of the state within the framework of the policy of import substitution. The conducted analyzes showed that due to the lack of Russian analogues in the market, enterprises used imported products, technologies and services. In addition, they listed that the insufficient quality of supply in the territory of Russia and the non-compliance with the technological requirements of enterprises cause the main problems. They concluded that "prices, terms of delivery and payment, issues of technical service and service quality influenced the choice of Russian enterprises to a lesser extent in favor of imports." [5]

Research scientists I. V. Grebenkin and I. O. Botkin conducted a study on the impact of imports on the dynamics of development of the regional manufacturing industry. The purpose of this study was to identify the most import-dependent zones and study their impact on the dynamics of industrial production development. In the period from 2005 to 2014, the empirical analysis of the import composition along with the volume of use of the production industry of the regions was carried out and grouped based on the assessment of their sustainability indicators. The results of the study showed that large volumes of imports are concentrated in regions with a high concentration of industrial sectors, and this made it possible to distinguish the regions with the greatest risk for the manufacturing industry in a negative external economic situation. "As the demands increased, it was possible to see that the high import share of the regions had a competitive effect on the domestic market as well as on the foreign market. They concluded that the production industry of these regions is the weakest region in a crisis situation as a result of negative changes in external factors.[6]

Bashir Al Hemzavi and Natacha Umutoni conducted their research on the impact of exports and imports on economic growth. The results of their study showed that there is a long-term positive relationship between gross domestic product exports and imports along with gross capital, labor and technology variables. It is clearly proven that one percent increase in export value has an effect on GDP growth of 0.05 percent and one percent increase in import is 0.32 percent. As a result of the research, "No country in today's world can live in economic isolation. Various sectors of the economy of all countries depend on international cooperation. "This has led to the international movement of goods and services, labor, technology, investment funds and business entities."[7] Similarly, they proposed to continue implementing export or import-based policies by promoting national export strategy and technology.

Several other scientists E.A. Fedorova, D.D. Ayrapetyan, S.O. Musienko, D.O. Afanasiev, F.Yu. Fedorov conducted his research on the impact of import substitution policy on the level of industrial production in Russia: industrial characteristics. The impact of the import substitution policy on the level of industrial production in the chemical industry and mechanical engineering was studied in the research work. Based on the forecast, a program for the development of import-substituting products in these sectors until 2022 was proposed. Taking into account the dependence on a specific sector of the economy, the process of implementing the policy of import substitution is envisaged. That is, they agreed that it is necessary to pay attention to regional differences. As a result of forecasting the index of industrial production, it was found that import substitution in the machinery and equipment manufacturing industry is effective both in the short and long term. "Implementation of the plans of measures developed by the Ministry of Industry and Trade on import substitution in this sector will serve to increase the volume of local production. These measures will not only reduce the volume of imports, but also help to reduce the level of unemployment among the population." came to the conclusion that.[8]

Scientists Askar Nailevich Mustafin, Svetlana Nikolaevna Kotenkova, Ivana Kravcakova Vozarova, Rastislav Kotulik studied the impact of import substitution policy on economic growth in their scientific research. In this study, as a component of the national economy of the Russian Federation, the issues of achieving total macroeconomic balance, adaptation to the market and reaching new levels of regional economic development, import substitution are covered. In the study, the possibility of estimating the economic development of the regions by GDP per capita was tested using the hypothesis method. An algorithm for sorting and classifying sectors and regions where the change policy was successfully implemented was used to select regions. This algorithm, if available, allows for an assessment of the cost-effectiveness of a policy. The results show that regions with import substitution economic policies are 10 percent more effective than those without. "Increasing the competitiveness of Russian industry was carried out at the expense of budget funds. In addition to the need to increase the export capacity of producers, it is possible to find a solution to the problem of effective consumer demand by proportionally reducing retail prices and comprehensively reducing production costs within the framework of a vertically integrated approach.[9]

Research methodologies. We used a number of methods in order to achieve specific results in our research in order to thoroughly analyze the issues of reducing imports and developing domestic production in our country. In order to form part of the methodology, we initially collected the information necessary for our research based on various databases and information from state agencies in our country. In particular, we used stat.uz, the official database of the State Statistics Committee, which provides and analyzes internal and external statistical data of our country, in forming the database.

