

Socioeconomic Drivers of Women's Employment Patterns: Evidence from the Next Eleven (N-11) Economies

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Abstract:

Women's employment emerges as a fundamental global development challenge, emphasizing the need to address the gender disparities in the workforce to foster inclusive and sustainable growth. This study examines the relationship between women's employment (WEMP) and some primary socio-economic determinants like education, fertility rate, workplace regulation, economic growth, and FDI in the Next Eleven (N-11) countries during the period of 1993-2022 by applying the CS-ARDL approach. This study further analyzed the U-feminisation hypothesis between economic growth and WEMP. The findings reveal the positive and significant impact of education on WEMP as 1% rise in education increase 0.10% employment opportunities for women, while the fertility rate, workplace regulation, and FDI show negative impact on female employment rate. Moreover, this study validates the U-feminisation hypothesis of economic growth and WEMP for N-11 countries which implies that employment opportunities for women decline initially with economic growth, reach a minimum level and gradually increase as economic growth continues. This study makes a significant contribution by analyzing the socio-economic determinants of WEMP in the Next Eleven countries.

Keywords: socio-economic, women's employment, CS-ARDL, N-11 countries

Abbreviation

WEMP: Women's Employment

Edu: Education

FR: Fertility Rate

WR: Workplace Regulations

FDI: Foreign Direct Investment

CSD: Cross-Sectional Dependence

1. Introduction

Globally, women contribute to economic activities with a workforce participation rate of 42.2%, while men outpace this by 72.5%, further women participation rate for lower and middle-income countries is around 47%, as compared to 72.5% participation rate of men in total workforce (World Bank, 2022). It indicates a relatively narrower gender gap in workforce participation in upper-middle-income countries compared to the global average. At present, both academic and social attention has been focused on the high prevalence of female participation in the workforce in emerging countries. The high rate of women's employment (WEMP) can improve their quality of life, as well as enhance their socio-economic status in the real world (Shami et al., 2019).

Women's engagement in the workforce is influenced by many factors, including the social and economic environment (Raihan et al., 2022). According to Truong et al. (2020) educational level, family arrangement, number of children, foreign investment, government expenditures, and financial development of a country are critical factors that influence the employment rate of women. The participation of females in the labor market varies considerably across nations, reflecting differences in 'economic development', 'social norms', 'education level', 'fertility rate', and 'access to childcare and supportive services' (Verick, 2014). These factors play a complex role in determining employment opportunities for women, particularly in developing countries additionally, the high rate of WEMP is essential for the growth of the economy, and thus their participation rate serves as an indicator of a country's potential for rapid economic growth (ŞAHİN, 2022).

Over the past two decades, the employment rate of women has significantly risen in developing countries, contributing positively to their economies (Nica et al., 2023). Despite this progress, women in these regions often face challenges, including lower levels of education and lack of skill training, that hinder their abilities to access broader employment opportunities (Radović-Marković & Achakpa, 2018). Some studies identified the crucial factors of WEMP at micro level including; education, age, marriage, and children (Milanović et al., 2022; Steiber & Haas, 2012) while few explored socio-economic factors of female participation in labor market such as education, per capita GDP, ratio of female to tertiary education, fertility rate, urbanization at macro level (Voumik et al., 2023; Taşseven et al., 2016). Many developing nations experience gender disparities in education, employment, and health (Borrowman & Klasen, 2020). Theoretically, education plays a pivotal role in determining the workforce size and impacting women's employment, further demonstrating that educated women earn more money, increasing overall expenditures

(Van Stel & Van Der Zwan, 2020). It is empirically investigated by Elsayed & Shirshikova (2023) and Hassan et al. (2020) that education has a positive impact on WEMP in lower-income countries. Further, existing literature examines the impact of fertility on WEMP (Wang & Chen, 2023; Tumen & Turan, 2023) and reveals that with a declining fertility rate, women are able to spend more time at work, as they will spend less time to manage their child care responsibilities. This finding is empirically supported by Jin et al. (2023). Some prior studies have highlighted the impact of workplace regulation on participation of females in labor force (Mitra, 2019; Chikh-Amnache & Mekhzoumi, 2023). In addition, FDI also has a significant impact on WEMP, as increased FDI positively correlates with higher women participation in the labor force and greater FDI contributes to increase female participation in new ventures and small businesses (Fang et al., 2023). Further, a 'U-shaped' relationship between economic growth and WEMP has been observed in some prior literature (Verick, 2014; Park, 2012). This U-shaped relationship is supported by U- feminisation hypothesis, implies that, increase in economic growth at initial level, employment opportunities for women declines, reaches at minimum level and subsequently increases with the increase in economic growth (Yıldırım & Akinci, 2021). Sinha (1965), Boserup (1970), and Goldin (1994), consider as the pioneers of this theory, suggest a long-term 'U-shaped' relationship between 'female employment' and 'economic growth'. The study conducted by Banerjee & Ghose (2023) empirically estimated and confirmed this 'U-shaped' relationship.

