

# Do Female Education and Labor Force Participation Contribute to Economic Growth in Afghanistan?

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## Abstract

This study examines the effects of female Education and labor force participation on economic growth in Afghanistan over a period 2002-2019. The study used secondary data and employed descriptive design since the data was numerical in nature. The data was analyzed using Stata software where multiple linear regression was conducted to establish the correlation between dependent variable and independent variables. Descriptive statistics and test for multicollinearity were done to establish if the independent variables are highly related. The VIF test and correlation analysis were done to ascertain this. The data results were presented in tables. The regression analysis established that the correlation between Enrolment in Upper Secondary Education and Gross Domestic Product was positive and significant. The correlation between Labor Force Participation Rate and Gross Domestic Product was negative and significant. However, the correlation between Women Business and the Law Index and Gross Domestic Product was positive and insignificant. The correlation between Unemployment Rate and Gross Domestic Product was negative and insignificant. This result affirms that though unemployment rate has a negative impact on the economic growth, its effect is still insignificant. The Afghanistan government should come up with policies, rules, and laws that will encourage more female gender to be enrolled in upper secondary schools. Additionally, the government should also take care of workers interests, working environments and their rights to decrease the labor force participation rates in order to enhance economic growth.

## Keywords

Female Education, Female Labor Force Participation Rate, Economic Growth, Afghanistan

## 1. Introduction

In Afghanistan, since 2001, women literacy rate has almost doubled from 17% to 30% and the number of girls in higher education had grown continuously from around 5000 in 2001 to around 90,000 in 2018 (UNESCO, 2021). Despite these statistics, female enrolment rate is still low compared to other developing countries. If in most countries the question is no longer how to generalize and democratize access to the education system, in Afghanistan, much ink has been spilled about that question. Moreover, in 2019 the country's female labor force participation (FLFP) rate was 21.76%, ranking among the lowest globally (TheGlobalEconomy.com, 2020). Similarly, in 2015, Afghanistan had 5% of women-owned businesses. The dismal statistics indicate that the nation has an issue with women as part of the labor force participation, education and female engagement in its economic activities. It also showed that the country had a problem with its socio-economic inclusivity to reduce poverty and facilitate the overall production and growth (Alkitkat, 2017). However, if interest in education and labor force by some economists is part of the general need to invest in human capital, since both of them are considered as sub-factors contributing to national economic growth by increasing labor productivity. The others are those who argue that labor force participation in the nation does not lead to economic development, nor does it promote sustainable long-term growth. The low FLFP rate in the country shows underlying factors preventing women from working. Examples of these factors would be gender inequality in the country's legal frameworks, limited mobility, low household bargaining power, and even a lack of economic opportunities. For instance, a survey conducted in 2015 shaped that 74.5% of the women in the country believed that women were not allowed to work outside their homes (Alkitkat, 2017). It was further noted that in the broader South Asian context, it has been noted that the traditional norms played a fundamental role in dictating gender roles. The neighboring nations had improved their treatment of women, but Afghanistan still held to its backward rules that women were not supposed to work in the corporate environment.

In Afghanistan, women and girls directly benefit from their work at the most basic level. The paid labor market activities increase the chances of the girls surviving from birth to adulthood, reducing the number of women missing. The missing women do not follow their dreams due to gender discrimination (Parlaktuna & Sediqi, 2020). The most positive correlation between the survival of women and the country's economic activity is that they have a comparative advantage. However, the Afghan people highly value their culture, and the labor market activity for women has not been widely affected. The nation has witnessed a lack of progress in closing the gender gap in employment and education, representing the nation's lost economic opportunities since women's potential has not been fully realized. The main objective of this research is to analyze the effects of female education and labor force participation on economic growth in Afghanistan; the rest of the paper is organized as follows: the next sec-

tion provides the literature review, third section describes the data applied and discusses methodology used for the analysis. Results and Discussion are reported in fourth section. The paper ends with conclusion and recommendations which are respectively the fifth and sixth section.

