

Article

Measuring the Impact of Reforms on Higher Education on Gender Equality

Masuda Isaeva^{*1}

1. JSC Asakabank, Senior Data Scientist.

* Correspondence: masudaisaeva@gmail.com

Abstract: This study explores the impact of reforms in the higher education system of Uzbekistan on the gender gap in tertiary education attainment. The study is based on the ratio of female and male students attending higher education institutions and the number of higher education institutions by region over the past decade, and panel data methods. The results show that the introduction of state-supported student loans has played an important role in reducing the gender gap, while the opening of new universities has created more opportunities for male students. The impact of reforms differs across the regions of the country. Based on these results, we develop recommendations for ensuring gender equality in higher education. The findings of the study are useful for policymakers working on higher education in developing countries.

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Keywords: Higher Education System, Gender Gap, Panel-Data, Student Loans, Uzbekistan.

1. Introduction

For decades, obtaining a university degree or higher education was an unattainable dream for many people in Uzbekistan. The country had one of the lowest levels of tertiary education in the world. In 2000, only 13 percent of the population had completed higher education, but by 2012 this figure had fallen to 8 percent, a figure that remained unchanged until 2017 (Figure 1). The country's shortage of highly qualified specialists has become one of the factors hindering economic development [1].

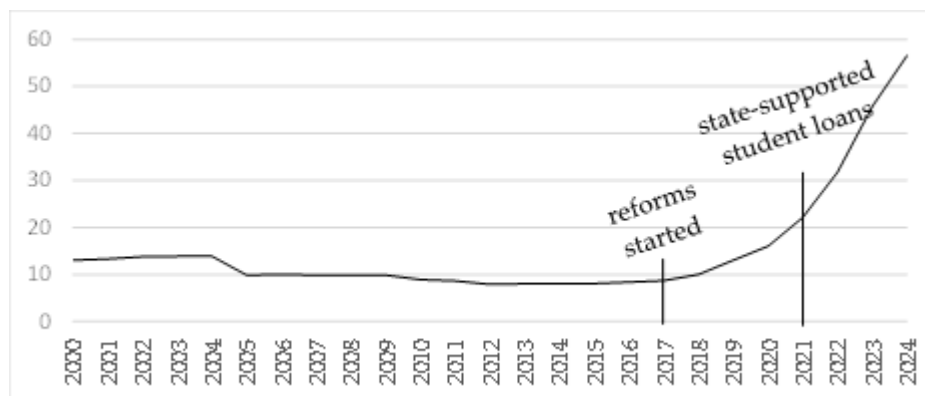


Figure 1. School enrollment, tertiary (% gross) in Uzbekistan.

Source: Author's development based on data from World Development Indicators.

In 2017, the government of Uzbekistan introduced the Education Strategy until 2030 to reform the higher education system with the aim of improving the quality, infrastructure, and coverage of higher education. The reforms have established the legal framework necessary for the establishment of private and international universities in the country, with the main goal of increasing the number and quality of higher education graduates [2]. In order to increase the affordability of tertiary education and its coverage, the government introduced state-supported student loans in 2021. These loans have lower interest rates than other retail loans and are provided on preferential terms for female students, i.e., 0% interest rate [3], [4].

As a result of the reforms, the higher education system of Uzbekistan began to change dramatically. In 2017, only 72 higher education institutions (HEIs) were in the country; by 2025, this number had reached 222. This means that in less than 15 years the number of HEIs has more than tripled. During the same period, the total number of students in HEI has increased by more than 5.4 times [5]. The reforms have led to dramatical increase in the coverage of student loans. In the 2024–2025 academic year, more than 200 billion soums of state-supported student loans were allocated [6]. While a total of 189,718 applications for student loans were received, 52,901 were granted loans. Of the loan recipients, 6,782 were male and 46,119 were female, representing 87 percent of all student loan recipients.

However, these figures do not mean that the gender gap in higher education has been narrowed. While the proportion of female students in universities started to exceed that of men in many developed countries in recent decades, gender gaps remain significant in developing economies. Despite the growing body of research on gender equality in higher education, empirical studies exploring the case of Uzbekistan are absent. This fact highlights the need for research exploring the impact of reforms on gender equality in higher education in Uzbekistan.