As the literature cited above generally examines the factors of women's employment (WEMP) at micro level, while a few studies explore crucial macro determinates of WEMP. Secondly, this study fills the gap in the literature by analyzing the important socio-economic determinants of WEMP, such as education, fertility rate, workplace regulation economic growth and FDI, particularly at macro level. Another contribution of this study that it explores the factors of female employment in the context of Next Eleven (N-11) countries, the most ignored region in the literature. The decision to prioritize the N11 countries is based on their substantial prospects for achieving significant economic growth in the near future (Khan et al., 2022). The importance of WEMP is underscored by the recognition that it is a pivotal determinant of economic growth in these countries.

The following sections cover the literature review, methodology (including empirical models, data, and econometric methods), analytical findings and associated discussions, and concluding remarks. Additionally, policy recommendations are provided to enhance women's employment in the N-11 nations.

2. Literature Review

An overview of the empirical literature investigating the determinants of the WEMP is provided in this section. Numerous studies have been carried out to identify these factors throughout the world. Several researchers have examined the phenomena of female employment from the perspective of structural econometric modelling, financial incentive, and from the point of view of life cycle decision making, moreover the growth of WEMP signifies a rise in labor availability, leading to an increase in a nation's production capacity, thereby benefiting future economic growth and output (Solotaroff et al., 2019; Aazami et al., 2011).

Education significantly influences women's participation in the workforce. When education level rises, female employment increases (ŞAHİN, 2022), moreover, women comparative advantage in the labor market increases as their level of education increases, thus, they spend less time on housework (Cho & Cho, 2015). Elsayed & Shirshikova (2023) investigate WEMP across Egypt in 1998, 2006, and 2012 from the 'Egyptian Labor Market Panel Survey' (ELMPS) and conclude that increasing participation of women in the labor market is associated with higher education.

Several studies have found that fertility rate is another core factor that impacts women's work force participation decision, when fertility rate declines, women have more time for work since they no longer need to deal with baby care (Lee et al., 2012). Research conducted by Jaramillo-Baanante (2017) found negative relationships between fertility rate and women's inclusion in the labor force. Considering the socioeconomic aspects of female employment in developing countries, urbanization and workplace regulations emerge as fundamental factors with a significant impact on the rate of women's employment (Shami et al., 2019). Further, workplace regulations, which include laws regarding the equal rights of men and women in the workforce are effective in reducing the wage gap between men and women, leading to equitable compensation practices across genders (Hyland et al., 2020).

Hossain et al. (2022) investigate the economic determinants of female employment for low and middle-income countries and found the positive effect of FDI on female employment along with positive impact of per capita GDP and urbanization. Lastly, various studies follow U-feminisation hypothesis and identified the U-shaped relation between economic growth and WEMP rate (Yıldırım & Akinci, 2021; Doğan & Akyüz, 2017).

Table 1 summarizes the imperative studies that give critical insights regarding the factors affecting female employment across regions and nations. It is manifest that WEMP is influenced by a blend of micro and macro factors, along with socio-economic determinants; education, gender, age, fertility rate, real per capita GDP, FDI, work regulation, mobility, household burdens; economic conditions; and social support. Some studies

emphasize the importance of education and society support in promoting women's participation in the workforce and the economy.

