Increasing the role of Uzbekistan in the international labor market, focusing on European countries, not Asian countries

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Abstract: This research compare the disadvantages and opportunities facing Uzbekistan in its efforts to improve its position in the international labor market. It analyzes the current situation of state of Uzbekistan's workforce, identifies key areas for improvement, and explores strategies for enhancing competitiveness and promoting labor mobility. The article considers factors such as, minimum wage, unemployment, labor market policies, and the attraction of foreign investment, offering recommendations for strengthening Uzbekistan's role in the global economy.

Our study specifically used time series models, namely OLS and VAR models. Through these studies, we can know exactly which areas are failing and which areas we can focus on to achieve the desired results. However, it also shows how low the effectiveness of the actions we are currently taking is.

Keywords: Labor market, migration, employability, workforce, labor migration.

Introduction: A substantial portion of Uzbekistan's population is young and of working age. This presents both a challenge (providing adequate employment) and an opportunity (developing a skilled workforce). There's a notable mismatch between the skills possessed by the labor force and the needs of the modern global job market. Many workers lack the necessary technical and soft skills (e.g., language proficiency, digital literacy). A significant portion of the workforce is engaged in the informal sector, which presents challenges for labor rights and tracking labor market trends. Underemployment and job insecurity are problems. Many workers may be employed, but not to their full potential or in secure positions. Uzbekistan has a history of labor migration, with many workers seeking employment in Russia and other countries. Remittances are a significant source of income for many families. The international labor market is highly competitive. Workers from Uzbekistan need to demonstrate competitiveness compared to workers from other countries. The global economy requires workers with advanced skills in technology, communication, problem-solving, and adaptability.

However, Uzbekistan's participation in the international labor market is very low. Migration flows from foreign countries are high only to a few Asian countries, while the number of labor migration flows to European countries is very low. Uzbekistan's overall low participation suggests a lack of connection with the global labor market. This could be due to limited awareness of opportunities, language barriers, and insufficient skills. Most Uzbek workers who are active in the international labor market often occupy low-skilled, low-paying jobs. This limits their potential earnings, skill development, and overall contribution to Uzbekistan's economy. Many migration flows are informal, leading to reduced protection for Uzbek workers abroad and fewer remittances benefiting the formal economy. [2].

The main goal of the study is to increase the role of Uzbekistan in the labor market and thereby increase the share of benefits from it in Uzbekistan. The main questions asked in this regard are:

• What is the current skill set of Uzbek workers, and how does it align with international labor market demands? This probes into the skills mismatch and identifies areas needing improvement.

• To what extent are current government policies and labor market regulations enabling or hindering Uzbekistan's competitiveness in the international labor market? This explores policy effectiveness and needed reforms.

• What are the current migration patterns for Uzbek workers, and what are the economic and social outcomes of those patterns, both for Uzbekistan and for workers themselves? This looks at current trends and their implications.

• What are the specific barriers preventing Uzbek workers from accessing higher-paying, higher-skilled jobs in European and other developed economies? This focuses on specific challenges in particular regions.[3].

The significance of the research explains why this analysis is importantand highlighting its potential impact and how it contributes to foreign exchange. But currently, the work being done to increase the role of the labor market in Uzbekistan is ineffective. The number of unemployed is increasing, but there are few qualified workers. The majority of the population goes to neighboring countries only for illegal work. The main key research questions include:

1. What obstacles to increasing Uzbekistan's role in the international labor market?

2. How can Uzbekistan's role in the international labor market be improved in the short term?

3.What are the useful and effective strategies to increase the inflow of labor from Uzbekistan in European countries, especially in developed countries?

This research has important positive implications for the future of Uzbekistan, not only for the increase in international cooperation, but also for the economy of Uzbekistan, which is expected to have a significant positive impact. Emphasize the interconnectedness of these benefits. Success in the international labor market will create ripple effects throughout the Uzbek economy and society.