This study examines the impact of higher education reforms in Uzbekistan, in particular the establishment of new HEIs and the introduction of state-supported student loans, on reducing the gender gap in higher education. The aim of the study is to assess the impact of reforms and develop policy recommendations aimed at increasing the number of female students in universities. The main research questions are:

1. What is the impact of the introduction of state-supported student loans on the gender gap in higher education?
2. What is the impact of the establishment of new HEIs on the gender gap in higher education?

This study contributes to the existing literature on gender equality in several ways. First, it includes initial empirical analyses to assess the impact of higher education reforms on gender inequality in developing countries in Central Asia, using the case of Uzbekistan. Second, the analysis is conducted using the most recent data from the National Statistics Agency of Uzbekistan (for 2016–2024). Third, it explores the differences in the impact of reforms on different regions within the country. Finally, the article offers practical recommendations for policymakers working to ensure gender equality in higher education.

The rest of this article is organized as follows. Section 2 reviews the relevant literature, and Section 3 describes the data and methodology. Section 4 presents the analysis and research findings. Section 5 compares the results with existing research, explains the differences and similarities in the results, and offers recommendations for policymakers. Section 6 is the conclusion.

Literature Review

Gender equality is one of the fundamental rights for building a prosperous and sustainable society for humanity [8]. Gender equality means that there is no discrimination

or favoritism between men and women in education, health care, career choices, and access to financial services. The gap between the number of women and men holding high-paid and leadership positions in different sectors of the economy is one of the indicators of gender equality. Increasing the number of women in a country with a university degree or higher education is an important step towards ensuring gender equality. In developed countries, the proportion of women studying in HEI has steadily increased in recent decades, and some scholars call this trend a “reversal of the gender gap.” However, in the case of developing countries, gender equality in access and attainment of higher education persists.

Gender equality in higher education is an important area of research. Studies on this topic are needed to assess the impact of policies aiming to ensure gender equality and to develop recommendations for new reforms. Studies on this topic can be grouped into three main theoretical perspectives: feminist theories, human development theories, and social justice theories.

The first group, based on feminist theory, sees equal opportunities for women and men to receive education as a means of ensuring basic human rights. Proponents of this group argue that gender equality in higher education reflects a broad structural inequality in society. Gender issues should be addressed by the state through reforms, new laws, and social activism. The numerical superiority of male students in HEI is associated with the limited geographical mobility of women. Scholars argue that female students tend to choose geographically close HEI and more educational-oriented majors, and such preferences are influenced by parental expectations, gender stereotypes, and cultural norms, and often constrain young women’s academic aspirations. While the establishment of local universities reduces the gender gap in university attainment, greater female participation in higher education increases the quality and diversity of human capital.

Human development theory serves as a foundation for the second group of studies. Studies in this group explore gender equality in higher education as a means to economic prosperity, and achieving gender balance in higher education is an economic imperative [7], [8]. These studies emphasize that education is the foundation of human development as it increases employment, innovation, institutional efficiency, and governance. As low-income families in developing countries prioritize the education of boys over the education of girls, limited financial resources are a major obstacle to closing the gender gap [9]. The expensive tuition fees have led to the emergence of student loans as a mechanism for investing in higher education. State subsidized student-loans can offer more flexible terms than other private loans and make higher education affordable. When they provide preferential terms for female students, such as lower interest rates or longer repayment periods, they contribute significantly to reducing gender inequality in higher education.

A third group of studies is based on social justice theory. These studies promote equal access to education as a way to achieve social justice. The results of these studies indicate that despite the increase in the number of women students in universities globally, gender gaps in higher education persist. While female students are overrepresented in traditionally “female” fields such as education, philology, and human resource management, they are totally underrepresented in science, technology, engineering, and mathematics (STEM) majors. Since STEM graduates often get prestigious and well-paid jobs, female graduates are getting low-paid or entry-level occupations.

While many countries have regulations that formally guarantee gender equality in employment and education, significant gender disparities persist in leadership positions and high-paying roles. Reducing these disparities requires systemic, comprehensive, and equitable reforms across society. Therefore, policies to address gender equality must address both structural and cultural barriers, ensuring equal opportunities, participation, and advancement for all.

