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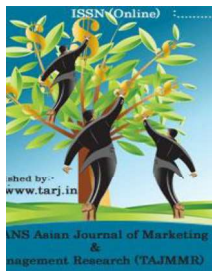
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### ECONOMETRIC ANALYSIS OF THE IMPACT OF THE INVESTMENT CLIMATE ON THE SUSTAINABILITY OF SOCIO-ECONOMIC DEVELOPMENT OF NAVOI REGION

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#### ABSTRACT

*This article provides an econometric analysis of the impact of the investment climate on the sustainability of socio-economic development of Navoi region in the current situation. It is well known that among the factors affecting the stability of the world economy, socio-economic development of countries and regions, there are emergencies and threats of global significance, the impact and vortex of which affects everyone equally. This will provide an opportunity to address important social issues, such as increasing employment and incomes in the first place.*

**KEYWORDS:** *Investment, Investment Environment, Investment Potential, Investment Activity, Business Environment, Regression Equation, STATA 15 Program, Bruish-Godfrey Test, ICOR Index.*

#### INTRODUCTION

In the context of modernization and liberalization of the economy, the growing importance of ensuring the attractiveness of the investment environment and the formation of new regional

centers in the form of special economic zones has led to increased competition in attracting investment, highly skilled labor and promising infrastructure projects.

Indeed, increasing the investment attractiveness of a region has a direct impact on the sustainability of its socio-economic development, i.e., the growth of a region's investment attractiveness strengthens the sustainability of its socio-economic development if other factors do not change.

It is well known that among the factors affecting the stability of the world economy, socio-economic development of countries and regions, there are emergencies and threats of global significance, the impact and vortex of which affects everyone equally. In particular, in the current context of the COVID-19 pandemic around the world, all economic values, international organizations, economists and scientists are revising the forecast indicators for the development of the regions. Taking into account the indicators related to safety, sanitation and public health is becoming increasingly important in the list of indicators that ensure investment attractiveness.

According to new forecasts released by the International Monetary Fund for 2020, the global economy is expected to shrink by 3% this year as a result of the pandemic in the baseline scenario. This is 6.3 percentage points lower than the forecast published in January this year. If the fight against the virus continues and quarantine continues into the second half of the year, then the global economy is worried that it could shrink by 6 percent. Also in 2020, the recession will be recorded in 157 out of 194 countries.

However, this does not diminish the importance of studying the impact of its investment attractiveness on the sustainability of socio-economic development of the region, but rather requires a new look and solutions to its problems.

To anticipate and develop scientifically based measures to prevent problems such as the unprofitability of investments in the country and its regions, or the limitation of the full capacity of the production process due to undefined risks and dangers in the effective use of investments. Ensuring the sustainability of development, the achievement of global competitiveness of the country and its regions - requires an in-depth and comprehensive analysis of the factors affecting investment efficiency, the identification of quantitative links between them. Therefore, the purpose of this article is to conduct an econometric analysis of the impact of the investment climate on the sustainability of socio-economic development of Navoi region. To achieve this goal, the following tasks are set out in this article:

- Clarification of the problems of socio-economic development of the region in modern conditions, the importance of ensuring the investment attractiveness of the region in this process;
- Determination of the exact scientific calculation of the levels of risk and risk arising in ensuring the stability of socio-economic development and investment attractiveness of the region in the conditions of uncertainty;
- Interpretation of the conditions and results of the methodology of econometric analysis of the impact of the investment climate on the sustainability of socio-economic development of Navoi region;

### **The degree of research on the topic**

Ensuring the attractiveness of the investment climate in the regions and the rational use of the factors represented by its indicators, research on their effective management is a relatively new direction, which requires in-depth research in this area.

Based on the analysis of the existing scientific and methodological base in this area in our country, the following areas of study of indicators for calculating the attractiveness of the investment climate and scientific and methodological aspects of evaluation can be identified:

1. Concepts of regional production complexes, economic zoning, location and development of productive forces of scientists of the Regional School of Economics.
2. Concepts of effective investment policy of scientists of the National School of Investment Policy in order to ensure the competitiveness of the regions.
3. Concepts of improving the scientific and methodological framework for increasing the attractiveness of the investment climate in Uzbekistan by the representatives of the School of investment and innovation potential, investment climate, investment efficiency and investment climate.

As J. Downs and G. Elliott [1] point out, “the investment environment is the economic, financial, and other conditions that affect the efficiency of an investment”. Many foreign researchers interpret the content of the concept of "investment environment" as close to the concept of "business environment", interpreting it as a set of external conditions that shape the level of risk of investing capital and the attractiveness of investing in a particular object.