• Highlight the long-term, strategic importance of your research. Your article is not just addressing a current challenge; it's helping lay the groundwork for a stronger, more prosperous future for Uzbekistan.

• Reiterate that your study will provide actionable, evidence-based recommendations that will contribute to achieving these positive outcomes.

Literature Review

Such research has been the main focus of developed countries, especially when they are just entering the labor market. In such studies, researchers focused on the number of unemployed people and the average or minimum wage of the population in the country. Research aims to identify shortcomings and recommend perfect solutions in a short period of time. Solving such problems has been shown to have positive effects on economic growth.

For example, B.Wilges (2022) emphasizes that the main area of focus in entering the international labor market is to further support the improvement of the knowledge and skills of the population under the age of 40 and ensure their departure to work abroad. The main problem faced is the lack of practical skills among the population under the age of 40. The main focus of his article is on this problem and as a solution he emphasizes the need to increase the number of educational institutions that teach courses in professions that are in international demand. [4].

Similarly, Marjolijn, (2019) purpose that employment of young adults with chronic physical conditions entering the labor market after finishing post-secondary education remains behind compared to typically developing peers. The aim of this study is to evaluate changes in their paid employment levels after following a vocational rehabilitation intervention that countries that focus on diversification into manufacturing and high value-added sectors tend to achieve more sustainable economic growth and as a solution, he insisted on attracting workers to foreign countries by further increasing their salaries. As a result, the number of people willing to go abroad is expected to increase by at least 40 percent. [5].

And another researchers M.Miskelova , P. Adamec (2022) point out that the main problems in entering the international labor market are the average salary and the age range of the unemployed over 40. As a solution to this, he specifically emphasizes increasing the population. He explains that when the number of young people increases, it will be possible to supply a workforce that can meet foreign demands. And he cites evidence in his article that the number of qualified employees is expected to increase in the coming years as a result of the increase in the population. [6].

 Rainer Diaz-Bone(2019) emphasizes that focus is on the situation of graduates one year after graduation and interesting them to the internationak market. For many academic disciplines no clearly defined labor market does exist. The concept of labor market is a metaphor, which is used by economists to study employment and wages. Like any notion of "market" it presupposes some shared common knowledge about abilities and skills of academics and common

knowledge about existing job opportunities in labor market. The article concludes that it is much easier to arouse interest in the labor market among young graduates, and through this they will have the opportunity to gain foreign experience and a high salary, and even continue their studies abroad, and such opportunities do not go unnoticed by young people. In the coming years, their percentage is expected to increase by 20 percent. [7].

Khahan Na-NanIn (2013) emphasizes that in Thailand, increasing the percentage of teenagers sent abroad to work is a solution that can be solved by increasing their job satisfaction. When their job satisfaction is high, other young people will also be interested in working abroad and improving their skills. As a result of this study, the number of young people who want to work abroad is expected to increase by three times [8].

Another researcher Christopher J (2006) explains that a minimum wage in a country has been shown to increase the desire of the younger generation to work and improve their skills abroad. Researcher analyze the effect of changes in minimum wages on labor market outcomes and welfare. Although minimum wage rises may or may not lead to increases in unemployment in our model, they can be welfare-improving to labor market participants on both the supply and demand sides of the labor market [9].

Researchers who have done research in this field have brought about quite positive changes. But there are some points that have been overlooked in their research. Their work has been found to be excellent in the fields of European countries, but in Asian countries, unlike that, the solutions in it may not show enough positive results. And one more thing to note is that we can see that their research lacks some empirical studies.

It should be noted that Uzbekistan is currently among the developing countries. It is necessary to learn to develop its lagging sectors. The main research topic in this article is one of such controversial situations, namely, increasing the number of young people in Uzbekistan going abroad to work, increasing their interest not only in neighboring countries, but also in developed countries such as Japan, America, and the Philippines. Many studies have been conducted in this field in Uzbekistan, but they have not conducted empirical research in their work, and the main reason for this is the lack of accurate quantitative data.

