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Analyzing female labor force participation in Afghanistan: Panel data approach

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Abstract. In comparison to other countries, female labor force participation in Afghanistan is the lowest. Afghanistan currently has the lowest labor force participation rate in the world, at 16%. According to the 2015 UN Gender Inequality Index, women own only 5% of Afghan businesses. The aim of this paper is to examine female labor force participation in Afghanistan. This is the first study of women's labor force participation in Afghanistan. Data were obtained from a variety of official sources, including the Central and Statistical Organization of Afghanistan, the World Bank, the Ministry of Labor, and the Ministry of Women's Affairs. The dataset covers 20 provinces in the different time periods from 2016 to 2020. In a panel data approach, we used a fixed effects model and a generalized method of moments (GMM) to analyze the effect of minimum wage, female education, female age, mother age, household size, father's education level, and female labor skills (work experience) on female labor force participation. Our findings show that the minimum wage, female education, female age, father's education level, and female work skills (work experience) all have significant and positive effects on female labor force participation. However, the mother's age has no effect on women's labor-force participation. There is a strong, statistically significant, and negative relationship between household size and female labor force participation. These findings imply that the Afghan government should consider using minimum wages, education, working age, and work experience as policy tools to increase female labor force participation. Using a panel data approach, this study contributes to the literature in Afghanistan.
Keywords. Female labor force; Household size; Education; Minimum wage; Labor market; Panel data, Afghanistan.
JEL. J20; J21; P21.

1. Introduction

The quality and distribution of a country's factors of production, particularly human capital, determines its economic growth (HC). Women constitute half of the labor force in any country (human capital). According to Mincer & Becker (1962), female labor force participation in economic activities and the labor market promotes robust growth (1965). Female labor force participation (FLFP) is at the forefront of policy debates worldwide, particularly in the Middle East/North Africa (MENA) region. The MENA region has a well-known low level of FLFP. According to recent data, MENA countries continue to rank near the bottom

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of the world in terms of women's labor-force participation. MENA countries account for 13 of the 20 countries with the lowest scores out of the 145 countries covered in this report. For over four decades, Afghanistan has been at war. Not only was the physical infrastructure destroyed during that time, but so were the regulatory, economic, social, and political institutions that ensure an efficient and effective environment for investment. Fortunately, the government has been engaged in establishing and developing the institutional requirements since the collapse of the Taliban regime and the new Afghan government's turn toward capitalism (a free market economy) in 2001.

Women were denied access to labor market and were not permitted to get job during the Taliban regime. They believed that women should stay at home by themselves to do housework and care for their children. When the new Afghan government came into power in 2001, the proportion of women in the labor market increased dramatically. In comparison to other countries, Afghanistan has a very high unemployment rate. According to the Ministry of Economy and the World Bank, approximately 40% of the population is poor. Afghanistan currently has the lowest FLFP rate in the world, at around 16%. The United Nations Gender Inequality Index (GII) ranks Afghanistan 171 out of 188 countries as the most difficult and dangerous country for women. As a result, Afghanistan's FLFP is less than the global average. According to World Bank data, the global average female labor force participation rate in 2011 was 51.3%, with South Asia accounting for 31.8%. In Afghanistan, the current FLFP rate is 15.7%. (World Bank, 2011). Many strategic initiatives have been planned and funded by the Afghan government, with the assistance of international partners. Thus, this study was conducted in only 20 of 34 provinces in Afghanistan. The main reason for choosing 20 provinces is that they have a higher proportion of female labor force than other provinces. Therefore, these provinces provided a reliable source of data for this study.

Some scholars have already studied the various factors that influence female labor force participation in Afghanistan. For example, education level (Azizi, 2019; Pikar, 2018; Qaeem, 2017), number of employed males and females in the households (Desai, 2016). Previous research on the female labor force participation rate (FLFPR) has yielded inconclusive results. These studies employ various methods and variables related to female labor force participation rates in three provinces of Afghanistan (Nangarhar, Kandarhar, and Mazar-e-Sharif). Moreover, these studies used time series data. This study revisits the initial findings and contributes to the literature on female labor force participation rates in Afghanistan using a panel data approach. As a result, this study is critical for determining the impact of minimum wage, female education, female age, mother age, household size, father's education level, and female labor skills (work experience) on the provincial female labor force participation rate in Afghanistan.