Table 1: Main studies on Women's Employment Factors

Authors	Period of Study	Countries	Variables	Methods	Findings
Voumik et al. (2023)	1990-2020	South Asian countries	Female Education, Trade openness and P/C GDP	CS-ARDL, AMG, MG, and CCEMG	Positive and significant impact of female education and trade openness, while P/C GDP and urbanization adversely impact on female employment in short and long run.
Buterin et al. (2023)	2009-2022	27 European Union (EU) members	Education and social change	Fixed effect and Random Effect Models	Education and social change has same significant impact on both men and women labor force participation in these countries.
Nica et al. (2023)	1991-2021	8 SAARC countries	Trade openness, GDP, FDI, urbanization	Panel QR and GMM	Trade openness along with GDP and FDI positively impact women employment, while urbanization curbs female access to workforce in these countries.
Chikh-Amnache & Mekhzoumi (2023)	1980-2021	10 South-East Asian countries	10 most important indicators includes; pay, workplace regulation, mobility, assets, school enrollments and others	Quantile regression-MM-QR	Some indicators have positive impact on female labor force participation like pay, workforce, mobility and others, while parenthood, unemployment and marriage shows adverse effect for female participation.
Saini et al. (2023)	Primary data of 144 women respondents	India	work-life balance, job stability, professional advancement, work atmosphere, and salary	Exploratory Factor Analysis	Professional advancement, work atmosphere and salary, work-life balance, and job satisfaction are key factors of working women's attitudes towards jobs.
Milanović et al. (2022)	Primary data of 678 women in 2019	Region of Southern and Eastern Serbia	age, education income, location, and kids ages 7	Binary Probit Model	Women's employment is significantly affected by demographic factors such as age, residence, income, education and having kids under 7 year of age

Klasen et al. (2021)	2019	8 low and middle income countries	Characteristics of women and their families, education and fertility rate	standardized empirical framework for comparative analyses	Women's characteristics differ across countries. Education and fertility steadily effect participation rate of women in employment.
Shami et al. (2019)	1990-2015	5 South Asian countries	GNI per capita, education, fertility rate	PCSE Model, LM Test	Findings validate Kuznet curve hypothesis and strong impact of the macro factors on female employment participation decision.
Demirhan & Demirhan (2017)	1990-2014	83 developing countries	Improving education levels and increasing male participation in labor markets.	Panel data model	Advanced educational level and increasing male participation contribute to higher level of female participation in employment rate
Taşseven et al. (2016)	1990-2013	32 OECD countries	Unemployment rate, GDP per capita, and fertility rate	Panel Logit Model	Female employment is positively and significantly affected by GDP per capita, unemployment and fertility rate.
Anyanwu (2012)	1991-2009	Sub-Saharan and North Africa	Quadratic per capita GDP, domestic investment, education, trade openness, urbanization	Cross-sectional Model	In Sub-Saharan Africa, per capita GDP, domestic investment, and education, increase female employment, while have these have negative correlation in North Africa.
Kiani (2009)	2009	Pakistan	Household income, female literacy, status of head of family	Tobit Model	Female incomes is negatively associated with women participation in workforce, while female literacy shows positive impact on women employment status.

The following hypothesis is formulated from the preceding discussion and existing research.

H1: Education, fertility rate, workplace regulation, GDP per capita and FDI significantly impact women's employment.

H2: A U-feminisation relationship exists between GDP per capita and women's employment.

The literature cited above focuses primarily on micro variables that affect WEMP in some developing and developed countries while a few studies investigate the socio-economic variables at the macro level, and ignore their impact on emerging developing nations which have the potential

to become the world's largest economies. Moreover, this study contributes to estimate the impact of workplace regulations and the U-feminisation hypothesis on female employment level. This study fulfills this gap by exploring some crucial socio-economic factors of women's employment in Next Eleven (N-11) countries.

3. Methodology

3.1 Data

The current study has collected the annual data for the panel of N-11 countries, comprising Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, Turkiye, South Korea and Viet Nam over the period of 2003-2022 to examine the socio-economic determinants of women employment.

Women Employment: Dependent Variable

Women's employment is the most fundamental factor of aggregate labor market and mainly measured by the female labor force participation rate (% of total female labor force) and sourced from WDI database (Voumik et al., 2023; Shami et al., 2019).