METHODOLOGY

Theoretical framework

The Neoclassical Labor Economics model, which is considered one of the statistical models, has an advantage over other models in that it has a logical foundation for numerical modeling. Another advantage is that it relies on logic in decision-making. The neoclassical labor market began to develop at the end of the 19th century. It is considered to have improved upon previous classical economic theories by adopting new approaches. Neoclassical labor economics originated from economists such as Adam Smith, John Stuart Mill, and David Ricardo. In 1960, Gary Backer used it in his theory called Human Capital. He used the neoclassical labor economics model to analyze the rent of labor based on education and skills [10].

Another great economist, Jacob Mincer, in his article Investment in human capital, describes the income during work using the neoclassical labor economics model. Jacob Mincer, who widely used the theory of neoclassical labor economics in his articles, identified the interaction of factors that affect the performance of workers through the neoclassical labor economics model [11].

The most complete statistical method for studying human capital is neoclassical labor economics because it closely studies the supply and demand of the labor market, assumes rational choices, estimates market equilibrium, and is based on empirical data.

In addition, Marianne Bertrand, in her article "A Field Experiment on Labor Market Discrimination", made extensive research on improving the quality of the labor force and increasing the number of participations in the labor market, using the Neoclassical labor economy model. [12].

In 2021, Katherine Meckl, in her article titled " The role of job training programs in enhancing labor market participation", explained how specific job training programs play a positive role for entering the international labor market and increasing income, perfectly using the Neoclassical Labor Economy model. has given. In his article, using the neoclassical labor economy model, he perfectly explained the difference between the population entering the international labor market without special training and the population with special training. [13].

Another researcher, David Card, in his 1999 article "The Causal Effect of Education on Earnings", studied the effect of education on the income of the population in the labor market through the Neoclassical Labor Economy and OLS model and made a forecast for the next years. [14].

In this same year, David Card published his work entitled Handbook of Labor Economics. In his book, labor supply and demand covers areas such as human capital and unemployment. In his book, he uses several statistical models. One of them is Neoclassical Labor

Economics. David Card uses this model to increase the scope of work of workers. mutually researched the factors that make and reduce the scope of work [15].

Another statistical model is the OLS model. The OLS model is used to find the direction and mean value of the regression coefficients of the variables. It has the possibility to give approximate results. We use the OLS model as the main model in our research. as an example, we can mention the researcher Giovanni Peri, who widely uses the OLS model in many research works. The Californian researcher analyzed the statistical results using the OLS model in his 2009 article The causes and effects of international migrations and achieved the desired results in this field [16].

Another German researcher, Christian Dustmann, widely used the OLS model in his research. In 2013, Christian Dustmann analyzed the effect of immigration along the distribution of wages using the OLS model [17].

The famous researcher Richard Freeman (1997) used the OLS model to study the factors affecting wages in the international labor market [18].

In our article titled "Increasing the participation of Uzbekistan in the international labor market", we conduct research using the Neoclassical labor economy model and Ordinary Least Squares models.

To assess Uzbekistan's export potential in our study, we will use OLS to analyze the negative and positive effects of Uzbekistan on the international labor market ```````such as:

- Unemployment rate;
- Working-age population;
- Minimum wage.
- Employment rate.
- Inflation.
- Corruption.

This approach makes it possible to determine the statistically significant factors affecting the increase of the role of Uzbekistan in the labor market and to develop recommendations for increasing the currency exchange in the country.