In summary, previous research highlights how gender inequality in higher education is shaped by a number of personal, social, financial, and institutional factors. While females are more likely to be more diligent and hardworking than males in secondary school and achieve higher academic results, socio-economic and cultural factors prevent them from entering university. Gender stereotypes instilled early in life [10], parental expectations, peer influence, family income, and labor market opportunities play a significant role in this decision. Accepting gender inequality as normal or women's ignorance about the discrimination against them can cause deep-rooted problems in society.

Public policies aimed at addressing gender equality in education should focus on expanding financial support for female students and cultural awareness campaigns that can change gender stereotypes. The causes of gender inequality vary from country to country. This study aims to examine how reforms in the higher education system in Uzbekistan are affecting gender equality, assess the results of the reforms, and develop recommendations based on the results of the analysis.

2. Materials and Methods

2.1. Model

We introduced the number of HEI and loan parameters to represent the reforms in higher education. The main hypothesis of the study is that the increase in the number of HEIs and the introduction of state-supported student loans will affect the level of student enrollment.

$$y_{r,t,g} = \alpha + \beta_1 female_g + \beta_2 loan_t + \beta_3 HEI_{r,t} + \beta_4 (female_g \times loan_t) + \beta_5 (female_g \times HEI_{r,t}) + \beta_6 (loan \times HEI_{r,t}) + \beta_7 (female_g \times loan_t \times HEI_{r,t}) + \mu_r + \lambda_t + \epsilon \quad (1)$$

Here, $y_{r,t,g}$ represents the enrollment rate in region r , year t , gender g ; $female_g = 1$ if the observation is female and 0 if male. $loan_t = 1$ for years ≥ 2021 (the period after the introduction of state-supported student loans), and 0 otherwise. $HEI_{r,t}$ is the number (or density) of higher-education institutions in region r , at year t (HEI_c centered version). μ_r denotes region fixed effects, capturing time-invariant regional factors, λ_t represents the year fixed effect and $\epsilon_{r,t,g}$ is an idiosyncratic error term. β_4 is the coefficient of $female \times loan$, presenting the effect of state-supported student loans on females when $HEI = 0$. β_3 is the effect of HEI on the control group (males) before the introduction of student loans. β_5 Is the difference in the HEI effect for females vs. males before student loans? β_6 is the change in the HEI effect for the control group after student loans, and last β_7 is the additional change in the HEI effect for females after the policy (the triple-interaction term – key for identifying complementarity).

Consequently, the effect of HEI on enrollment is defined as:

$$\frac{\partial y}{\partial HEI} = \beta_3 + \beta_5 female + \beta_6 loan + \beta_7 (female \times loan) \quad (2)$$

For the control group ($female=0$):

$$Pre_student_loans(loan = 0): \frac{\partial y}{\partial HEI} = \beta_3 \quad (3)$$

$$Post_student_loan(loan = 1): \frac{\partial y}{\partial HEI} = \beta_3 + \beta_6 \quad (4)$$

For the treatment group ($female=1$):

$$Pre_student_loan(loan = 0): \frac{\partial y}{\partial HEI} = \beta_3 + \beta_5 \quad (5)$$

$$Post_student_laons(loan = 1): \frac{\partial y}{\partial HEI} = \beta_3 + \beta_5 + \beta_6 + \beta_7 \quad (6)$$

Effect of the student loan) on enrollment:

$$\frac{\partial y}{\partial laon} = \beta_2 + \beta_4 female + \beta_6 HEI + \beta_7 (female \times HEI) \quad (7)$$

For the control group.

$$student_loan_effect = \beta_2 + \beta_6 HEI \quad (8)$$

For the treatment group

$$student_loan_effect = \beta_2 + \beta_4 + (\beta_6 + \beta_7) HEI \quad (9)$$

The female-male difference in the student-loan effect (i.e., how much more the student loans help females than males at a given HEI) is:

$$\Delta_{female-male}(loan) = \beta_4 + \beta_7 HEI \quad (10)$$

2.2. Data

Data for this study were obtained from the official website of the National Statistics Agency of Uzbekistan. It includes the number of higher education institutions by region, as well as the number of male and female students studying in them. Uzbekistan consists of twelve administrative regions, the Autonomous Republic of Karakalpakstan, and the capital city of Tashkent, which is considered a separate territory. The data is aggregated for 14 regions of Uzbekistan for 2016–2024 and structured as panel data (Table 1).

Table 1. Description of data.