This study was motivated by the need to determine the labor force participation rate of women in Afghanistan due to the gender labor force disparities. We employ panel data analysis techniques such as the stationary panel test, fixed effect, and the Generalized Method of Movements (GMM). The time series period is from 2016 to 2020, while the cross-sectional data covers 20 provinces in Afghanistan. The purpose of this research is to examine female labor force participation (FLFP) in Afghanistan. The following research question must be answered in order to achieve the research objective.

What factors have an impact on FLFP in Afghanistan?

This paper is organized as follows. In Section 2, we summarize the relevant literature on female labor force participation. In section 3, we explain the data characteristics and methodology. The results of an econometric analysis of female labor force participation are summarized in section 4. Finally, in the last section, we conclude and discuss some policy implications.

2. Analyzing female labor force participation

The proportion of women in the labor force is an important indicator of economic development. Although economic growth leads to more efficient use of production factors, gender inequality has an impact on the supply and distribution of labor, which is the primary and most important factor of production. Women's labor-force participation, which is critical to an economy, varies greatly around the world (Psachar & Tzannatos, 1989). Despite the fact that females constitute the bulk and majority of the population in virtually all countries around the world, their labor-force participation has lagged behind that of men from the past to the present (Doan & Akyüz, 2017). As an integral part of a country's society, women can also play an influential and important role in its economic growth, progress, and development.

The experiences of developed economies also give us reason to believe that female labor force participation can play a significant role in the growth, progress, and development of all nations and economies. However, there are still numerous barriers and difficulties for female workers to enter the labor force (Khan, 2009). In general, the economy has three production factors. These factors are physical capital, human capital, and technology, all of which are critical to a country's growth. Unlike developed countries, emerging and developing countries have limited technological and physical capital resources. As a result, the abundance and wealth of labor force in emerging economies can play a critical role in accelerating economic growth (Qaeem, 2017). Human capital consists of men's and women's skills.

Human capital is heavily reliant on labor force quantity and quality. Emerging economies (economies) have not yet fully utilized the capacity of this factor of production (labor force), particularly among women who work (Hussein, 2012). It appears impossible to use the factors of production as effectively and efficiently as possible while achieving long-term economic growth, regardless of gender. Women's labor-force participation is one of the most significant social phenomena of the last century. According to (Goldin, 1994), when agriculture is the dominant sector of the economy, more women participate in the labor market, despite high poverty rates and low educational qualifications among women. When the economy transitions from agricultural to industrial sectors, women are unable to take advantage of the labor market opportunities available from the start. The primary reason was that the birth rate was high and the female labor force was undereducated. Furthermore, because the society is more traditional in the early stages of economic transition from agriculture to industries, FLFP in the labor market may be influenced and affected by social culture and customs (Hafeez & Ahmed, 2002). Several recent studies have looked at the factors and determinants that influence women's labor force participation and economic activities.

Eser & Berber (2008) "examined and researched women's participation in human capital (labor force) in Turkey According to the findings of their

research, the most important and fundamental reasons for the decline in women's economic activity are low levels of education, childcare, contrasting and unfavorable labor market situations, a lack of part-time job opportunities, flaws in labor laws, and persistent unfavorable traditions regarding women's employment" (Berber & Eser, 2008). Tansel (2002) also investigated the factors influencing women's employment in Turkey. He identified three major reasons for the lowest FLFP rate in economic activities. The first reason, he noted, is the longer and more extensive period of education for the younger population, which postpones and delays their entry into the labor market. The second reason is the shift in labor force from agriculture to industry, which he defined and explained in the study. The decline in labor force participation is due to higher labor force participation in agriculture than in the industrial sector. Third, the study discovered that the initial pension and retirement structures and systems resulted in a large number of people leaving the labor force (Tansel, 2002). Linacre (2007) examines lower FLFP in a number of OECD countries. This study discovered numerous factors and determinants that increase FLFP, such as employment of women with children, higher education of women, convenient childcare arrangements, and the availability of part-time work.