Empirical framework

In this paper, we use a multivariate time series model to determine the relationship between Uzbekistan's labor market share and unemployment rate, employment rate, minimum wage, corruption, inflation, exchange rate (USD), foreign direct indicators. we used a quantitative approach. Factors influencing the hypothesis are expressed as to how much the factors that we have obtained have influenced the hypothesis:

Variable name	Variable type	Description
Net Migration	Dependent	Annual Net Migration
Unemployment rate	Independent	Annual Unemployment rate
Employment rate	Independent	Annual Employment rate
Inflation	Independent	Annual inflation rates
Working-age population	Independent	Annual population of working age
Minimum wages	Independent	Annual minimum wage (sum)
Corruption	Independent	Annual corruption rate

Below is our main hypothesis:

H 0: The share of people going to the international labor market from Uzbekistan will increase not only to neighboring countries but also to developed countries.

H 1: The share of people going to the international labor market from Uzbekistan does not increase not only to neighboring countries, but also to developed countries.

In this article, we analysis the above mentioned indicators for the period from 1996 to 2023 and developed an econometric model and equations using multifactor series.This model was developed to investigate the interaction between dependent and independent variables:

Linear model:

Net Migration $=\beta 0+\beta 1$ Unemployment rate $+\beta 2$

Employment rate $+\beta 3$ Inflation $+\beta 4$ Working-age

population $+\beta 5$ Minimum wages $+\beta 6$ Corruption $+\varepsilon i$

(1), where: $\beta 0$: model intercept; εi : conditional error.

The description of the VAR model is given

below:

$Yt = a +\beta 1 Yt -1+\beta 2 Yt -2+ \cdots +\beta pYt - p +\varepsilon i$ (2)

In this article, the VAR model is applied to multivariate time series and a forecasting model is developed for

selected indicators. STATA 18 software, which is currently widely used worldwide, was used to create the model and forecast the data.The variables will be tested using three main cointegration dependent conditions to achieve the above objective.

Test for stationarity. Unit root was tested using the Augmented Dickey-Fuller (ADF) test. Do the observed variables tend to revert to the long-term trend after the shock, or do the variables follow a random walk? If the variables follow a random walk after a temporary or permanent shock, the regression between the variables is assumed to be spurious.Therefore, OLS will not give consistent parameter estimates. All series must be stationary at the same level. The ADF test can be defined as in equation (3).

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + a_i \sum_i^m \Delta Y_{t-1} + \varepsilon_t \quad (3)$$

Testable hypothesis:

H 0: $\delta = 0$ (contains unit root, data are not stationary)

H 1: $\delta < 0$ (does not contain a unit root, data are stationary).

In cointegration testing, considering cointegration, a linear combination of two or more variables may be stationary even if the variables are not individually stationary.

It is no secret that the Johansen cointegration test is used to assess cointegration. The components in the vector yt are cointegrated to the degree d and b, denoted by CI (d , b), if:

(i) All components of Y_t are I (d)

(ii) There is a non zero vector $\beta = (\beta_1, \beta_2, ..., \beta_n)$ such that the linear combination $\beta Y_t = \beta_1 Y_{1t} + \beta_2 Y_{2t} + ... + \beta_n Y_{nt}$ will be cointegrated to the degree (d − b), where b >0. The vector β is the cointegration vector. In the case b = d =1, Y_t is I (1), and their linear combination I (0).

Johansen (1991) and Johansen and Juselius (1990) developed a maximum likelihood approach using a VAR model to estimate the cointegration relationship between components in a vector variable k variable Y_t. Consider the VAR model for Y_t:

$A(L)x_i = \varepsilon_t \quad (4)$

The parameter can be represented as a vector autoregressive error correction mechanism:

$$\Delta Y_t = \sum_{i=1}^{p-1} \Pi_i \Delta Y_{t-1} + a\beta Y_{t-p} + \varepsilon_t \quad (5),$$

where $\beta = (-1, \beta_2, ..., \beta_n)$ is the vector containing r cointegration vectors, and the rate of adjustment parameter is given by $\alpha = (a, a_2, ..., a_n)$ when the rank of $\beta = r < k$, k is the number of endogenous variables. If the number of cointegration relationships is known, hypothesis testing can be performed on α and β. The lag length specification for the model can be determined from the VAR equation using the AIC and SC tests.