Variable name	Count	Min	Max	Mean	Std
enrol_rate	252	0.0013	0.196	0.021	0.026
HEI	252	1	98	10.1	16.16
year	252	2016	2024	2020	2.59
gender	252	0	1	0.5	0.5
Loan	252	0	1	0.5	0.5
region	252	14 regions of Uzbekistan			

Source: Author's development based on data from the National Statistic Committee of Uzbekistan.

State-supported student loans were introduced in September 2021. Thus, 2016–2020 represents the period before the loans, and 2021–2024 represents the period after the loans were introduced. We constructed a binary variable loan indicating periods after the introduction of student loans (0 for 2016–2020, 1 for 2021–2024).

Enrollment rate (denoted as enrol_rate) is a dependent variable, and it is calculated by dividing the number of male/female students by the number of male/female population, respectively. Enrollment rate and number of HEIs are continuous variables, and gender and region are dummy variables. The final dataset contains 252 observations, representing the enrolment rates of men and women by region and year. Figure 2 presents male and female enrolment rates for 2016 and 2024.

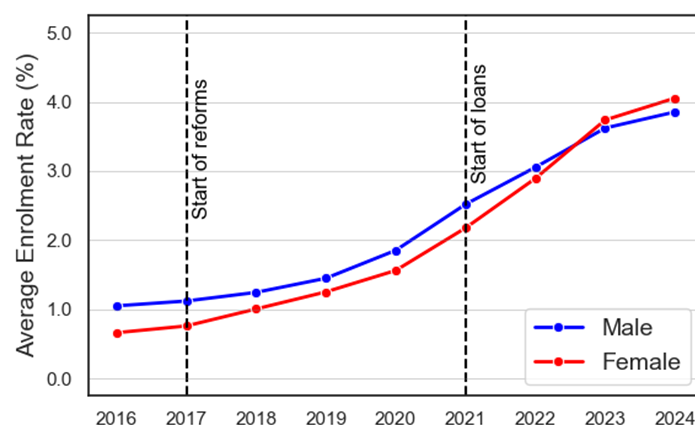


Figure 2. The country's average enrolment trends by gender. Source: Author's development based on analyses.

While enrollment rates have increased for both male and female students, the gender gap has persisted up to 2023, and the share of male students in the male population significantly exceeded that of females. Since 2023, however, this trend has reversed, and females now have higher attainment rates. We aim to analyze whether this change is driven by the expansion of HEI and the introduction of student loans or by a natural trend.

Interaction terms (female_HEI and female_loan) capture gender-specific effects of HEI expansion and the post-loan period, respectively, while HEI_loan and HEI_loan_female represent the combined effects of HEI and student loans, and their interaction with gender.

2.3. Methodologies: Panel Data Approach

The structure of the data collected in this article requires the use of panel data methods. Panel (or longitudinal) data requires the collection of parameters for multiple entities over several time periods. When all entities are observed over the same time period, the data set is considered a balanced dataset. Panel data has several advantages over cross-sectional or time series data. First, it increases the efficiency of econometric calculations because it offers more degrees of freedom and less multicollinearity. Second, it allows researchers to estimate and control for the effects of omitted variables.

The main methods used in panel data analysis are Fixed Effects (FE) and Random Effects (RE) models. In an FE model, omitted variables can be correlated with the observed ones. This model controls the effects of time-invariant variables with time-invariant effects. The RE model uses the Generalized Least Squares (GLS) or Maximum Likelihood principle instead of Ordinary Least Squares (OLS), and it helps to eliminate heteroscedasticity. In a RE model, unobserved variables are assumed to be uncorrelated (or statistically independent) from observed ones. This assumption may not always hold, but RE models are advantageous when time-invariant variables are important or when FE estimates have high standard errors. To determine whether RE or FE is appropriate for a particular case, the Hausman test is employed (Zulfikar, 2018).

3. Results

All analyses are conducted in the Jupyter Notebook environment using the statsmodels and matplotlib libraries of Python. The Samarkand region is used as the reference category for estimating both Random Effects (RE) and Fixed Effects (FE) models, as it is the region closest to the national average. The estimation results are presented in Table 2.