According to 2003 data, men with university degrees participated in the labor force at a rate that was only 13% higher than men with less than a high school diploma. As a result, female labor force participation was 26% higher with a high level of education (university-level education) than with only upper-secondary education (Linacre, 2007). Jaumotte (2003) investigated the determinants and factors influencing FLFP. He looked at data from 17 OECD countries between 1982 and 1999. Many policy tools were evaluated in the study, including tax handling and treatment of the second stipendiary in a family, subsidies, childcare, child benefits, paid motherhood and maternity leave, and tax incentives for the division of labor between men and women. The study's findings indicate that many of these policies have a positive impact on FLFP. However, the study's findings show that child support and FLFP are decreasing. Women's education, labor market conditions, and social and cultural attitudes/behaviors are the fundamental and most important variables influencing FLFP (Jaumotte, 2003). According to Hulme & Lawson (2010), a lack of suitable and adequate work opportunities promotes crime and exacerbates poverty in many countries. Another recent study confirms and suggests that poverty is a serious and important indicator in clarifying labor market cooperation, and various tests have found evidence of a positive relationship between abnormal (extraordinary) poverty and female labor force participation (FLFP).

Bridgesa, Lawsonb, & Begum (2011) conducted the testing and research. It was proposed that policies be implemented to improve women's access to guidance. This should provide and improve skills, improve access to credit, and increase employability through funding for independent work. Young women in Bangladesh try to confine themselves to jobs such as tailoring (counter) and food processing. This limits their employment opportunities (Rahman, 2005). Kargi (2014) sought a satisfactory explanation for the concept of "unemployment/jobless growth." According to the study, in addition to high population growth rates, the labor force participation rate was significantly lower. Turkey experienced average economic growth during the study period, but this did not result in job creation (employment). As he

stated, increasing the number of job openings would be beneficial in resolving this contradictory situation and increasing female labor-force participation. There will be a strong and convincing commitment to the process of economic growth and development (Kargi, 2014). Dixon-Mueller (2013) investigated the advantages of funding committed projects that assisted rural women in increasing their economic activities.

These projects have produced impressive results and provide rural women with an independent source of income. She believes that any development efforts should focus on young, earlier, and preparatory unmarried women. A study investigates how family economic conditions, education, and gender trust/belief systems influence women's work drive. The test included women under the age of 11 from 117 countries, including India, Pakistan, and Sri Lanka. The age groups between 25 and 55 have the highest levels of work drive support. As women, they will most likely be interested if they have the opportunity to open doors. This also gives them the ability to protect their children, as they feel unsafe leaving their young children at home while they work. Paid maternity leave protects women in cities (Ruth & Mueller, 2013).

According to research, enrolling in primary school ensures these non-professional women's future. They have a better chance of getting a job if they have less education than someone who has no scientific/academic knowledge. Women's education must be effectively ensured so that they are aware of their basic rights and the importance of working to contribute to economic growth. The study also discovered that religious beliefs in many countries prevent women from working. When religious beliefs are strong in a country, women between the ages of 25 and 55 have a lower share of the labor force. Been-Lon Chen, Mei Hsu, and Chih-Fang Lai (2014) investigated the link between labor force participation and long-term growth and unemployment. They discover that rising unemployment compensation (reimbursement), rising employment costs, rising worker bargaining power, low employment/ productivity, and long-term economic growth all have an impact on female labor force participation rates (Been, Mei & Chih, 2014).

Women's labor input, according to a study by EwaLechman and Harleen Kaur (2015), contributes to the decline in the early stages of economic growth. As a country grows financially, its economy shifts to a profit-driven model that operates more deliberately. From 1990 to 2012, the test consisted of a U-shaped curve examination of the consolidation of women's work interest and financial development in 162 countries. The connection between high wage and upper-center wage areas/regions is confirmed by a U-shape, which creates more opportunities for women. Unrelated evaluations confirmed that countries with lower wages have a relationship. The U-curve has flipped in countries with low wage levels (EwaLechman & Kaur, 2015). Tkachenko & Taras Mosiychuk (2014) studied post-socialist economies to better understand the role of labor in economic development. From 1960 to 2010, they collected time series data.