In addition, before performing the model forecast, five Gauss-Markov conditions were applied to determine the direction and density of the indicators: heteroscedastic problem, residual autocorrelation problem of the model, and regression models.

RESULTS

For our empirical study of Uzbekistan's export potential, the indicator we chose as a dependent variable is Uzbekistan's export volume (Ex), which was $3,393,714,865 in 2000. In the final period, i.e., in 2023, this figure reached $24,066,920,244.36, indicating an almost eight-fold increase in Uzbekistan's export volume over the past 23 years.
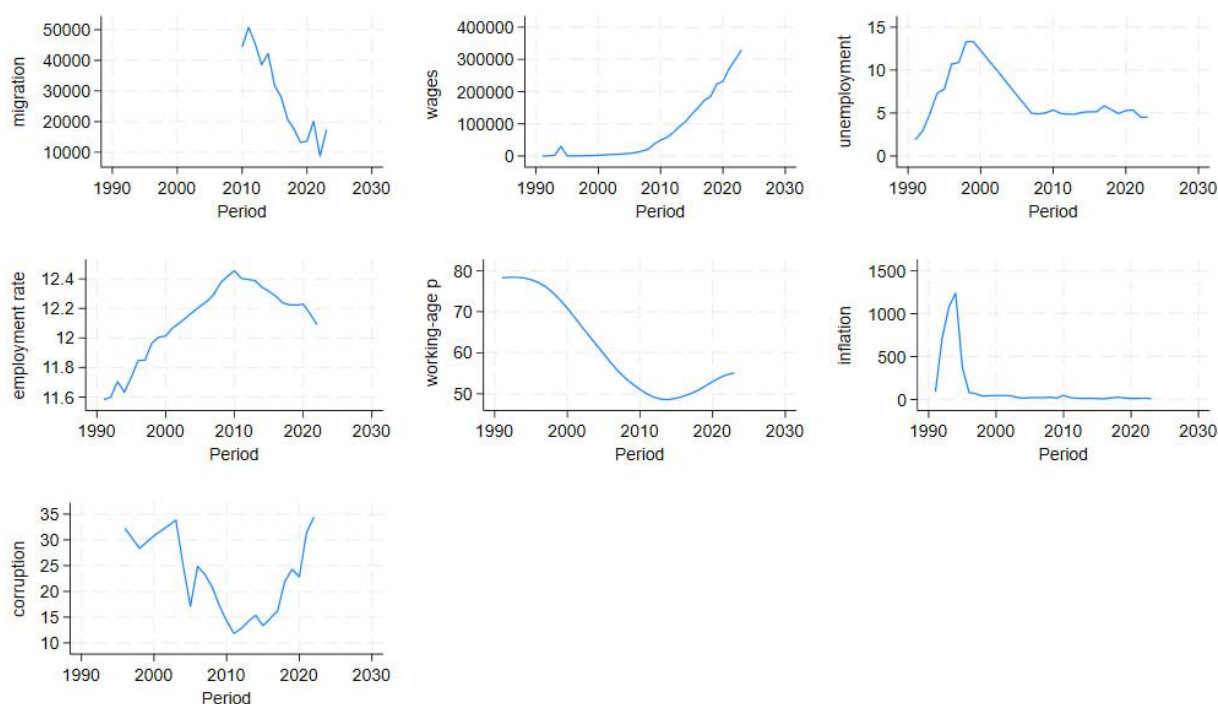
Fig. 1. Results of testing dependent and independent variables for stationarity using the graph method.

The results of the graphical method of stationarity test presented in Figure 1 indicate that the dependent variables of "Migration" are not stationary, as the average value of the statistics varies according to the stationarity requirement. These indicators, which mainly include the years 2010-2023, are graphs representing changes in migration and factors influencing it.It helps in finding potential relationships. For example, changes in migration indicate whether they are related to wages, unemployment, or employment. Decreasing the working age population and increasing wages are also related.