According to S.Yu. Sivakova [2], these categories are used in foreign practice as completely synonymous concepts. Representatives of the Institute for Development Studies (IDS, University of Sussex) M. Moore and H. Schmitts [3] emphasize the need to differentiate these concepts and describe the factors that justify it. In their view, an improvement in the business environment (or investment climate) implies an opportunity to reduce the costs of running a business, while an improvement in the investment environment means an opportunity to reduce the risks of investing capital.

According to local economist D. Gozibekov [4], “the attractiveness of the investment climate is a set of conditions created for investors, the existence of guaranteed conditions and opportunities”.

According to Sh. Mustafakulov [5], “the integrated investment attractiveness of the country is the general level of objective socio-economic, natural-geographical and environmental indicators that characterize the conditions of economic development of the country and have a positive or negative impact on the formation of investment activity”.

Attracting investment is an important task for all countries. The organization of expanded reproduction, the implementation of strategic development programs, the acquisition of new markets require additional investment.

In the framework of the new investment policy in the context of modernization and liberalization of the economy, taking into account the prospects of development of the country, the main task is to ensure the attractiveness of the investment climate and systematic study of effective

governance. It is expedient to develop an improved mechanism for this by coordinating and harmonizing the balance of vital factors such as “investment potential”, “investment activity”, and “business environment”.

This new approach allows you to:

- To give a new interpretation of the concept of “attractiveness of the investment environment” on the basis of a systematic approach and to develop an improved terminological apparatus;
- Scientific analysis of the factors determining the need for a new approach to ensuring the attractiveness of the investment climate in the Republic of Uzbekistan and substantiation of measures for their effective management;
- Development of a methodology for assessing the state of the investment climate, taking into account the factors and effectiveness, through the effective use of the potential of the region, determined by factors such as natural and economic, financial, labor, corporate governance and effective functioning of local governments;
- Provide methodological recommendations for forecasting the prospects for effective management of the investment climate through a systematic study of factors and individual assessment of economic growth, modernization and diversification, the business environment, the state policy of free and special economic zones and the openness of the economy with complex coefficients ;
- Development of a methodology for assessing the prospects of economic development and its impact on investment potential, based on the attractiveness of the investment climate and the laws of innovative development, which allows to identify priorities for its effective management;
- Scientific substantiation of the prospects of using the best foreign experience in Uzbekistan to increase the activity of the investment climate;
- Development of a system of comprehensive measures aimed at ensuring the attractiveness of the investment climate by the state and the implementation of medium and long-term objectives of effective management on the basis of a new conceptual scheme of studying the interrelationship of various factors.

## **THE MAIN FINDINGS AND RESULTS**

Attracting investments is crucial for the development of the country's economy, the construction and reconstruction of new enterprises equipped with modern equipment and technologies. This will provide an opportunity to address important social issues, such as increasing employment and incomes in the first place. Therefore, it is important to provide economic incentives and create the necessary conditions for enterprises that are actively attracting foreign investment.

It is impossible to carry out structural changes and modernization of the economy, re-equip enterprises with modern equipment and launch the production of competitive products without attracting foreign investment, especially in the leading sectors and expanding the participation of foreign investors. Attracting foreign investment in the economy of our country will accelerate the expansion of economic opportunities and serve to ensure sustainable economic growth through

the use of domestic opportunities and resources in all areas, the development of new techniques and technologies.

Investment is a factor that drives any economy and ensures its development, and it is necessary to increase the volume of investment in the national economy, using all opportunities wisely.

The largest enterprises located in Navoi region are monopolies not only in the region but also in the country. Navoi MMC alone provides 10% of total consumer goods and 18% of budget revenues in the country. Currently, the plant employs more than 54,000 people. Today, the balance of the combine is estimated at 1.3 billion US dollars, while its market price is estimated at 11 billion US dollars [6].

In 2018, a different trend and disparities in funding sources can also be observed. The largest increase in funding sources was due to foreign loans and investments, which in 2018 increased by 3.7 times compared to 2017. It should be noted that such a large increase was due to the commissioning of 8 facilities in Navoi MMC worth \$ 1.2 billion and a sharp increase due to the projects implemented by JSC "Navoiyazot". Due to the effective implementation of these projects, gold production has increased by 2.5% and silver production by 37% over the past three years.