[3] Дудниченко Сергей Владимирович – 2005 “Проблемы регулирования импорта в современной промышленной политике России” ГОУВПО "Государственный университет управления" Издательский центр ГОУВПО "ГУУ".

[4] Шишкина Ольга Владимировна 2010 “Развитие национальной промышленности в условиях расширения внешнеторговых отношений” Отпечатано в издательско-полиграфическоіі фирме ЗОЛ «Лика» Россия, Москва, 105203, ул. Нижняя Первомайская, д. 47.

[5] Simachev Y., Kuzyk M., Zudin N. (2016) Import Dependence and Its Substitution in the Russian Manufacturing: Business Viewpoint. Foresight and STI Governance, vol. 10, no 4, pp. 25–45. DOI: 10.17323/1995- 459X.2016.4.25.45

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1-table

Economic indicators of the Republic of Uzbekistan [10]

	IMPORT (BILLION SOUMS)	MANUFACTURING INDUSTRY (BILLION SOUMS)
2010	18 180,6	8 036,6
2011	24 809,8	10 576,3
2012	28 909,7	13 442,1
2013	32 857,6	17 806,4
2014	34 413,9	23 705,6
2015	33 943,0	28 353,9
2016	37 116,9	34 875,4
2017	48 975,7	43 861,9
2018	122 149,6	67 897,1
2019	214 370,3	93 452,1
2020	199 875,7	116 043,1
2021	279 744,0	144 523,4

In the work of the final project, which is planned to be implemented when using the secondary database, we used the data of the last 12 years (2010-2021) of the indicators of our country's economy. Also, in the research process, we used the EKK method, correlation analysis, and R-squared, F-statics, t-critical, and E-elasticity tests for model evaluation in econometric modeling. At the stage of econometric modeling, we created a linear model, that is, we use import as the main factor and percentage values of the industrial output as the variable x. We used the following linear regression model.11:

$$y = a_0 + a_1 x + e$$

Here:

a_0, a_1 – parameters of the regression model;

e – also called model error or residual.

We use the method of least squares to find the parameters of the linear model, that is, the system of normal equations 12:

$$\begin{cases} na_0 + a_1 \sum x_i = \sum y_i \\ a_0 \sum x_i + a_1 \sum x_i^2 = \sum x_i y_i \end{cases} \quad (1)$$

Alternatively, linear regression model parameters can be found using Excel, Eviews, and Stata utility packages. In the next step, we check the model in several tests. The following formula is used to determine the correlation coefficient13:

$$r_{yx} = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{\sigma_x \cdot \sigma_y} \quad (2)$$

R-squared and as follows:

$$R - squared = r_{yx}^2 \quad (3)$$

The statistical significance of each new factor introduced into the model can be checked using the special *F* - criterion. Therefore, not only the entire equation can be evaluated by the Fisher criterion (*F*-statics), but also the significance of each factor included in the regression model. The need for such verification arises from the introduction of new variables into the model. Then the Fisher criterion for the F-statics linear regression model is used by the following formula14:

$$F = \frac{r_{xy}^2}{1 - r_{xy}^2} \cdot (n - 2) \quad (4)$$

t-critical is used to check the reliability of the parameters found in the model, and Student's test is as follows 15:

$$t_{a_1} = a_1 \cdot \frac{\sqrt{n-2} \cdot S_x}{S_\Delta} \quad (5)$$

We conduct an empirical analysis by conducting an econometric modeling stage through all the formulas mentioned above. We will use the Stata14 application package for this.