At the same time, migration, which are independent variables (the mean is variable, the variance is also variable), wages - (variable of variance),employment - (the mean is variable, the variance is also variable),corruption- (mean variable, the variance is also variable), working age for the specified cases according to stationarity are considered non-stationary, since they do not respond to the results. We see that the remaining independent variables, such as unemployment (Unemployment) and inflation are stationary. Because it was observed that their means and variances do not change.

Table 1. Results of testing variables for stationarity using the Dickey Fuller test.

Variables	Test statistics value	1 % critical value	5 % critical value	1 0 % critical value	Number of observations	Mac Kinnon's p-value	Degree of differentiation (0, 1, 2)
Net Migration	-5.570	-3.750	-3.000	-2.630	12	0.0000.	0
Unemployment rate	-11.355	-3.716	-2.986	-2.624	30	0.0000	2
Employment rate	-3.854	-3.716	-3.716	-2.624	30	0.0024.	1
Inflation	-4.835	-3.709	-3.709	-2.630	31	0.0000	1
Working-age population	-4.611	-4.765	-3.730	-2.626	28	0.0001	2
Minimum wages	-3.709	-3.709	-3.000	-2.623	31	0.0040	2
Corruption	-6.541	-3.750	-3.000	-2.630	18	0.0000	1

The Dickey-Fuller test is widely used by researchers around the world to test the stationarity of time series data . The advantage of this test over the graph and other tests of stationarity is that it not only allows us to know whether the statistical data is stationary or non-stationary, but if the data is not stationary, it allows us to make the non-stationary data stationary. . According to the requirement of this test, the value of the test statistic must be less than all critical values (1%, 5%, 10%). Additionally, the McKenney p-value must meet the requirement of being less than 0.05. According to Table 2, Migration Minimum Wage Unemployment Rate Employment Rate Corruption Inflation Rate variables are found to be non-stationary according to the result of this test and some are stationary after double differentiation to make it stationary. became In this test, the migration was not need double differentiation.
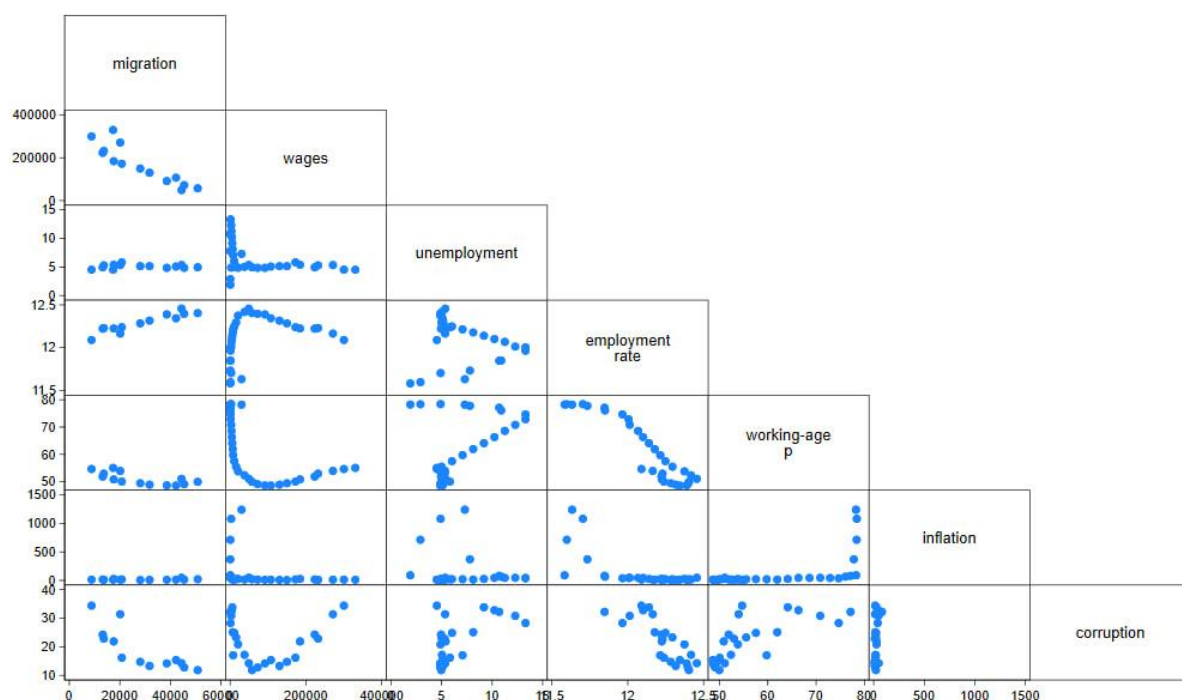