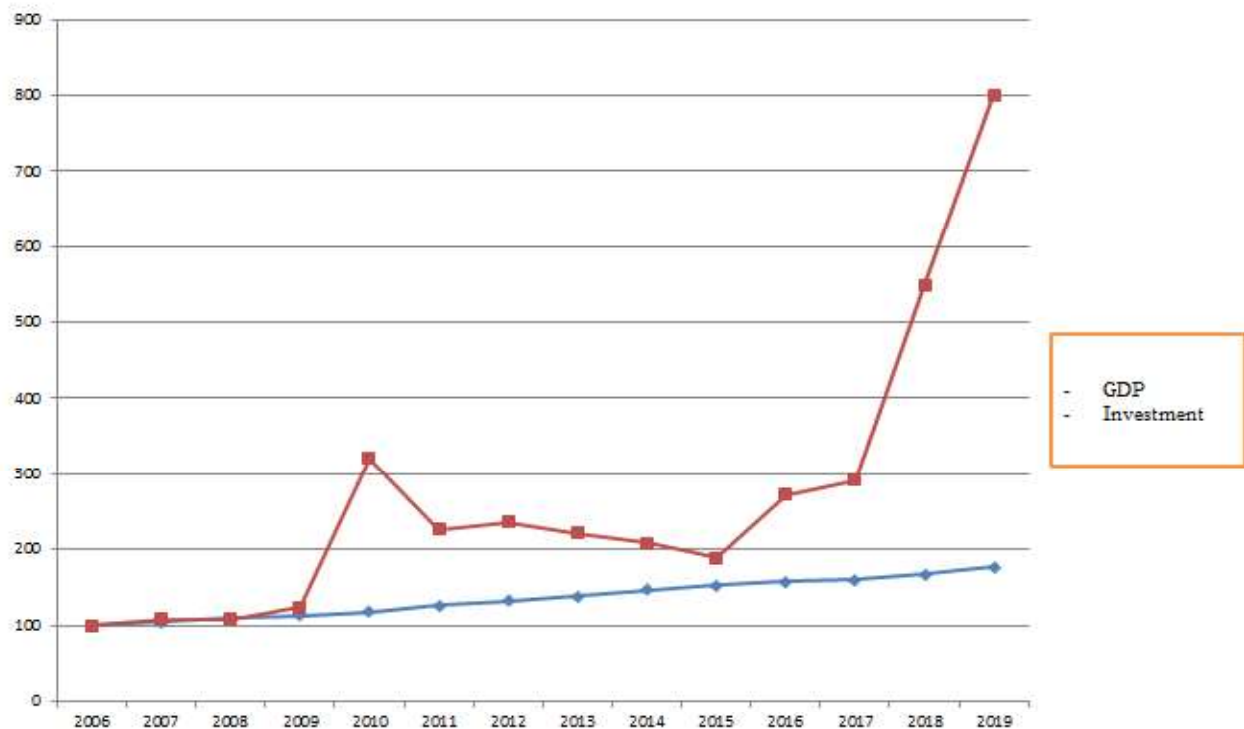
In this regard, it is important to analyze the Navoi region, the object of our study, its role in ensuring economic development of the country, the complex activities carried out there, the conditions created for entrepreneurship and the development of institutional structures to ensure competitiveness. In Navoi region, it is expedient to study the impact of fixed capital investment on gross regional product through the econometric analysis of the annual growth rate of gross regional product, to reveal new trends and patterns in the development of the national economy.

For this purpose, in 2006-2019, the factors influencing the gross regional product of Navoi region -  $Y_t$ : investments in fixed assets last year -  $I_{t-1}$  and the gross regional product of the previous period -  $Y_{t-1}$ .

The reason why the econometric model includes the values of last year's investments in fixed capital is that many investment projects take some time to materialize. Therefore, the gross regional product for the current period was taken as a factor influencing last year's fixed capital investment. The purpose of adding the gross regional product of the previous period is explained by the fact that the equation may be an autocorrelation mummy. If the value of the related variable is included in the model for the previous period, the autocorrelation problem can be eliminated. In addition, taking into account the impact of inflation in the period under review, data for all years were obtained using the gross regional product deflator in terms of growth compared to 2006. This means that each indicator shows the percentage change compared to 2006.

As can be seen from Figure 1, Navoi region pursued an active investment policy in 2006-2019, as a result of which the volume of investments in fixed assets increased by almost 8 times. Gross regional product also has a steady growth trend, almost doubling during the period under review.





**Figure 1. Dynamics of gross regional product and investments in fixed assets in Navoi region (where 2006 = 100%) [1]**

Using this data, we need to determine the parameters of the following regression equation.

$$Y_t = \beta_0 + \beta_1 I_{t-1} + \beta_2 Y_{t-1} + \varepsilon_t \mathbf{(1)}$$

Here, the coefficients  $\beta_k$  indicate the effect of the factors obtained on the gross regional product.  $\varepsilon_t$  is the stochastic part of the regression equation and represents the randomness in the model. Entering the data into the STATA 15 program, we obtain the following results.

**TABLE 1 THE VALUES OF THE PARAMETERS OF THE REGRESSION EQUATION [2]**

$Y_t$	Coef.	Std. err.	T	P> t	95 % Conf. Interval	
$I_{t-1}$	0.014	0.006	2.50	0.031	0.002	0.027
$Y_{t-1}$	0.971	0.030	32.73	0.000	0.905	1.037
Cons.	6.493	3.180	2.04	0.068	-0.593	13.580

According to the results of the table, the effect of the two independent variables obtained on the related variable is statistically significant at the 5% significance level. This is because the p-value of both t-statistics is less than 0.05.