These countries have a low wage share of GDP. The availability of employment is unrelated to the availability of professional qualifications and quality educational resources. Female labor force participation rates are lower in comparison to other countries (Olena & Mosiychuk, 2014). Odile (2016) investigated gender differences in various age groups. According to his finding's, married men are more likely to be employed and have access to different opportunities than married women. Male labor force participation is

influenced by factors such as education, childbearing/fertility, and social security. His research focused on labor market outcomes in South Africa (Odile, 2016).

Tsani *et al.,* (2012) investigate the relationship between female labor force participation and economic development in the countries of the South Mediterranean. The authors use a two-step methodology, two econometric exercises, and general input modeling to demonstrate these relationships. The first method's findings show a U-shaped relationship between female labor force participation and economic growth. Additional research proposes factors influencing women's labor-force participation, such as personal, economic, and labor-market conditions. The study's findings also suggest that if economic growth slows, women's participation will decrease. However, as economic growth accelerates, so will women's labor-force participation. To achieve higher levels of female participation, cultural norms and legal codes need to be modernized by introducing reforms in laws and education.

According to Ahmad & Hafiz (2007), the two most important determinants affecting women's labor force participation are a country's education and economic conditions. Using data from married women in Mani Bahauddin (Punjab, Pakistan), they discovered that human capital is the most important determinant of women's income (Ahmad & Hafiz, 2007). Ejaz (2007) used the Pakistan Social and Living Standards Survey from 2004-2005 to discover that age, education level, and marital status all have a positive and significant impact on female labor force participation (FLFP). According to the findings, women who belong to a nuclear family and have access to vehicles are more likely to participate in economic activities, whereas having a large number of children and having household appliances reduces the likelihood of female labor sharing and participation (Ejaz, 2007). Abe & Oishi (2008) assessed and examined income inequality among married women using the Japan National Income and Expenditure Survey between 1994 and 2004. According to the findings of the study, between 1993 and 2003, inequality decreased, married women's average income increased, and thus the income gap between high-income women and all married women narrowed (Abe & Oishi, 2008).

Raaum *et al.,* (2007) discovered that wealthy married women with children and husbands reduced their workload (labor supply) in the US and UK compared to Nordic countries. Intergenerational data from five countries were used in the study: the United Kingdom, Denmark, Norway, the United States, and Finland. In the United Kingdom, Denmark, Norway, the United States, and Finland, the study sought to clarify the status of marriage and the role of gender in intergenerational income mobility. The findings indicate equal movement (mobility) of married women across countries, but intergenerational movement is greater in the Nordic countries than in the United Kingdom and the United States.

Garca-Escribano (2004) observed, using a U.S. panel study of income dynamics from 1975 to 1999, that the presence of liquid (liquidity) constraints and transition shocks to the husband's income increases women's labor force participation. Furthermore, these factors increase the number of hours worked by women. The study presents the substitution effect between female labor force participation and shocks to husband's income by using an instrumented cross-sectional variance decay and decomposition (Garca-Escribano, 2004). Maglad (1998) revealed, using the Sudan Demographic Survey from 1990-1991, that education is positively and significantly correlated

with women's wage growth and decision to enter the labor market. Moreover, female labor force participation (FLFP) is positively related to women's wages and negatively related to wealth and having small children (Maglad, 1998).

The study of FLFP in emerging countries such as Afghanistan is more complicated because there are many related determinants to consider. Researchers have identified several magnitudes and aspects that affect women's ability to participate in the labor market: economic growth and development, educational attainment, social dimensions (e.g., norms affecting marriage, birth, and women's roles outside the family), institutional settings (e.g., laws, protections, and benefits), access to credit and other costs (inputs), and family/spouse characteristics (Gaddis & Stephan, 2013). According to the U-shaped female labor force hypothesis, as countries develop, married women's labor force participation decreases and then increases (Goldin & Claudia, 1994).