Fig.2. Correlation graph between variables

Figure 2 and Table 2 show the correlation analysis between the factorsThis table is a scatter matrix showing the pairwise relationships between several variables. It shows whether there is a relationship between migration and the variables, whether it is negative, positive, or no relationship.

Migration and wages: This relationship shows a *negative* relationship, meaning that if wages are low, migration will be high. However, in some cases, higher wages are also associated with higher migration, indicating a non-linear relationship.

Migration and unemployment: This relationship shows a linear *negative* relationship, meaning that if unemployment is high, migration will be low.

Migration and employment rate: There is a strong relationship between high migration and employment rate, and vice versa.

There is also a slight *positive* relationship between migration and the working age population.

Migration and inflation: There is no specific relationship between these indicators.

Migration and corruption: Although not in a constant state, there is a *negative* trend overall.

Wages and unemployment: There is no constant relationship between these indicators.

Wages and employment rate: There is also a non-linear trend between these. Two different relationships can be identified.

Wages and working age population: There is a slight negative trend between these indicators.

Wages and inflation: There is a non-linear trend between these indicators.
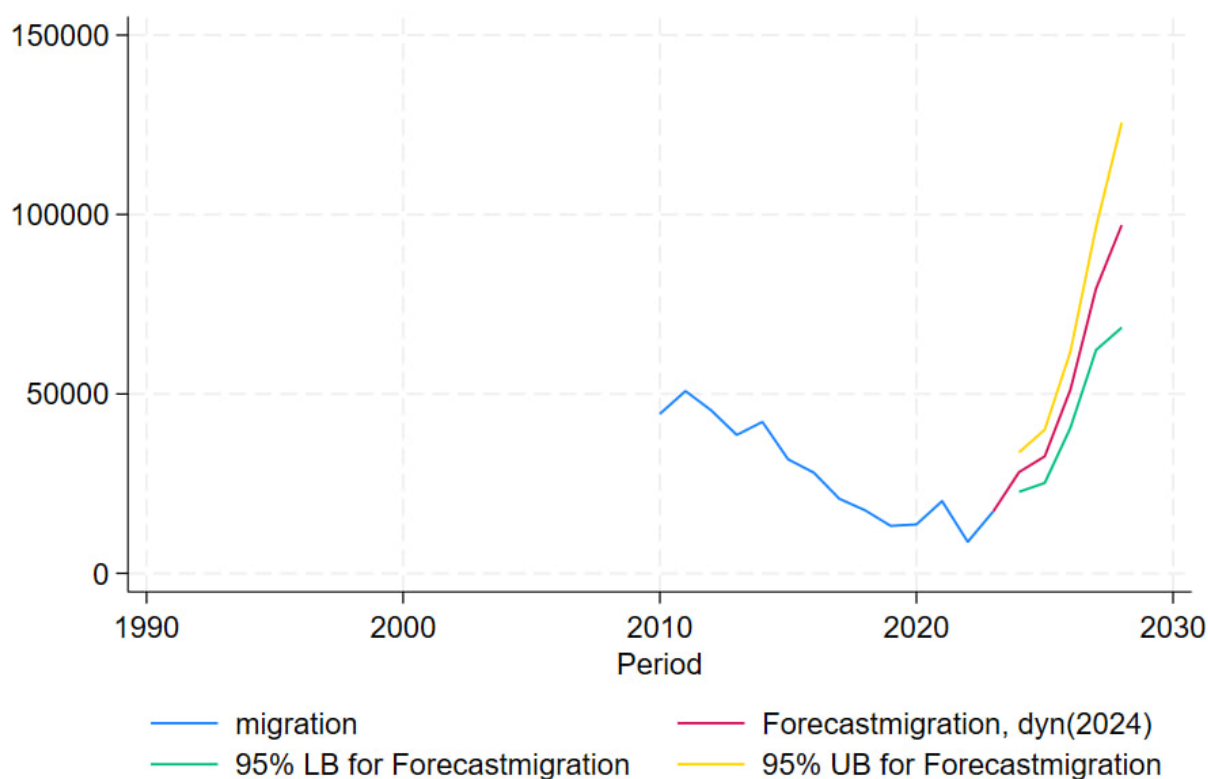
Wages and corruption: There is also a non-linear trend.

