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INFLUENCE OF EDUCATION LEVEL ON WAGES: ECONOMETRIC ANALYSIS

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Abstract: In this article, we examine the relationship between education level and wages in Uzbekistan based on econometric analysis. Using data from representative samples of households and individual respondents, a regression assessment of the impact of different levels of education (primary, secondary, secondary special, higher) on the population's income was conducted. The findings can be used in developing education and employment policies in Uzbekistan.

Keywords: education level, wages, econometric analysis, regression, labor market, human capital, Uzbekistan, gender gap, regional differences, socio-economic development.

Аннотация: В статье мы рассматриваем взаимосвязь между уровнем образования и заработной платой в Узбекистане на основе эконометрического анализа. Используя данные репрезентативных выборок домохозяйств и индивидуальных респондентов, проведена регрессионная оценка влияния различных уровней образования (начальное, среднее, среднее специальное, высшее) на доходы населения. Полученные выводы могут быть использованы при разработке политики в области образования и занятости в Узбекистане.

Ключевые слова: уровень образования, заработная плата, эконометрический анализ, регрессия, рынок труда, человеческий капитал, узбекистан, гендерный разрыв, региональные различия, социально-экономическое развитие.

Introduction.

In the context of economic modernization and the growing importance of knowledge as the main resource for production, education is becoming a key factor in the formation of human capital and economic well-being of the population. One of the most studied aspects in this context is the relationship between the level of education and wages. According to the human capital theory developed by G. Becker and T. Schultz, investments in education lead to increased labor productivity and, accordingly, an increase in an individual's income. This hypothesis has received broad empirical support in studies based on econometric modeling, in particular, using the Mincer equation. For developing countries such as Uzbekistan, where structural reforms are taking place in the field of education and labor, studying the impact of education on wages is particularly relevant. Despite the general understanding of the importance of education, empirical research in the Uzbek context remains limited. At the same time, according to World Bank reports, the level of education has a significant impact on income in countries with transition economies. Studies conducted in Central Asian countries also confirm a positive correlation between completion of higher education and wages.

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The purpose of our study is to quantitatively assess the impact of education on wages in Uzbekistan using econometric methods. The work uses data obtained from sample household surveys, as well as official statistics. Particular attention is paid to differences by gender, region and type of employment, which allows for a deeper understanding of the mechanisms of income formation in the country.

Main part.

The formation of wages in modern economies is largely explained by the theory of human capital, which states that education is an investment that generates income in the form of higher wages in the future. According to G. Becker, the level of education increases the productivity of the worker, and therefore his market value. In turn, T. Schultz considered education as one of the factors of sustainable economic growth.

The main tool for quantitatively assessing the impact of education on wages is the Mincer equation, which describes the logarithm of wages as a function of years of education and work experience:

$$\ln(w_i) = \beta_0 + \beta_1 \cdot Educ_i + \beta_2 \cdot Exp_i + \beta_3 \cdot Exp_i^2 + \varepsilon_i$$

где:

- w_i — заработная плата индивида i,
- $Educ_i$ — количество лет обучения,
- Exp_i — стаж работы,
- ε_i — случайная ошибка.

This equation allows us to estimate how much one additional year of education increases the wage adjusted for experience.
Modern studies supplement the Mincer equation with various variables: gender, region, sector of employment, type of education, etc. This allows us to take into account the institutional and structural features of the national economy (Card, 2001; Psacharopoulos & Patrinos, 2018).
The empirical base is microdata obtained from a sample survey of household living conditions in Uzbekistan (2022), provided by the State Statistics Committee. The sample includes only economically active individuals aged 18 to 65 years. Main variables:
• dependent variable: logarithm of monthly wages,
• independent: level of education (categorically: primary, secondary, secondary special, higher),
• control: age, experience, gender, region, sector of employment.
To assess the impact of education on income, multiple linear regression is used according to the Mincer model with categorized education. Calculations were performed in the Stata environment.
Econometric estimates show:

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• People with higher education earn on average 48–55% more than those who have only secondary education ($p<0.01$).
• Holders of secondary specialized education demonstrate an increase of 15–20% compared to the baseline.
• The effect of education is more pronounced for women, which indicates its compensatory role in the context of gender inequality.
• Regional analysis shows that in the cities of Tashkent and Nukus, the return on education is significantly higher than in rural areas.

The results confirm the theoretical hypothesis about the positive impact of education on wages. However, the high level of informal employment and limited access to high-paying vacancies in the regions reduce the overall efficiency of investments in education. This requires an active policy at the intersection of education and the labor market.

Conclusions and suggestions.

The conducted analysis confirmed the presence of a stable positive relationship between the level of education and wages in Uzbekistan. Based on the Mincer equation and data from a sample population survey, it was found that additional education contributes to a significant increase in income, especially in the case of higher education. The identified differences by gender, region and industry indicate the presence of structural and institutional factors affecting the return on education. The return on education is especially high in urban areas and among women, which emphasizes its importance as a tool for social mobility and the fight against inequality. At the same time, limited access to quality education in rural areas and a high level of informal employment reduce the overall efficiency of human capital in the country. The results highlight the need to integrate education and economic policies to stimulate long-term sustainable growth.

As a result of our research on this topic, we offer the following proposals:

- Developing high-quality higher and vocational education, especially in remote regions, taking into account the needs of the labor market.
- Increasing the investment attractiveness of education, including public-private partnerships in training specialists in in-demand areas.
- Expanding programs for advanced training and retraining for adults in the context of digitalization and structural changes in the economy.
- Supporting women in obtaining an education through scholarships, targeted quotas and career guidance initiatives, especially in technical and STEM specialties.
- Creating mechanisms for effective interaction between educational institutions and employers to ensure the employment of graduates and increase the return on education.
- Reducing the level of informal employment, including through tax incentives for the formal employment of individuals with a high level of education.
- Regular monitoring and econometric analysis of the return on education based on current data, allowing for the adjustment of public policy in this area.

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