The RE model explains 93% of the variation in enrollment rates ($R^2 = 0.933$), and the time effects capture average annual changes relative to 2016. While in 2020, there is a significant increase of 0.43% in enrollment rates compared to 2016, there is 0.3% decrease in 2021. However, by 2024, 0.6% growth is occurring, presenting a recovery and continued expansion in enrollment rates [11], [12]. The coefficient of the loan variable is equal to 0.004, meaning that the introduction of state-supported student loans increases average enrollment rates for

Table 2. Results of the RE and FE Model.

Random effect model		
R-squared:		0.933
Adj. R-squared:		0.929
F-statistic:		131.8
Prob (F-statistic):		3.18e-103
Log-Likelihood:		901.07
AIC:		-1772

	BIC:		-1719	
	Coef	std err	z	P> z
Intercept	0.002	0.001	2.89	0.004
2017	0.001	0.001	0.76	0.447
2018	0.001	0.001	0.68	0.499
2019	0.001	0.001	1.25	0.212
2020	0.004	0.001	3.45	0.001
2021	-0.003	0.001	-2.17	0.030
2022	-0.001	0.001	-0.64	0.522
2023	0.003	0.002	1.77	0.077
2024	0.006	0.002	2.76	0.006
loan	0.004	0.001	3.47	0.001
HEI	0.001	6.08e-05	23.64	0.000
female	0.003	0.001	2.99	0.003
female_loan	0.005	0.003	1.71	0.088
female_HEI	-0.001	0.000	-7.26	0.000
HEI_loan	0.000	9.17e-05	3.75	0.000
HEI_loan_female	0.000	0.000	1.27	0.204

Source: Author's development based on the analyses.

0.4%, holding other factors constant. The coefficient is equal to 0.001 and indicates that the establishment of every new HEI increases enrollment rates by 0.01%. The coefficient of the female variable is equal to 0.003, which means female enrollment rates are 0.26% higher than those of males. The coefficients of female_loan and HEI_loan_female variables are not statistically significant [13]. However, the negative coefficient of female_HEI indicates that men benefited slightly more than women from the establishment of new universities. The positive and significant coefficient of HEI_loan implies that loans amplify the positive effect of HEI expansion – that is, as more universities open, student loans further enhance enrollment. The coefficient of HEI_loan_female is not statistically significant, suggesting that the three-way interaction does not bring a significant effect for females.

The FE model explains 97.2% of the variation in enrollment rates ($R^2 = 0.972$), and the overall regression is statistically significant, confirming that independent variables jointly explain the dependent variable. While a loan is associated with a 0.3% increase in the average enrollment rates. HEI corresponds to 0.2% increase in enrollment rates. Female enrollment is 0.3% higher than male enrollment [14]. The coefficient of the female_loan variable is stronger than the coefficient of the loan variable, suggesting that females are benefiting more from loans. The coefficient of female_HEI is smaller than HEI, indicating that males benefit slightly more from new institutional openings. The coefficients of HEI_loan and HEI_loan_female variables are not statistically significant. These results reveal that the combined effect of HEI expansion and student loans does not significantly differ by gender. Coefficients of regional variables indicate that Navoi (+0.022), Jizzakh (+0.017), and Syrdarya (+0.017) are the top regions benefiting from educational reforms and outperforming.

Table 3. Results of FE Model.

Fixed effect model	
R-squared:	0.972
Adj. R-squared:	0.969
F-statistic:	210.7
Prob (F-statistic):	1.87e-143
Log-Likelihood:	1011.8

		AIC: BIC:		-1968 -1869
	Coef	std err	z	P> z
Intercept	0.01	0.003	-3.34	0.001
2017	0.001	0.001	0.37	0.712
2018	-0.001	0.001	-0.57	0.571
2019	-0.001	0.002	-0.64	0.525
2020	0.002	0.002	0.75	0.453
2021	-0.002	0.001	-2.78	0.006
2022	-0.001	0.001	-1.18	0.239
2023	0.002	0.001	1.99	0.047
2024	0.005	0.001	3.58	0.000
Andijan	0.006	0.002	2.69	0.007
Bukhara	0.015	0.002	6.77	0.000
Fergana	0.003	0.002	1.45	0.148
Jizzakh	0.017	0.003	6.01	0.000
Karakalpakstan	0.013	0.002	7.08	0.000
Kashkadarya	0.006	0.002	2.78	0.005
Khorezm	0.012	0.003	4.68	0.000
Namangan	0.009	0.003	3.40	0.001
Navoi	0.022	0.003	6.66	0.000
Surkhandarya	0.008	0.002	3.56	0.000
Syrdarya	0.017	0.003	5.33	0.000
Tashkent city	-0.016	0.015	-1.08	0.281
Tashkent reg.	0.005	0.002	2.66	0.008
loan	0.003	0.001	2.52	0.012
HEI	0.002	0.000	5.33	0.000
female	0.003	0.001	3.30	0.001
female_loan	0.005	0.002	2.51	0.012
female_HEI	-0.001	6.56e-05	-12.21	0.000
HEI_loan	4.34e-06	0.000	0.02	0.983
HEI_loan_female	0.000	0.000	1.73	0.083