Figure No. 3. Export volume from 2023 to 2029 (forecast from 2024 to 2029).

Figure 3 shows the time series with 5-year forecast and confidence intervals. Ex is the historical observation of migration represented by the blue line covering the period from 2010 to 2023. According to the trend in the data, fluctuations have a positive trend. In the forecast (ForecastMigration, (2024)) it is represented by a brown line starting in 2024 and ending in 2030. This forecast is based on several years of data.

Confidence limits:

95% lower bound (95% LB for ForecastMigration) - the green line shows the lower limit of the forecast in this graph.

95% Upper Limit (95% UB for ForecastMigration) - The orange line indicates the upper limit of the forecast in this graph.

The forecast shows that the growth after 2024 is positive, but there is a certain degree of uncertainty. It is shown that the difference between the upper and lower bounds increases towards the later years of the forecast period, which indicates an increase in forecast uncertainty. Thus, this graph shows the forecast of the dynamics of migration in the following years, taking into account the confidence intervals that reflect the possible variability of future values. In addition, forecasts show that by 2030, the rate of migration in Uzbekistan will increase sharply.

It is important to note that we believe that the results and study would have been better if we had studied migration with other potential factors, but unfortunately, due to lack of data, we were only able to study short-term perspectives, not long-term perspectives. It is important to note that each model and approach may have limitations. Although cross-sectional models are only able to capture short-term relationships between factors, we hope that in the future, other researchers will use the latter approach to include other external factors in their studies.

CONCLUSION

According to the results of the research, in recent years, the level of migration in Uzbekistan has shown a positive growth rate compared to the current situation. It is no secret that migration is a key factor that plays a positive role in the short and long term economic development of Uzbekistan. Therefore, its development in many cases cannot fail to have a positive impact on other sectors, as it contributes to an increase in the volume of gross domestic product per capita, reducing unemployment, increasing the flow of foreign direct investment, ensuring the influx of qualified workers, that is, workers who can meet world standards, and this is the basis for restoring friendly relations between the countries of the world. Therefore, we can conclude that one of the most important policy options for increasing the level of migration in Uzbekistan is to create conditions for young people to go abroad, provide them with sufficient salaries, and increase their sense of

patriotism by increasing the number of jobs in the state, reducing the percentage of corruption, and supporting the introduction of methods of developed countries in Uzbekistan. According to the positive results of this study, if these shortcomings are eliminated, the level of migration in the country is expected to increase, and as a result, the flow of foreign currency will increase, and the employment rate will increase.

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