Analysis and results. Implementation of the program of reforming industrial sectors, carrying out structural changes and diversification, strengthening the material and technical base, the Republic is creating the ground for the development of industrial production, and as a result, it can be seen that industry is rapidly entering the regions. For example, new industries such as building materials, automobile industry, food industry, which did not exist before, have appeared in Jizzakh. 19 large metal processing projects have been implemented in Samarkand, Syrdarya, Namangan and other regions. 54 newly established small industrial zones in Namangan will produce products worth 3 trillion soums in 2022. In addition, in the last three years, the volume of production in the chemical industry has increased by 1.5 times, and exports by 2 times, showing good results. Nevertheless, we can see that there are still many untapped opportunities and potential of regions and industries.16

If we analyze the production of industrial products according to the type of economic activity, in December 2022 itself, there are sectors in which the production of products will increase significantly compared to the previous year. For example, in the production of food products - 59,421.9 billion soums. Including metallurgical industry - 106,443.8 billion soums, chemical products - 33,350.2 billion soums, rubber and plastic products - 8,917.0 billion soums, other non-metallic minerals products - 22,374.0 billion soums, beverages - 16,336.3 billion soums, textile products, clothing, leather products - 62,757.0 billion soums , production of coke and oil refining products - 15,064.1 billion soums, production of finished metal products, excluding machines and equipment - 11,892.2 billion soums.

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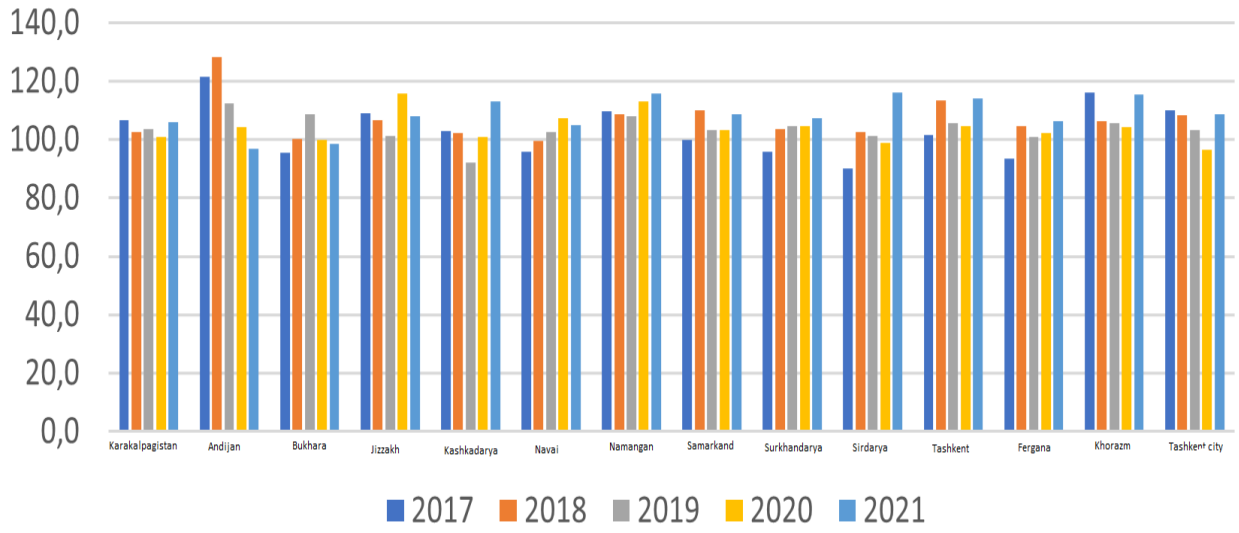
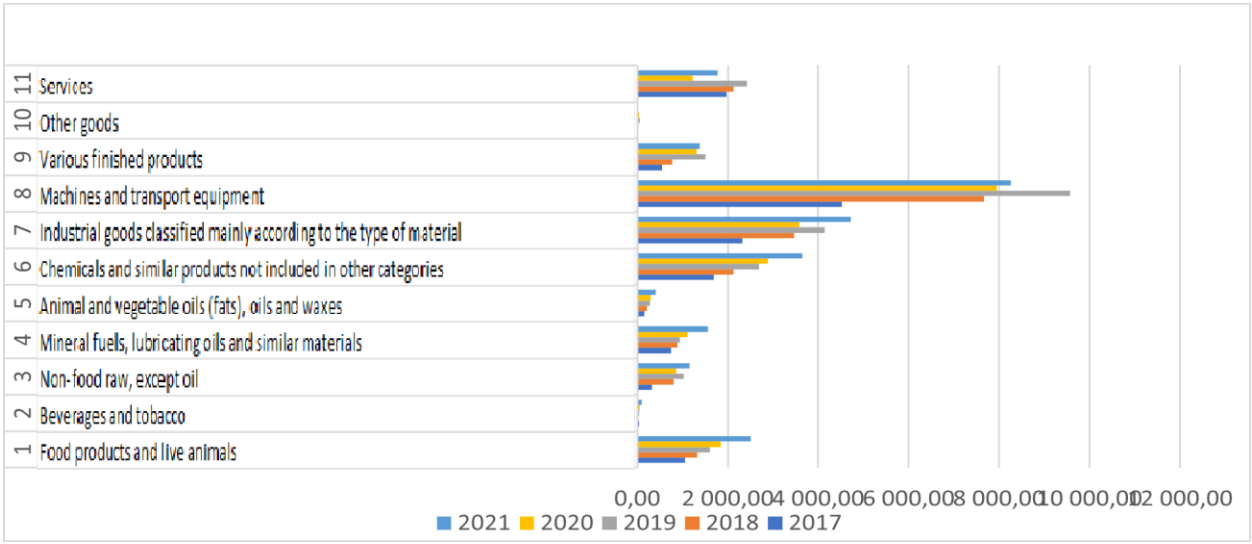