Source: Author's development based on the analyses.

Other regions in the model. 2023–2024 shows clear positive effects, indicating a period of recovery and growth in enrollment rates. To determine which model best fits our data, we performed the Hausman test.

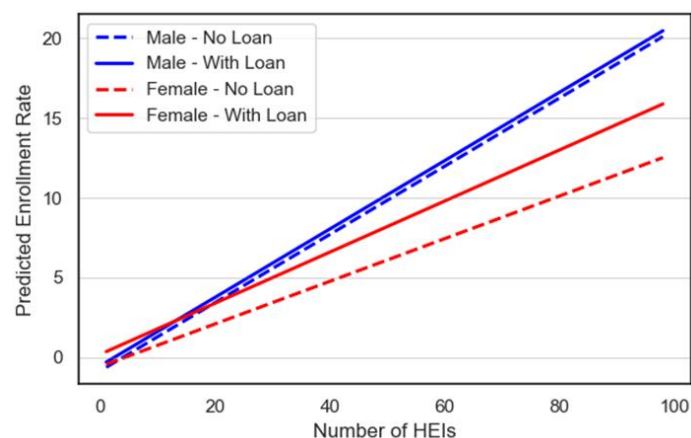


Figure 3. Predicted Enrollment Rates by Gender, Loan, and HEI Availability. Source: Author's development based on the analyses.

The test results show that the Hausman Test Statistic = 30.9, degrees of freedom = 16, p-value = 0.0137. Since the p-value is less than 0.05 in this test, we reject H_0 and conclude that the Fixed Effects model is more appropriate for our case, and the results of this model should be used for interpretation and implication.

Each line in Figure 3 illustrates how predicted enrollment rates change as HEI availability increases under different combinations of gender and loan status. Solid blue and red lines represent the post-loan, and dashed lines represent the pre-loan period for males and females, respectively [15]. The solid lines lie above the dashed lines, indicating that student loans modestly increased enrollment rates, holding other factors constant. Both red lines lie below the blue lines, indicating that females have lower enrollment rates at every level of loan and HEI availability. However, the solid red line being above the dashed red line implies that student loans increase female enrollment. Angle between solid and dashed lines is steeper for red lines than blue lines, meaning that females are benefiting more than males from loans. All lines slope upward, indicating that HEI expansion raises enrollment rates for both genders [16]. The steeper slope of the blue lines suggests that men benefit slightly more from new university openings. Overall, HEI expansion increases total enrollment; however, it widens the gender gap. State-supported student loans raise enrollment for both males and females, though the effect is somewhat higher for females.

4. Discussion

The results of this study show that the reforms being carried out in the higher education sector in Uzbekistan are starting to bear positive changes. In particular, the establishment of new HEIs has increased higher education attainment [17]. Although the number of male and female students has increased, the effect of HEI is more evident in the increase in the number of male students. State-supported student loans, on the other hand, have a positive effect on the increase in the number of female students. This indicates that educational loans contribute to reducing the gender gap in higher education. In addition, the positive and statistically significant interaction between the number of HEIs and educational loans indicates that government-supported loan programs are more effective in regions with better educational infrastructure [18]. These two factors complement each other and together serve as the basis for educational reforms. However, the three-way interaction between the variables number of HEI, student loans, and female is not statistically significant, which means that the effectiveness of loans for women does not depend on the number of HEI.

Our results show that males are more likely to benefit from the establishment of new HEI than women. These findings contradict scholars' conclusions that the establishment of new universities increases female university attainment [19]. The difference in results is explained by the geographical location of the new HEI. In Uzbekistan, out of the 152 newly established universities across the country, 59 were opened in the capital city, Tashkent, and 15 in the Tashkent region. Such centralization does not provide opportunities for female students in remote areas with limited mobility and reduces the overall inclusiveness of the reforms.