Socio-economic factors: Independent Variables

Women's employment is affected by many socio-economic factors like education, age, income, young children, income and others (Abdurahman & Jemal, 2022). This study mainly focuses on some fundamental social and economic determinants of women's employment for N-11 countries. Education is the primary factor of women's employment and serves as the catalyst for social, cultural and economic development (Milanović et al., 2022) facilitating knowledge transfer, job training, fostering good citizenship, and reducing social inequality (Salinas, 2018). Literacy rate, adult female (% of females ages 15 and above) from WDI database is used to measure the impact of education on women employment (Mumba, 2020). Another significant factor of women's decisions regarding workforce participation is the fertility rate (Shami et al., 2019), the proxy of average number of children born by a woman during her productive years is utilized to measure the fertility rate in N-11 countries and sourced from WDI (Klasen et al., 2021). Workplace regulations can either facilitate or hinder women's participation in labor market, include factors such as their legal capacity and ability to work, as well as the presence of workplace safeguards against sexual harassment and discrimination (Hyland et al., 2020). Women Business and the Law Index Score (scale 1-100) from the World Bank Gender portal is exploited to measure the impact of workplace regulation on women employment (Chikh-Amnache & Mekhzoumi, 2023).

The explanatory variables GDP per capita (constant 2015 US dollars) and square of GDP per capita are used as a proxy from WDI database to exemplify the U-shaped relationship between economic growth and women's employment (Yıldırım & Akinci, 2021). Lastly, Foreign direct

investment (FDI), as a measure of economic openness has the potential to influence international technology transfer, generate greater job prospects for women, as well as, exploit the low-skilled and low-wage female workers (Fang et al., 2023; Baylor, 2021). FDI is measured as a “Foreign direct investment, net inflows (BOP, current USD)” from WDI to gauge its impact on women employment (Nica et al., 2023). All the data is converted into natural logarithm (excluding workplace regulation index), to smooth their values overtime, reducing heterogeneity among variables, and allowing us to predict the relationships between them correctly.

3.2 Empirical Model and Estimators

The main objective of this study is to explore the socio-economic factors influencing women's workforce participation rates. In this context, the women employment (% of female in labor force) serves as the dependent variable, while explanatory variables include education, urbanization, fertility rate, workplace regulation, per capita GDP, the square of per capita GDP, and FDI. Table 2 presents the names, symbols, descriptions, and source for the entire model.

Table 2: Variables and Data Source

Symbols	Variables	Units/Descriptions	Source
WEMP	Women's Employment	'Percentage of female employment to population ratio' (Labor force, female % of total labor force)	WDI database
Edu	Education	'Literacy rate', adult female (% of females ages 15 and above)	WDI
FR	Fertility rate	Fertility rate (total birth per woman)	WDI
WR	Workplace Regulations	Women Business and the Law Index Score (scale 1-100)	World Bank Gender Data Portal
GNI	GDP P/C	GDP per capita (current US dollar)	WDI
FDI	Foreign Direct Investment	FDI, net inflows (BOP, current USD)	WDI

Based on the literature cited above, this study demonstrates a theoretical framework to evaluate some socio-economic factors such as education (Edu), fertility rate (FR), workplace regulation (WR), GDP per capita (GDPpc), and FDI as fundamental determinants of WEMP in N-11 countries.

$$WEMP = f(Edu, FR, WR, GDPpc, GDPpc^2, FDI) \quad (1)$$

The subsequent econometric model is employed for panel data analysis to evaluate the influence of these socio-economic factors on female employment.

$$\ln WEMP_{it} = \beta_0 + \beta_1 \ln Edu_{it} + \beta_2 \ln FR_{it} + \beta_3 WR + \beta_4 \ln GDPpc_{it} + \beta_5 \ln GDPpc^2_{it} + \beta_6 \ln FDI_{it} + \varepsilon_{it} \quad (2)$$

In model (2), the subscripts i and t represent countries and years, respectively. The variable WEMP signifies the level of 'women's employment' particularly in N-11 countries. Further, Edu, FR, WR, GDPpc, GDPpc², FDI denote education, fertility rate, workplace regulation, GDP per capita, GDP per capita squared, and foreign direct investment respectively. In addition, the constant term is symbolized as β_0 , and the estimated coefficients are denoted by β_1 to β_5 . The stochastic error term is denoted by ε_{it} , attributed to random variations or unobserved factors in the model.

3.3 Econometric Methodology

This study seeks to explore the long-run relationship between WEMP, education, fertility, workplace regulation, economic growth, and FDI by undertaking the following econometric techniques.