Females are more active in the workforce when incomes and returns are very low or small and agriculture dominates - sometimes as paid laborers, but more frequently as paid employees on family farmhouses. The income effect occurs when women's labor-force participation decreases as their incomes rise, the market expands, and new technologies are introduced. This is due to the relative decrease in the price of home-made goods as well as the decline in demand for women's agricultural labor. Even when women's comparative/relative wages (wages) rise, married women may be denied official employment due to social norms and/or employer preferences.

At this stage, the substitution effect (replacing home production with labor market production) dominates and enforces the income effect. This theory suggests that only economic growth can impact women's workforce participation.

Fig. 1 depicts how Afghanistan fits into the U-shaped hypothesis. Afghanistan has a much lower FLFP rate than expected given its level of growth and development. Political freedom occurs decades before economic change in many of the countries studied for the U-shaped hypothesis. Political freedom is a recent phenomenon in war-torn Afghanistan, making the U-shaped hypothesis difficult to implement. In terms of per capita income, the countries studied to test the hypothesis were never as poor as the poorest countries are today. They never held strong religious beliefs, so women's perspectives may differ. Nevertheless, the role of education in effecting change for women may be similar.

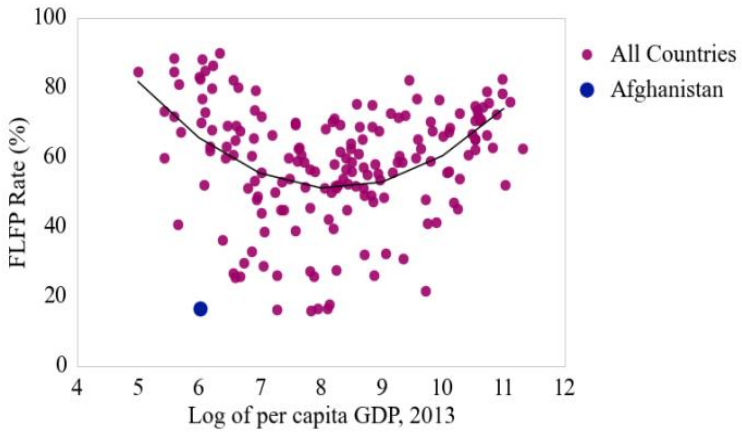

Figure 1. *The position of Afghanistan in the U-shaped hypothesis*
Source: WDI (2015).

Educational attainment is one of the most important determinants and factors of labor market outcomes in both developed and developing countries, implying that it is an important predictor of women's labor market participation. There appears to be a U-shaped relationship between education level and labor force participation; high labor force participation appears to be associated with both very low and very high education levels (Desai, & Li,2016). During the Taliban regime in Afghanistan (1997), women were confined to their homes and were not permitted to work outside the home. Fortunately, since the Taliban regime's collapse in 2001 and the establishment of the Afghan government, the proportion of women in the labor force has significantly increased and improved.

According to the UN's Gender Inequality Index (GII), Afghanistan ranks 171 out of 188 countries as the most challenging and risky country for women in the world. As a result, FLFP in Afghanistan is lower than the global average for women. According to World Bank data, women workers accounted for 51.3% of all workers, while this figure was only around 31.8% in South Asia. Whereas Afghanistan's current FLFP rate is around 15.7%, (World Bank, 2011). These bleak and depressing statistics have serious implications for the country's socioeconomic inclusion, poverty reduction, and overall growth, development, and productivity.

As previously stated, some underlying factors prevent women from working in Afghanistan. These factors include limited mobility, gender inequality through legal structures, a lack of economic opportunities, and little or no bargaining power in the household or family. Empirical evidence suggests that Afghan women want or are willing to work. In a 2015 survey, 74% of Afghan females (women) demonstrated that women should be allowed to access the labor market and get a job what they want. Moreover, the UN estimated in 2015 that females owned only 5% of businesses in Afghanistan. Poverty is widespread in this country, with women suffering the most. In some rural areas, there is still a prevalent belief that women do not have the right to attend school, or that they can only attend primary school. Women, they believe, should only do their homework and care for their children. According to a 2017 survey conducted by the Afghanistan Central Statistics Organization (CSO), 74.5% of Afghan women want to work outside the home if women are allowed to do so (CSO, 2017).