1-picture. Growth rates of industrial output per capita[17]

The rate of economic growth is related to the positive dynamics observed in the main sectors of the economy. If we analyze the picture of the growth of industrial production per capita, according to it, in 2017, Andijan - 121.4%, Khorezm - 116.3%, Tashkent region - 110.2%, Jizzakh - 109.2%, Namangan – 109.7%, the Republic of Karakalpakstan – 106.7%, Kashkadarya – 103.0%, Tashkent – 101.5%, formed at the expense of the regions, and a very small share is Syrdarya – 90, 3%, Fergana – 93.4%, Bukhara – 95.6%.

According to the data of the State Statistics Committee, in January-July 2021, as part of Uzbekistan's foreign trade turnover, exports amounted to 8.1 billion US dollars, while imports equaled 13.4 billion US dollars. Liberalization of foreign trade, reduction of various tariff and notary restrictions, measures to eliminate monopoly are being gradually implemented in our country. Also, by diversifying the geography of foreign trade, types of products and raw materials, as well as retailers and supplier countries, practical measures are being taken to ensure stable economic growth, satisfy the population's demand for food products, and ensure price stability.



2-picture. Import content[18]

In Figure 3 above, we can see that the content of imports has doubled over the last five years, and in 2017 it totaled 13,370.3 mln. amounting to US dollars, by 2021 - 25,507.7 million. We can see that the US dollar has increased. It is obvious that a large amount of goods, mainly cars and transport equipment, were imported. In 2017 - 4,517 and in 2021 - 8,252.4 million. The United States established the dollar. In 2017, industrial goods classified according to the type of material - 2,325.9 million U.S. dollars, chemicals and similar products not included in other categories - 1,695.7 million U.S. dollars and food food products and live animals - 1,049.0 million USD and doubled in 2021. The least amount of imported products are animal and vegetable oils (fats), oils and waxes - 160.1 million US dollars and mineral fuel, lubricating oils and similar materials - 742.1 million US dollars and it is expected to double in 2021.

After all the above statistical analysis, we will perform a correlation-regression analysis. In doing so, we achieved the following results directly using the stata14 application package:

[17] https://stat.uz/uz/rasmiy-statistika/industry-2
[18] https://stat.uz/uz/rasmiy-statistika/merchandise-trade-2

	Y	X
Y	1.0000	
X	0.9784	1.0000
	0.0000	

3- picture. Correlation analysis matrix [19]

1. A correlational analysis was performed. It confirmed the strong direct proportional relationship between the import value and the volume of industrial production, as well as the significance of the found correlation coefficient in terms of p-value. This means that the volume of industrial production increases proportionally with the volume of imports.