3.3.1 Cross-section Dependence and Unit root tests

The phenomenon of cross-section dependence (CSD) has been extensively addressed in the existing literature, primarily due to its potential to introduce biases in estimation models and undermine their validity. It is imperative to address CSD to ensure accurate and robust results. To access the 'cross-sectional dependency Pesaran (2004) technique is employed that introduces a simple test for CSD dependence, which is relied on the mean pairwise correlation coefficients of the OLS residuals obtained from the augmented framework (Dickey & Fuller, 1979). To investigate the existence of cross-sectional correlation, the Pesaran (2004) test is employed and applicable in both stationary and nonstationary panels (Erdoğan et al., 2020). There is no cross-sectional dependence in the null hypothesis of the test. As per the results of Pesaran (2004), CSD test (see Table 3), it is evident that cross-sectional dependence exists in most of the variables, therefore it is recommended to apply 2nd generation panel unit root test Pesaran Panel Unit Root test (2007).

3.3.2 Cointegration Tests

The cointegration analysis is employed to determine the long-term relationship between the series. Westerlund Panel Cointegration (Westerlund, 2008), Kao's (Kao, 1999) and Johansen's tests (Johansen, 1991) are employed for cointegration analysis. There is a common null hypothesis of 'no cointegration' and the same alternative for all tests.

3.3.3. CS-ARDL Test

To examine the association between the variables this study employs a recently developed method known as CS-ARDL developed by Chudik and Pesaran (2015) in conjunction with FMOLS and DOLS. The CS-ARDL

framework incorporates short-term and long-term estimates, error correction components, as well as short-term and long-term cross-sectional means for each variable of the study. This approach tackles endogeneity issues, mix-order integration in unit root testing and cross-sectional dependence (Malik & Masood, 2022). The CS-ARDL approach has some benefits over the other methods. First, it can generate robust estimates even when the variables are integrated of different order such as $I(0)$ or $I(1)$ (Salinas et al., 2023). Second, this model provides accurate results even in the presence of short-run and long-run CSD (Chudik and Pesaran, 2015). Third, the CS-ARDL is a mean group estimation approach that accommodates heterogeneous slope coefficients. It extends the ARDL model by using cross-sectional averages as proxies for unobserved common factors and their lags (Ahmed, 2020). Lastly, it is an efficient method in the presence of weak exogeneity arising from the lagged dependent variable in the model. The baseline model of CS-ARDL is represented in equation (3).

$$LWEMP = \alpha_{it} + \sum_{j=1}^P \beta_{it} LWEMP_{i,t-j} + \sum_{j=0}^P \gamma_{it} X_{t-j} + \sum_{j=0}^3 \delta \bar{Y}_{t-j} + \varepsilon_{it} \quad (3)$$

Where $\bar{Y}_t = (\Delta LWEMP_t, \bar{X}_t)'$ and $X_{it} = (LEdu_{it} LFR_{it} LWR_{it} LGDPpc_{it} LGDPpc_{it}^2 LFDI_{it})'$.

3.3.4. Robustness Analysis

In order to estimate the long-run parameters, it is necessary to establish a cointegration relationship. Several methods have been proposed for estimating panel cointegration parameters, including 'pooled OLS', 'dynamic OLS' (DOLS), and 'fully modified OLS' (FMOLS). The OLS estimator for long-run equations leads to preconception parameter estimates until regressors are firmly exogenous; thus, OLS estimators are not capable of making accurate inferences (Batool & Akbar, 2023). The alternative approaches for measuring long term cointegration are FMOLS proposed by (Pedroni, 2001), developed by (Phillips & Hansen, 1990), and DOLS developed by (Stock & Watson, 1993). Panel FMOLS and DOLS methods are appropriate as these techniques address the issue of endogeneity and serial correlations of error terms. Moreover, FMOLS and DOLS approaches produce more reliable and efficient estimates with a small sample size (Merlin & Chen, 2021), and impose additional requirements requiring that all variables must be integrated of same order. Primarily, FMOLS and DOLS can handle CD and heterogeneity in the data (Faisal et al., 2020)