The Afghan government has also made a number of significant and substantial commitments to women, such as signing international gender agreements and ensuring equality in its structure (constitution). In this regard, the Afghan government, with the assistance of its international partners (agencies, donors), has proposed a number of policies to provide opportunities for Afghan women in the labor market. Young girls have been employed in a variety of fields, including education, health, agriculture, industry, security, telecommunications, and so on. Despite these accomplishments, a sizable proportion of the country's female workforce remains unemployed. Male unemployment increased to 22.6% in 2013 from 8.5 million active labor force participants, while female unemployment increased 2.5 times (World Bank, 2017).

3. Data and model

The dataset we used was compiled by the Central and Statistics Organization (CSO) of Afghanistan, the World Bank (WB), the Ministry of

Labor, and the Ministry of Women's Affairs. The secondary data revealed that panel data is divided into two parts: times-series data and cross-sectional data. Time-series data are annual data for a period of five years. In the meantime, the cross-sectional data will cover 20 of Afghanistan's 34 provinces. Female labor force participation (FLP) is defined as the proportion of economically active females aged 18 to 60 divided by the total female population of the same age group (18-60). As both time and individual provinces are used, they fall into the category of panel data. The chosen province is denoted by the i. Therefore, the observation of i=20 is for the provinces of Kabul, Nangarhar, Herat, Kapisa, Bamyan, Kankdar, Parwan, Khost, Daykundi, Samangan, Takhar, Farah, Faryab, Logar, Panjishir, Laghman, Balkh, Badakhsah, Baghlan, and Kunar, and the study's sample size is from 2016 to 2020. Thus, time is denoted as t= 5 years. These provinces were chosen based on data availability for the years 2016-2020. We took the natural logarithm of the dependent variable (lnFLP). The dataset is unbalanced, with several observations missing across different years and provinces due to a lack of data.

We use the Levin, Lin, and Chu method to check the stationarity of panel data with a unit root test. In this study, we examine at women's labor-force participation in Afghanistan. The fixed effects model and the system generalized method of moments (GMM) estimator developed by Arellano & Bover (1995) and Blundell & Bond (1998) were used in this study. We provide system GMM estimation as a consistency check in addition to the fixed effects estimates. In lagged dependent variable models, the GMM estimator accounts for the problems caused by unobserved province specific effects and joint endogeneity, as well as controlling for simultaneity and omitted variable biases.

Fixed effect equation;

$$\ln FLFP_{i,t} = \alpha_i + \beta_1 Miw_{i,t} + \beta_2 Feduc_{i,t} + \beta_3 FemAge_{i,t} + \beta_4 MothAge_{i,t} + \beta_5 Hsize_{i,t} + \beta_6 FAeduc_{i,t} + \beta_7 FLS\ (Work\ exp)_{it} + u_{i,t} \quad (1)$$

GMM equation;

$$\ln FLFP_{it} = \rho FLFP_{i,t-1} + \beta_1 Miw_{i,t} + \beta_2 Feduc_{i,t} + \beta_3 FemAge_{i,t} + \beta_4 MothAge_{i,t} + \beta_5 Hsize_{i,t} + \beta_6 FAeduc_{i,t} + \beta_7 FLS\ (Work\ exp)_{i,t} + \mu_i + u_{i,t} \quad (2)$$

The dependent variable is the natural logarithm of the female labor force participation (FLFP), while the explanatory variables are minimum wage rate in Afghani (Miw), female education (elementary, secondary, high school, bachelor's, master's, and Ph.D{Feduc}), female age in years (FemAge), mother age in years (MothAge), household size (Hsize), father's education level (Faeduc), and female labor skills (FLS). μ_i is an unobserved province specific effect, u is the error term, and i and t represent subscripts for provinces and time respectively.

Hypothesis of the model

H1: Minimum wage has a significant effect on female labor force participation.

H2: Female education level has a significant effect on female labor force participation.

H3: Female age has a significant effect on female labor force participation.

H4: Female labor skills (work experience) has a significant effect on female labor force participation.

4. The empirical analysis

Several statistical test results are provided in this section.