Source	SS	df	MS
Model	8.7769e+10	1	8.7769e+10
Residual	3.9231e+09	10	392311286
Total	9.1692e+10	11	8.3356e+09

Number of obs	= 12
F(1, 10)	= 223.72
Prob > F	= 0.0000
R-squared	= 0.9572
Adj R-squared	= 0.9529
Root MSE	= 19807

Y	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
X	1.969868	.1316989	14.96	0.000	1.676425	2.263312
_cons	-9303.689	8742.248	-1.06	0.312	-28782.63	10175.25

4- picture. Regression analysis result[20]

2. Regression analysis was performed. Regression analysis was performed using the Stata14 application package. In it, the parameters of the linear regression model were found and had the following form:

$$Y = -9303,689 + 1,969868 \cdot X + e$$

In this:

$$Import = -9303,689 + 1,969868 \cdot Manufacturing$$

Based on the OLS model, the change in the volume of industrial production by an additional 1 billion soums means that the import value will increase by 1.9 billion soums on an empirical basis.

```
Average marginal effects                        Number of obs   =         12
Model VCE    : OLS

Expression   : Linear prediction, predict()
ey/ex w.r.t. : X
```

	ey/ex	Delta-method Std. Err.	z	P>|z|	[95% Conf.	Interval]
X	1.338757	.5432722	2.46	0.014	.2739627	2.403551

5- picture. Average marginal value[21]

Also, the elastic value of the parameter of the linear model found through regression analysis was found. Based on this, a 1% change in industrial production volume represents a 1.33% change in the output factor, and this value is significant in terms of p-value.

3. Testing the built model. As we mentioned in the methodology, we analyze the reliability of each factor included in the regression model according to the t-student test. The t-critical value of the cons coefficient of the model is insignificant in terms of p-value, which means that it is unreliable. Since the coefficient in front of the influencing factor was

[19] Muallif hisob-kitob natiajasi
[20] Stata14 amaliy paketi orqali olingan muallif hisob-kitobi
[21] Muallif dastur orqali topgan natijasi

significant in terms of p-value, it was expressed as reliable. In addition, we can see from F-statics how important the selected model shape is. According to the results of regression analysis, F=223.72 and it is significant in terms of p-value. This is a proof that the chosen linear regression model (OLS model) is chosen correctly.

Conclusions and suggestions. Despite the fact that measures are being taken to expand the production of localized goods that replace imports, the volume of imports in our country is allowed to increase unreasonably. This leads to the inefficient use of foreign currency funds that can be directed to the implementation of important projects for the economy of our country to further expand the volume of production and create new jobs. The success of important socio-economic tasks such as improving the sectoral and territorial structure of the national economy, ensuring the rational employment of labor resources, increasing the competitiveness of national enterprises, and achieving economic security is largely dependent on increasing the level of localization of the production of finished products, components and materials on the basis of industrial cooperation. depends. Because as a result:

- stable and consistent development of the economy, reducing its dependence on external factors;
- to accelerate the implementation of new effective technologies in production processes;
- positive development of foreign economic activity;
- expansion of export potential by conducting an industrial policy aimed at creating high added value;
- it is possible to achieve results such as reducing the content of imports.

As a result of consistent reforms carried out in our country, a number of measures are being implemented to increase the volume of production and expand the types of industrial products, to satisfy the needs of the population for consumer goods. However, we came to the conclusion that the absence of a single system for the localization of industrial production in the republic is the reason for the underutilization of production capacities and the decrease in the level of creation of the added value chain through deep processing of local raw materials.

During our research, the results showed that in the current state of foreign trade in our country and its regions, there is no possibility of receiving stable foreign exchange earnings from the export of goods and services. The priority of raw materials in the structure of exports and the narrowness of the range of exported goods make our country and its regional economy dependent on economic changes in world markets.

Also, there are cases of inefficient use of imported technological equipment in our country, which is hindered by issues such as land allocation, construction permits, and connection to communication networks. It can be seen that there are opportunities to achieve economic efficiency as a result of reducing imports through localization of production, for which:

- Creation of a unified system for localization of production of industrial products in Uzbekistan;
- to further accelerate the processes of localization of production in sectors and regions;
- mastering the production of components, spare parts and materials through full and effective use of existing production capacities;
- it is appropriate to pay special attention to the expansion of cooperation relations in the industry and optimization of the volume of imports.

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