## 2. Literature Review

In Viracheat (2011) conducted a study on Growth of higher education and its association with per capita gross domestic product in Cambodia. The study aimed at assessing the impact of higher education on per capita GDP in kingdom of Cambodia from 1999 to 2009. Other objectives of the study were to analyze the growth of higher education in Cambodia. The study used secondary data collected in the ministry of education, youth and sports of the Royal Government of Cambodia. The data was analyzed using simple regression analysis and results summarized and displayed in tables. The research established that the correlation between gross domestic product and gross enrollment ration in higher education is positive. This means that Enrolment in Upper Secondary Education has a positive impact to the GDP of a country.

Gumus (2012) researched on the correlation between the school enrolments rates at the primary, secondary and tertiary levels and the GDP per capita between the periods of 1980-2008 in Turkey. To achieve this goal, the Toda-Yamamoto's (1995) causality test was used. The results of the research suggest that there is a statistical and great association between the school enrolment at a primary level bi-directionally and the GDP per capita. There is a great association between these variables at a secondary level. However, the association only exists in one way which is from the GDP per capita to the enrollment rate in secondary schools. At a tertiary level, there was no correlation between the school enrollment rate and the GDP per capita.

Lechman and Kaur (2015) researched on how the female labor force participation and economic growth related to each other. The study aimed at providing new insights on the correlation between the economic growth and the FLPR in 162 nations between the periods 1990 and 2012. The study was done in two different perspectives. One of them examined the female labor force participation in 162 nations while the other disaggregated the evidence and re-examined the correlation in four different income groups which were the low-income, lower-middle-income, high income, and upper-middle-income. Data used on female labor force participation and per capita income were from the World Development Indicators 2013 database. A panel data analysis was used to find out the correlation between these two variables and it assumed that they were non-linear. The main findings from the research were that there was a U-shaped correlation between the growth of the economy and labor force participation. Nevertheless, a high cross-country variability in the arena was discovered and the U-shaped feminization hypothesis was not registered.

Shahid (2014) researched on the association between the effects of the labor

force participation and economic growth in Pakistan. The research hoped to discover how the labor force participation affects the economic growth related to the gross fixed capital formation. The research used a time series data from 1980 to 2012 that had been acquired from the Pakistan Bureau of Statistic, the World Bank and the State Bank of Pakistan. Nonetheless, it used initially augmented Phillip Perron and Dicky Fuller tests that displayed the gross fixed capital formation which remained put on the initial difference but other variable stations were level and intercepted each other. Likewise, the Johnson co-integration risk was also incorporated to show the long run correlation existing between variables. Nonetheless, the results of the vector error correction model showed that the economic growth was negative, the gross fixed capital formation was positive, and the labor force participation was negative in the short run.

**Morched and Jarboui (2018)** conducted a research on whether female entrepreneurship added a value to a nation's economic growth. The research used panel data from 2000 to 2014 acquired from 25 developed and developing nations. The results of the study were that female entrepreneurship negatively affected on a nation but it had indirect effects on the economic growth mainly through business creation leading to economic development. Similarly, it was also clear that female entrepreneurship generated a lot of employment opportunities, wealth creation, poverty reduction, and income distribution. The research recommended for governments to support initiatives related to women-owned businesses as a way of improving economic growth.

**Tersoo (2013)** conducts a study on the correlation between women entrepreneurship and the economic growth. The research aims at finding out the correlation between the two in Benue State, North-Central Nigeria. It uses an explanatory survey method and a questionnaire is used to collect data. The research also involved 60 respondents who were from 244 different registered businesses in the state. The hypothesis testing tools used were Analysis of Variance (ANOVA), and analysis of r co-variance, regression, and correlation. The findings suggested that the activities of the women entrepreneurs did not affect Benue state's economic growth and this was caused by several operational issues. It meant that there was a weak correlation between the women entrepreneurs and public policy support in the state. The government programs and social support services never helped deal with the operational challenges and the women were required to take an extra mile to overcome the hardships. Some recommendations for the women-owned businesses to thrive in Benue State were entrepreneurship education, capacity building, and even creation of a neutral environment in different policy measures to help these women grow in the corporate sector.