4.1. Descriptive analysis

Analysis the Position of Labor Force Participation in Afghanistan

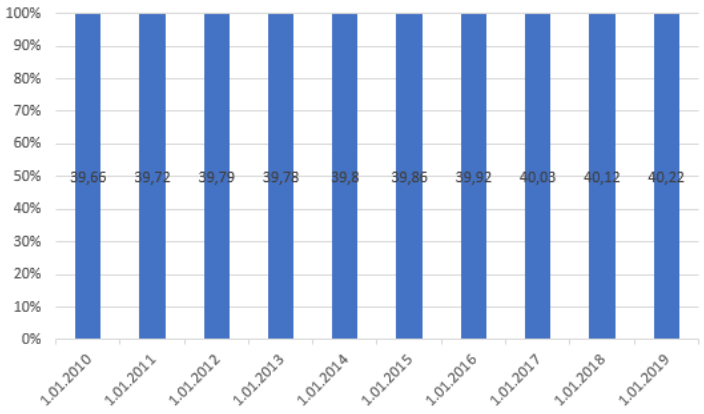

Figure 1. *Participation Rate for Ages 15-24. Source Authors' Analysis based on World Bank data.*

The labor force participation rate (FLFPR) for the 15-24 age group is the proportion of the population aged 15 who is economically active and working: all people who provide and supply labor for the production of goods and services in a given period. Afghanistan's labor force participation rate was 39.66% in 2010, but it rose to 39.72% in 2011. In 2012, the labor force participation rate was 39.79%. The labor force participation rate fell from 39.78 to 39.8 in 2014. From 2015 to 2019, the labor force participation rate gradually increased.

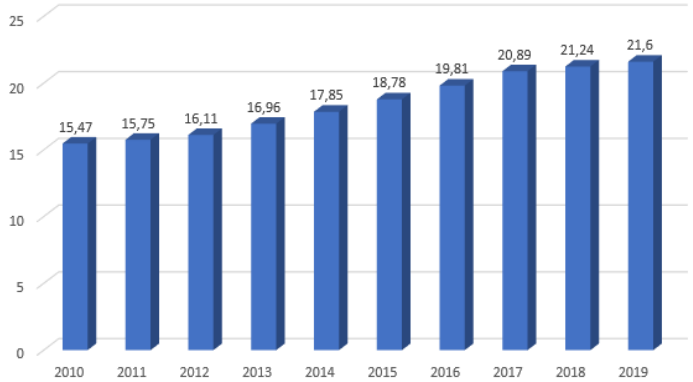

Figure 2. *Labor force, female (% of total labor force). Source Authors' Analysis based on World Bank data.*

According to the fig. 2, in 2010, the labor force participation rate of women in Afghanistan was 15.47% of the total labor force. In 2011, this rate was 15.75%. From 2012 to 2019, the labor force participation rate of women in Afghanistan has gradually increased.

4.2. Unit root test

The Levin, Lin, and Chu unit root test results are shown in Table 1.

Table 1. *Unit root test*

Variables	Degree of Integration	p-value*	Conclusion
LnFLFP	I(1)	0.0000**	Panel is stationary
Miw	I(1)	0.0000**	Panel is stationary
Feduc	I(1)	0.0000**	Panel is stationary
FemAge	I(1)	0.0000**	Panel is stationary
MothAge	I(1)	0.0000**	Panel is stationary
Hsize	I(1)	0.0000**	Panel is stationary
FAeduc	I(1)	0.0000**	Panel is stationary
FLS (work experience)	I(1)	0.0000**	Panel is stationary

Notes: (*) Levin, Lin & Chu; (**) Significant at a significant level of 1%, 5%, and 10%
Source: Authors' Analysis based on Word Bank data

Table 1. shows that the female labor force participation rate is stationary at the first-order difference (p-value < 0.05). The other variables such as minimum wage, female education, mother's age, household size, father's education level, and female labor skills (work experience) have also been stationary at the first-order difference.