Using the data in Table 1, the following regression equation can be constructed:

$$Y_t = 6.493 + 0.014 * I_{t-1} + 0.971 * Y_{t-1} \quad (2)$$

According to the regression equation, a 1% increase in investment over the past period, provided that other factors remain unchanged, will increase gross regional product by an average of 0.014%. An increase of 1% in the gross regional product of the previous year will lead to a corresponding increase in the gross regional product of the current period by 0.971%. The analysis shows that investment is important in ensuring economic growth in the region, especially in the medium term, when investment projects have a strong impact on economic growth.

**TABLE 2 RESULTS OF THE CRITERION OF THE REGRESSION EQUATION [3]**

Source	SS	Df	MS	Number of obs.	=	13
Model	6620.04	2	3310.02	F(3,12)	=	1250.48
Residual	26.47	12	2.65	Prob>F	=	0.000
Total	6646.51	14	553.88	R-squared	=	0.996

Of course, in econometrics, each developed regression equation needs to be evaluated on the basis of additional criteria. Therefore, the regression equation is also examined against a number of criteria (Table 2). According to the table, it follows that the regression equation is adequate and reliable, because the p-value of the F-statistic is very small (0.000) and the coefficient of determination (R<sup>2</sup>) is 99.6%. Hence, the obtained independent variables explain the related variable, i.e., the change in gross regional product by 99.6%.

In the next step, we check whether there is an autocorrelation in the regression equation. To do this, we use the Brosch-Godfrey test.

**TABLE 3 BROYSH-GODFREY TEST**

Lags	Chi2	df	Prob>chi2
1	1.3	1	0.25

*Source: The results were calculated by the author in the STATA 15 program.*

The Brosch-Godfrey test consists of the following zero and alternative hypotheses:

$H_0$ : There is no autocorrelation in the regression equation;

$H_1$ : There is an autocorrelation in the regression equation.

According to the data in Table 3, the Brosh-Godfrey test has ar-value of 0.25, i.e., we cannot reject the zero hypothesis that there is no autocorrelation. Hence, there is no autocorrelation in the regression equation under study.

It is known that in the world practice the ICOR (Incremental Capital-Output Ratio) index (capital capacity of GDP or gross regional product growth) is used to assess the effectiveness of investments in a particular region. It is defined as follows [7]:

$$ICOR = \frac{I}{\Delta GRP} * 100\%$$

Here:

**I** - investments in fixed assets;

**GRP**- Gross regional product volume;

**ΔGRP%** - Growth rate of GDP, in percent.

The lower the ICOR index, the higher the efficiency of investment in economic growth in the region. The importance of investment in the economic growth of the region is high, and each unit of investment allows creating a product that is higher than the previous level. This requires further strengthening of investment in the economy in the current situation.

The higher the ICOR index, the lower the efficiency of investment use in the economic growth of the region. This indicates the low importance of investment in the economic growth of the region, as well as the mismatch between economic growth and foreign investment.

In 2016, the ICOR index in Navoi region was 1.8, but in 2017 it was 9.1. In industrialized countries, it is noted that an index of 2.5 is acceptable. It can be seen that the growth rate of investment in these years was higher than the growth rate of GRP. This, of course, shows that, as noted above, the efficiency of the use of investments in the economic growth of the region is low. In subsequent years, ie in 2018, the ICOR index reached 4.1 and in 2019 1.5, reaching the level of international standards in terms of quality.

## CONCLUSION

In general, in this scientific article on the results of econometric analysis of the impact of the investment climate on the sustainability of socio-economic development of Navoi region, we came to the following general conclusions:

1. Econometric analysis of the impact of the investment climate on the stability of socio-economic development of the region ensures the correct distribution of investments based on the potential of the regions and their sectors of the economy in the face of uncertainty, to prevent deficits and surpluses.
2. Improving the methodology of econometric modeling of the impact of the attractiveness of the investment environment on the sustainability of socio-economic development of the region; Ensuring sustainable growth and global competitiveness of the regions and their sectors of the economy, as well as an in-depth and comprehensive analysis of the factors affecting investment efficiency; allows the identification of quantitative relationships between them.
3. This econometric analysis proves that investments in fixed assets are an important factor in ensuring economic growth in the region. Indeed, the investment activity of enterprises in the region, first of all, leads to an increase in technological and economic efficiency. This will allow enterprises to produce products that are competitive in the domestic and global markets, and thus further increase production. Therefore, the continuation of the pace of investment activity in the region in recent years is expected to lead to even greater positive changes in the welfare of the region in the near future.

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