**Taasim and Daud (2020)** conducted a research on the impact that gender unemployment has on the economic growth. The research aimed at finding out whether unemployment based on people's gender affected a nation's economy. The objective of the study was seen through the events that took place before the growth of the East ASEA region. Indonesia, Malaysia, Philippines and Brunei

took a large inflow of immigrants to support growth. The people from these nations were dependent on foreign labor and it created the gender inequality issue which hindered prosperity. Two methods were used and they included the Dynamic Ordinary Least Square (DOLS) and the Fully Modified Ordinary Least Square (FMOLS). The time series employed was from 1990 to 2018. The results of the research were different to Okun's law suggesting that there is a negative correlation between the gross domestic product and male unemployment rate. However, this study discovered that there was no impact on the GDP caused by female unemployment. Similarly, it discovered that policies to benefit and increase participation of female workers were important to help in creating a conducive working environment to benefit all people in businesses

Chien (2020) conducted a research with the aim of finding out the association between unemployment rates and the GDP growth rates. The study entailed combining data from the Bureau of Labor Statistics (BLS), and the Bureau of Economic Analysis (BEA). The research involved calculations of the GDP in 2019 and it used an employment required table from the BLS to determine the employee output in each sector. The results of the study were that the high unemployment rate led to a rapid decline in the GDP.

Liu, Liu, and Ma (2021) carried out a study on the impact of female labor participation on household savings rate. This paper is based on the 2017 China Household Financial Survey data. This paper found that labor participation of married women significantly increases household savings rates. In addition, Heterogeneity analysis showed that there is a significant impact of married women's labor participation on the 20- to 30-year-old female family, university and higher education levels, and simultaneously on the savings rate of families who would like be with two children.

### 3. Data and Methodology

The research used quantitative research design since the data involved was numerical in nature. To establish the influence of female education and female labor force participation on economic growth in Afghanistan, Time Series Cross Sectional data was used. To this aims all data are exclusively derived from Education Statistics and World Development Indicators 2021. The focused period for study was from 2002 to 2019 which is 18 years.

#### Econometric model

The model explains the impact of Enrolment in Upper Secondary Education, Labor Force Participation Rate, Women Business and the Law Index Score, and Unemployment Rate Female on Gross Domestic Product. In the model, the explanatory variables are; Enrolment in Upper Secondary Education (EUS), Labor Force Participation Rate (LFPR), Women Business and the Law Index Score (WBLI), and Unemployment Rate Female (UN). The dependent variable is Gross Domestic Product ( $Y$ ).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

$Y$  = dependent variable;

$\beta_0$  = Constant;

$\beta_1, \beta_2, \beta_3, \beta_4$  = Correlation coefficients;

$X_1$  = Enrolment in Upper Secondary Education;

$X_2$  = Labor Force Participation Rate;

$X_3$  = Women Business and the Law Index Score;

$X_4$  = Unemployment Rate Female;

$\varepsilon$  = error term.

### 1) Dependent variable

The Gross Domestic Product is the dependent variable which is influenced by independent variables. GDP measures the income that is earned from the production or the aggregate amount spent on services and goods less import costs.

### 2) Independent variables

These are the causes and each of their values are independent of the other variables in the study. The independent variables are;

a) Enrolment in Upper Secondary Education; this is the proportion of female gender that is admitted in the upper secondary education in Afghanistan.

b) Labor Force Participation Rate: is the proportion of working-age population which is either looking for work actively or apparently working.

c) Women Business and the Law Index Score: measures women alignment to the economic decisions at various stages of their respective lives. The indicators include; Mobility, Workplace, Assets, Pay, and Pension.

d) Unemployment Rate: it refers to the share of the labor force that is without work but available for and seeking employment. The unemployment rate increases and decreases depending with the economic conditions.