4.3. The panel estimations of fixed-effect, and generalized method of movements

Table 2. *Coefficients*

Dependent variable: lagged Female labor force participation

	Fixed	GMM
Lagged FLPF		0.166
		(0.160)
Miw	1.42e-07***	5.22e-08*
	(1.91e-08)	(2.85e-08)
Feduc	0.232***	0.250***
	(0.0610)	(0.0697)
FemAge	0.0310***	0.0494***
	(0.0020)	(0.0060)
MothAge	0.000199	0.000623
	(0.00137)	(0.00125)
Hsize	-0.0232**	-0.0121
	(0.0101)	(0.0121)
FAeduc	0.206***	0.229***
	(0.0638)	(0.0789)
FLS (Work exp)	0.0560*	0.0589*
	(0.0130)	(0.0232)
Constant	4.880***	4.002***
	(0.291)	(0.976)
F-statistics (df)	11.94	
Prob > F	0.0000	
Wald statistics (df)		24.82
Prob > chi2		0.0017
Observations	100	60
Number of ProvincesCode	20	20
R-squared	0.519	
Standard errors in parentheses		

Notes: *** p<0.01, ** p<0.05, * p<0.1
Source: Authors' Analysis based on Word Bank data

Estimation results are reported in Table 2. The F (7,73) is 11.94 and the probability value (Prob > F) is 0.000, which is less than 5%. we can conclude that our model is very good and nicely fitted. Also, the R2 value is 51.9%. The R^2 value is generally lower in cross-sectional analysis than in time-series models. The R^2 value is not too high in a panel data analysis because of the heterogeneity of cross-sections. If the panel data is more time-dominant, R^2 will be arguably higher than when the panel data is more dominantly cross-section (Peizhi & Ramzan, 2020). The estimated coefficient of minimum wage is significant and positively related with female labor force participation. Moreover, while there is a significant and positive estimated relationship between female education and female labor force participation. In other words, the coefficient of female education is significant to explain the dependent variable (female labor force participation).

The coefficient of female age has positive and significant effect on the female labor force participation. The estimated coefficient of mother age has positive but insignificant effect on female labor force participation. In other words, mother age is likely to increase FLFP, but the association is statistically insignificant. There is a strong, statistically significant, and negative relationship between household size and female labor force participation. The father's education level variable, has significant and positive effect on female labor force participation. The findings indicate that the coefficient of female labor skills (work experience) is significant and positively related with female labor force participation.

The final estimation method is system generalized method of movements (S-GMM) where we examine heterogeneity in the adjustment dynamics between various categories. Instruments for differenced equation include the lagged value of female labor force participation. Lagged female labor force participation is insignificant and positively related with female labor force participation. The coefficient values of minimum wage and female education level are significantly positive, implying that these variables positively affect female labor force participation. The estimated coefficient of female age is significant and positively associated with female labore force participation. There is also positive and significant estimated association between father' education level and female labor force participation rate. female. Finally, the coefficient of female labor skills (work experience) has positive and significant effect on FLFP.

5. Conclusion and policy implications

Any country's economic growth is primarily determined by the quality and distribution of its factors of production, particularly human capital (HC). Women make up half of the labor force in each country (human capital). Afghanistan has the lowest FLFP rate in the world when compared to other countries. This suggests that there are numerous key factors and reasons that prevent women from obtaining jobs, such as security concerns, limited mobility, a lack of economic opportunities, gender inequality due to legal structure/framework, and less or low bargaining power in the household. Afghanistan ranks 171st out of 188 countries in the Gender Inequality Index (GII), making it the most challenging and dangerous country in the world for women. Using fixed effect and GMM models, we show that the minimum wage, female education, female age, father's education, and female labor skills

(work experience) all have a significant positive effect on female labor force participation.

From a policy perspective, the Afghan government should maintain minimum wages in order to motivate and assist women in earning decent wages, as well as increase the competence of the female labor force through education, which improves the quality of human resources (human investment). Furthermore, arrangements regarding women's working age and work experience are required to facilitate the availability of skilled female labor. Therefore, the Afghan government must consider minimum wages, education, working age, and work experience as policy tools to increase female labor force participation. Furthermore, Afghanistan introduces a decentralization policy that delays the implementation of macro policies (e.g., labor policy). As a result, when policies are transferred to local governments, the central government requires more adjustment time to ensure policy synergy and harmonization. To gain a better understanding of the short-term determinants of female labor force participation rate in each province of Afghanistan, future studies should consider dynamic panel data.

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