The results highlight the importance of financial support in ensuring gender equality in higher education. These results are consistent with the findings of [20]. The availability of state-supported student loans and providing special preferential terms for female students contribute to reducing the gender gap in higher education. In Uzbekistan, the tuition fees pose financial challenges for a population with low- and middle-income. Government-supported student loans make higher education more accessible to all. Incentives offered for female students make student loans more attractive and strengthen the impact of inclusive education reforms.

Across Uzbekistan's administrative regions, the impact of education reforms differs. Navoi, Syrdarya, Jizzakh, and Bukhara regions have benefited the most from reforms, while regions such as Tashkent City, Fergana, and Tashkent Region have lagged behind. Cultural norms are the main reason for such regional differences. The policy recommendations derived from these findings are:

Expanding the volume of state-supported student loans the student loans are significantly increasing enrollment for both male and female students. Further increasing the volume of resources allocated to such loans and further optimizing the loan allocation mechanisms will serve to increase the impact of the reforms.

State-supported student loans are providing a foundation for reducing gender inequality in higher education by making it affordable for female students. Increasing financial programs aimed at ensuring gender equality in higher education, creating loan programs exclusively for female students, or launching mechanisms to finance female education through special funds and scholarships will reduce the gender gap further.

Establishing new HEI is increasing the access to higher education. However, since they are mainly located in Tashkent, females living in remote areas are not interested in studying there. Policies encouraging the establishment of new universities in regional administrative centers or remote areas by providing tax benefits or other incentive schemes should be developed. Implementation of such policies will promote regional balance, help to increase the number of local HEIs, and consequently contribute to closing the gender gap.

When developing policies aimed at ensuring gender equality, it is necessary to learn from the experiences of developed countries. Sharing the analysis of best practices, research results, and experiences will contribute to creating more equitable education systems in Uzbekistan and other developing countries.

5. Conclusion

Uzbekistan was one of the countries with the lowest tertiary education attainment rates in the world for many years. In addition, the number of male students in HEI was significantly higher than that of female students, and gender imbalance was a serious problem. In 2017, the Uzbek government began implementing major reforms in the higher education sector. Initially, the regulations regarding establishing new universities were simplified. As a result, the number of HEIs and the number of students increased significantly. However, the gender gap continued to persist.

In 2021, state-supported student loans were introduced. While student loans were available to both genders, they offer more attractive terms for female students. To further enhance the effectiveness of the reforms and optimize education policies in the future, it is important to properly assess their impact. A proper understanding of the factors that create gender gaps allows policymakers to develop measures that promote equal educational opportunities for all.

In this study, we analyze how these reforms are affecting gender equality in higher education. To do this, we use data collected from the official website of the State Statistics Committee for 2016-2024 for fourteen regions of Uzbekistan and panel data methods. The results of this study show that the reforms have significantly increased university attainment. In particular, the opening of new HEIs has led to an increase in the total number of students, while the introduction of state-supported student loans has made tertiary education more affordable for female students. However, the impact of the reforms across regions remains different due to cultural norms and stereotypes.

The results of this study enrich the empirical literature on gender inequality and provide a solid foundation for evidence-based policymaking. This study has a number of

contributions. First, it is the first empirical study to assess the impact of reforms and the gender gap in higher education in Uzbekistan. Second, it uses the most recent, comprehensive data covering the period 2016-2024. Third, we quantitatively assess the impact of reforms on the gender gap in higher education for fourteen regions. By demonstrating the differences in the impact of reforms by regions, we highlight the need for regional approaches and policies. The results of this study are useful for scholars conducting research on gender equality and policymakers.

This study has some limitations. We do not analyze the gender gap by academic majors. Previous studies have shown that, despite the increasing number of female students, there are still fewer female students studying in STEM and high-paying disciplines. Furthermore, we did not analyze differences between universities with different tuition fees or rankings. It is likely that gender differences among students are bigger at higher-ranked and more expensive universities. Therefore, future studies could expand this analysis by examining gender gaps across academic majors, universities with top and low rankings, and labor market outcomes to gain a broader understanding of the gender gap.

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