4. Results and Discussion

This study incorporates the data of N-11 countries from WDI database from 1993-2022 for measuring the long-run cointegration between WEMP and education, fertility rate, workplace regulation, economic growth and FDI. Table 3 reports the results of (Pesaran, 2004) CSD test for WEMP, fertility rate, workplace regulation, GDPpc (Proxy of economic growth) and FDI. As most of the values are significant, thus, the null hypothesis of 'cross-

sectional' independence is rejected, which reveals the CSD of all the variables except WEMP (see Table 3). Following this, the results of Pesaran Panel Unit Root test (2007) display in Table 4. In the presence of CSD in the data, all traditional panel unit root tests or first generation panel unit root tests are invalid (Chen et al., 2022). This study employs 2nd generation Pesaran (2007) unit root test to determine the unit root characteristics of the variables in order to solve this problem. The findings indicate that none of the variable is stationary at level, however all of the variables are stationary at first difference. Thus all of the selected series are integrated of order one, denoted as I(1). Subsequently, the next step is to evaluate the long run relationship between the series by using Westerlund cointegration test (Westerlund, 2008), Kao (1999) panel cointegration and Fisher panel cointegration tests (Johansen, 1991). The null hypotheses in these tests states that variables are not co-integrated. Table 5 indicates the Westerlund cointegration test results, where the null hypothesis is rejected at significance level of 10% that confirms the existence of long-run cointegration among the variables. Kao (1999) test also validates the cointegration between the observed variables at 1% level of significance (see Table 6). Finally, the Johansen Fisher (1991) cointegration test procedure is applied to determine the number of cointegrating variables through two likelihood tests: 'the trace test' and 'the maximum eigenvalue test'. The statistics of 'trace test' and 'maximum eigenvalue test' of Johansen (1991) cointegration test is reported in Table 7. Both test statistics reject the null hypothesis of no cointegration between the variables, confirming the existence of panel cointegration between the observed variables at significance level of 1% in N-11 countries.

Table 3: Pesaran CSD test Results

Variables	CD-tests	p- value
lnWE	-0.99	0.321
lnEdu	34.28***	0.000
lnFR	34.35***	0.000
lnWR	33.47***	0.000
lnGDPpc	37.02***	0.000
lnGDPpc ²	37.08***	0.000
lnFDI	20.07***	0.000

Table 4: Pesaran Panel Unit Root test Results

Variables	Level		1 st Difference	
	Statistic	P- value	Statistic	P- value
lnWE	-1.668	0.636	-3.324	0.000
lnEdu	-1.516	0.808	-4.071	0.000
lnFR	-0.995	0.996	-2.253	0.049
lnWR	-1.710	0.581	-2.746	0.000
lnGDPpc	-1.948	0.272	-2.347	0.024
lnGDPpc ₂	-1.826	0.424	-2.282	0.040
lnFDI	-1.762	0.511	-3.058	0.000

Table 5: Westerlund Cointegration Test

Statistics	Statistic	Prob
Variance Ratio	-1.552*	0.062
Ho: No Cointegration		
Note: * indicates significance at 10% level.		

Table 6: Kao Panel Cointegration test

Statistics	t-Statistic	Prob
ADF	-2.997***	0.001
Note: *** indicates significance at 1% level.		

Table 7: Results of Johansen Cointegration Test

Hypothesis	Trace statistics	1% critical value	Max-Eigen statistics	1% critical value
None	412.7***	0.0000	238.2***	0.0000
At most 1	233.6***	0.0000	102.3***	0.0000
At most 2	145.1***	0.0000	57.46***	0.0001
At most 3	100.0***	0.0000	54.14***	0.0002

At most 4	60.52***	0.0000	40.48***	0.0095
Note: *** indicates significance at 1% level				

With the identification of long run cointegration among the observed variables, the next step is to estimate the long run relationship between women's employment (WEMP) and education(Edu), fertility rate (FR), workplace regulation, economic growth and FDI by using CS-ARDL approach and the results display in Table 8. The findings reveal that Edu has a significant and positive impact on WEMP in long-run (see Table 8), implies that a 1% rise in education leads to 0.10% increase in women employment opportunities in N-11 countries. Higher education level increase skills and knowledge of women and they became more competitive in the labor market and get more employment opportunities (Thaddeus et al., 2022). This result is consistent with the findings of Voumik et al. (2023) on South Asian countries and Shami et al. (2019) on five South Asian economies. Additionally, the study of Datta et al. (2020) validates that highly educated women have a higher work participation rate. FR adversely impacts the WEMP, indicating a 1% increase in FR declines 1.09% in WEMP, which implies that with fewer children women have more time to work and have more energy to devote in their careers that increases employment opportunities for them. The studies of Tomatis & Impicciatore (2023) on seven European countries and Kearney & Levine (2022) on USA verified the negative relationship of fertility rate and women's employment.