## 4. Results and Discussion

### 4.1. Descriptive Statistics

The mean value for female Enrolment in Upper Secondary Education in Afghanistan is 196,674.61. Its minimum value is 31,386 while its maximum value is 367,543. However, it has the highest standard deviation which is 136,568.27. This means that the data on Enrolment in Upper Secondary Education has large variations hence, widely spread. The mean value for female LFPR in Afghanistan is 17.048. Its minimum value is 15.13 while its maximum value is 21.76. However, it has a standard deviation of 2.39. This means that the data is clustered around the mean. The mean value for Women Business and the Law Index Score in Afghanistan is 30.139. Its minimum value is 26.25 while its maximum value is 38.125. However, it has a standard deviation of 4.525. This means that the data is also clustered around the mean. The mean value for female Unemployment Rate in Afghanistan is 14.56911. Its minimum value is 13.906 while its maximum value is 15.036. However, it has a standard deviation of 0.352. This means that the data is also clustered around the mean (**Table 1**).

**Table 1.** Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
EUS	18	196,674.61	136,568.27	31,386	367,543
LFPR	18	17.048	2.39	15.13	21.76
WBLI	18	30.139	4.525	26.25	38.125
UN	18	14.569	0.352	13.906	15.036

## 4.2. Correlation Analysis

The correlation among the independent variables will help in identifying whether there are instances of multicollinearity among the variables. The correlation between EUS and LFPR is 0.792 meaning that there is a high positive correlation between Enrolment in Upper Secondary Education and LFPR. This means that the two variables move in the same direction. For instance, an increase one unit of Enrolment in Upper Secondary Education leads to a proportionate increase in LFPR and vice versa (**Table 2**).

**Table 2.** Correlation TEST.

Variables	(1)	(2)	(3)	(4)
(1) EUS	1.000			
(2) LFPR	0.792	1.000		
(3) WBLI	0.743	0.908	1.000	
(4) UN	-0.621	-0.821	-0.797	1.000

The correlation between EUS and WBLI is 0.743 meaning that Enrolment in Upper Secondary Education and Women Business and the Law Index Score have a moderate positive correlation and the two variables tend to move in one direction. A unit change in Enrolment in Upper Secondary Education results to a proportionate change in Women Business and the Law Index Score.

The correlation between Enrolment in Upper Secondary Education and Unemployment rate is  $-0.621$ . This means we have a negative correlation between the two variables. When one of the variables increases, the other variable decreases while when one of the variables decreases, the other variable increases. This is an inverse proportional. We can therefore, affirm that there is an inverse correlation between Enrolment in Upper Secondary Education and Unemployment rate.

The correlation between LFPR and Women Business and the Law Index Score is 0.908. This figure shows that the correlation is highly positive and the two variables tend to move in one direction. This means that a change in one variable leads to a proportionate change in the other variable by 0.908.

The correlation between LFPR and Unemployment rate is  $-0.821$ . This means that we have an inverse correlation between these two independent variables. A unit increase in LFPR leads to a decrease in Unemployment Rate by  $-0.821$ . On

the other hand, a unit decrease in LFPR would result in an increase in of Unemployment Rate by 0.821.

There exists a moderate negative correlation of  $-0.797$  between Unemployment Rate and Women Business and the Law Index Score.

### 4.3. Variance Inflation Factor VIF-Test

Multicollinearity is a phenomenon where one independent variable in multiple regression model has the possibility of being linearly predicted from the others with a significant degree of accuracy. Identification of variables that are affected by multicollinearity is important because it helps to determine whether there is need for fixing the issue. The VIF starts with value 1 and does not have the upper limit. A value of 1 shows that there is no association among the autonomous variables. The variable between value 1 to 5 exhibits that there exists a moderate correlation but not so significant to warrant some corrective measures. When the VIF is more than 5, it is a critical level of multicollinearity and coefficients are estimated poorly and p-values are questionable. If the VIF is more than 10 for each individual coefficient, then there is an issue of concern regarding multicollinearity. The individual VIF for the independent variables are 2.741 for Enrolment in Upper Secondary Education, 8.138 for the LFPR, 6.03 for Women Business and the Law Index Score, and 3.255 for Unemployment Rate Female. In this case, the individual VIF value for each variable has been less than 10 and therefore, we can conclude that there is no significant correlation among the independent variables. The data is free from multicollinearity hence, it is unbiased and can be used to make sound decision (Table 3).

Table 3. VIF.

	VIF	1/VIF
LFPR	8.138	0.123
WBLI	6.03	0.166
UN	3.255	0.307
EUS	2.741	0.365
Mean VIF	5.041	.

### 4.4. Multiple Regression Analysis

The R-squared is a coefficient of determination or variability and it is a arithmetical measure which represents the ratio of the variance for the dependent variable that is expounded by the autonomous variables in a regression model. If the R-squared value is  $0.3 < r < 0.5$ , then the regression model is considered weak. When the R-squared value is  $0.5 < r < 0.7$ , then the regression model is considered to have a moderate effect. However, if the R-squared is  $r > 0.7$ , then the regression model has a strong effect. The regression analysis output reveal that the model has an adjusted R-squared of 0.9629. This means that in this



**Table 4.** ANOVA.

GDP	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
EUS	58717.807	3558.392	16.50	0	51,030.37 66,405.25	***
LFPR	-1.36e+09	3.50e+08	-3.87	0.002	-2.11e+09 -6.00e+08	***
WBLI	6.47e+07	1.59e+08	0.41	0.691	-2.79e+08 4.09e+08	
UN	-1.48e+09	1.51e+09	-0.98	0.343	-4.73e+09 1.77e+09	
Constant	4.50e+10	2.55e+10	1.77	0.1	-9.96e+09 1.00e+11	

  

Mean dependent var	13,801,241,389.583	SD dependent var	6,285,429,636.151
R-squared	0.9717	Number of obs	18
F-test	111.40	Prob > F	0.000
Adj R-squared	0.9629		
Akaike crit. (AIC)	808.128	Bayesian crit. (BIC)	812.580

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

model, 96.29% of the variance in dependent variable (GDP) is caused by autonomous variables in the regression model. The other value is explained by error term which has not been factored in the regression model. This means that this regression model has a strong effect size and can be used in making predictions (Table 4).

#### 4.5. The Regression Model Output Interpretation

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

$$Y = 4.50e+10 + 58717.81X_1 - 1.36e+09X_2 + 6.47e+07X_3 - 1.48e+09X_4 + \varepsilon$$

In the model, the constant coefficient value is 4.50e+10 meaning that given that all other factors not considered, the GDP of Afghanistan is 4.50e+10.

The coefficient of Enrolment in Upper Secondary Education is 58,717.81. This means that a unit increase in Enrolment in Upper Secondary Education (EUS) results to a change of 58,717.81 in GDP. There exists a linear correlation between GDP and Enrolment in Upper Secondary Education. Its level of significance is 0.000 and since it is below 0.05 ( $p < 0.05$ ) significance value at 95% confidence interval, it is inferred that the correlation is significant. We therefore, reject the null hypothesis that states that Enrolment in Upper Secondary Education (EUS) has no significant effect on GDP and accept the alternative hypothesis that state that Enrolment in Upper Secondary Education (EUS) has a significant effect on GDP.

There exists a linear correlation between Gross Domestic Product (GDP) and Women Business and the Law Index Score (WBLI). The coefficient of WBLI is 6.47e+07 meaning that a unit increase in Women Business and the Law Index Score leads to an increase of GDP by 6.47e+07 units. However, the correlation is

statistically insignificant since its p-value is 0.691 which is greater the significance threshold of 0.05 ( $p < 0.05$ ). We can infer that the linear correlation between GDP and WBLI is statistically insignificant. Therefore, we fail to reject the null hypothesis that states that there is no significant effect of WBLI on the GDP.

The coefficient of LFPR is  $-1.36e+09$ . This means that a unit increase in LFPR results to a change of  $-1.36e+09$  in GDP. There exists a linear association between GDP and LFPR. Its level of significance is 0.002 and since it is below 0.05 ( $p < 0.05$ ) significance value at 95% confidence interval, it is inferred that the association is significant. We therefore, reject the null hypothesis that states that LFPR has no significant effect on GDP and accept the alternative hypothesis that state that Force Participation has a significant effect on GDP.

The coefficient of Unemployment Rate is  $-1.48e+09$ . This means that a unit increase in Unemployment Rate (UN) results to a change of  $-1.48e+09$  units in GDP. There exists a linear correlation between GDP and Female Unemployment Rate (UN). Its level of significance is 0.343 and since it is greater than 0.05 ( $p < 0.05$ ) significance value at 95% confidence interval, it is inferred that the correlation is insignificant. We therefore, fail to reject the null hypothesis that states that Female Unemployment Rate (UN) has no significant effect on GDP and reject the alternative hypothesis that states Female Unemployment Rate has a significant effect on GDP.

## 5. Conclusion

The paper has comprehensively investigated the effect of Enrolment in Upper Secondary Education, LFPR, Women Business and the Law Index Score, and Unemployment Rate Female on Gross Domestic Product of Afghanistan. The research study has identified that EUS has a positive and significant correlation with the GDP. This means that Enrolment of female gender in upper secondary education has a positive impact to the Gross Domestic Product of Afghanistan. Education has a positive impact to the growth of economy. Education improves human capital which consequently enhances productivity level of employees and workers. An increase in productivity due to high relevant skills and expertise increases the economy output. Increase in productivity of products, goods and services can be exported to countries of need and this leads to earning of foreign exchange revenue which enhances the national revenue. Consequently, this national revenue leads to the growth of economy.

The LFPR and GDP have a correlation of  $-1.36e+09$  with a significance level of 0.002 which is statistically significant. This means that an increase in LFPR leads to a decrease of GDP by  $1.36e+09$ . LFPR is the proportion of working-age population which is either looking for work actively or apparently working. It is an important aspect of the labor market since it represents the amount of labor resources that is available in the economy and ready for production of goods and services. The regression analysis has shown that an increase in LFPR affects the GDP negatively. The possible answer to this might be due to increase in number

of people who are actively seeking for jobs and are yet to be employed, which translates to short-term unemployment.

The Women Business and the Law Index Score and Gross Domestic Product (GDP) have a positive coefficient correlation of  $6.47e+07$  with a significance level of 0.691 which is statistically insignificant. Increase in Women Business and the Law Index Score means that more women align themselves with economic decisions at various stages of their respective lives. The indicators include; Entrepreneurship, Mobility, Workplace, Assets, Pay, and Pension. Increase in Women Business and the Law Index Score means that more women have access to resources in their hands, have capabilities in their households and consequently have a positive outcomes. Therefore, Women Business and the Law Index Score have a positive correlation with the GDP but have an insignificant impact.

Unemployment rate and Gross Domestic Product have a negative correlation coefficient of  $-1.48e+09$  with a significance value of 0.343. Unemployment causes a negative economic growth known as recession. This is because when there is less demand for goods and services due to low purchasing power from the consumers who are the people, the firms will produce fewer goods and consequently require fewer workers. Nevertheless, some companies go bankrupt a situation that makes several people redundant. This has a negative impact to the economic growth since there is decrease in goods and services. The government costs can go beyond the payment of benefits to the victims who have lost their jobs and this reduces the Gross Domestic Product. Unemployment also increases dependent population and economic overload in the country.

## 6. Recommendations

The Afghanistan as a country, should invest in schools, develop curriculums that give female gender quality education to enhance their skills, knowledge and expertise. This will develop human capital which is one of positive drivers for sustainable economic growth.

The government should make sure that the larger proportion of Labor Force Participation rate compose of female gender who are working and decrease the number of female workers who are actively looking for jobs. Affirmative action should be taken to increase the employment rate in the country.

The government should encourage self-employment programs, and encourage skill training for employment promotion. This will increase the morale of people in the country to focus on being job creators instead of being job seekers.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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