The coefficient of workplace regulation has a negative yet very small impact on women employment (with 1% rise in WR decreases only 0.001% WEMP) in N-11 countries (see Table 8). Complex or rigid regulation at workplace regarding unpaid parental leaves, flexible work arrangements might have adverse impact on women employment, particularly in developing countries, where gender equality and laws and regulations are still evolving and limit women career advancement (Fine et al., 2020). Previous literature cited the mixed effect regarding the workplace regulation and WEMP, the study of Hyland et al. (2020) on Congo is in favor of the negative impact of workplace regulation on WEMP while Chikh-Amnache & Mekhzoumi (2023) found the positive impact of workplace regulation on female participation in labor force in south Asian economies. FDI, another crucial macroeconomic determinant, exerts a significant negative impact on WEMP, indicating 1% increase in FDI causes to decrease WEMP by 0.256% (see Table 8). In developing countries, generally, women face greater barriers because of the occupational competition and in this scenario globalization adversely impact female participation in labor force (Wacker et al., 2017). According to the first hypothesis, all of these socio-economic factors have a positive or negative significant impact on women's employment.

The second hypothesis is about the U-feminisation relationship between 'economic growth' and 'women's employment' in N-11 countries. According to U-feminisation WEMP is inversely related to economic growth. As the economy grows, WEMP declines at first, reaches its minimum, then begins to increase as economic growth continuous (Yıldırım & Akinci, 2021). The results depicted in Table 8 confirm the U-feminisation relation of WEMP and economic growth, as the coefficient of GDP per capita is negative and significant, which confirms that when economic growth increases by 1% women's employment decreases 0.70%, moreover, GDP per capita squared coefficient is statistically positive and significant as 1% increase in GDPpc squared leads to 0.037% increase in WEMP that again validates increasing trend in women employment with continuous economic growth (see Table 8). The same results are in line with the previous research conducted by Altuzarra (2019) on European Union countries and Yıldırım & Akinci (2021) on middle-income countries.

The short-run estimation of of CS-ARDL are displayed in Table 8, indicating the positive and significant impact of education on WEMP, while FR, WR, and FDI have negative and significant impact on WEMP. U-feminisation relationship exist between economic growth and women's employment in short-run as GDPpc has negative and significant impact on WEMP and GDPpc squared shows a positive and significant impact on WEMP validates the second hypothesis in short-run (see Table 8).

Table 8: CS-ARDL Regression Analysis

Variables	Coefficients	Standard Errors
Long-run Results		
lnEdu	0.104**	0.049
lnFR	-1.096***	0.310
lnWR	-0.001*	0.000
lnFDI	-0.256*	0.144
lnGDPpc	-0.706***	0.201
lnGDPpc²	0.037***	0.006
Short-run Results		
lnEdu	0.025**	0.011
lnFR	-0.416**	0.200

lnWR	-0.004**	0.002
lnFDI	-0.091*	0.050
lnGDPpc	-0.769***	0.201
lnGDPpc²	0.039***	0.003
Note: The significance is represented by *** at 1%; ** at 5%; *at 10%.		

For robustness analysis this study employs FMOLS and DOLS approaches and estimated results are reported in Table 9. The direction of the coefficients of all the estimators is consistent with the CS-ARDL results but their significance levels are different (see Table 8 and Table 9).

Table 9: FMOLS and DOLS Long Run Estimation Results

Variables	FMOLS	DOLS
Dependent Variable: WE		
lnEdu	0.090*** (0.012)	0.046 (0.074)
lnFR	-0.605*** (0.021)	-0.577*** (0.125)
lnWR	-0.003*** (0.000)	-0.007*** (0.002)
lnGDPpc	-0.499*** (0.071)	-1.664** (0.703)
lnGDPpc²	0.029*** (0.004)	0.100** (0.041)
lnFDI	-0.036*** (0.008)	-0.099* (0.056)
Note: Standard errors are enclosed in parentheses, the significance is represented by *** at 1%; ** at 5%; *at 10%.		

5. Conclusion and Policy Recommendation

Next Eleven (N-11) countries are expected to see substantial growth in their economies and populations in the coming decades, which further increase the female employment opportunities in this region. The main objective of this study is to evaluate the impact of socio-economic determinants on WEMP in N-11 countries from 1993 to 2022. The fundamental socio-economic determinants include education, fertility rate, workplace regulation, economic growth and FDI. This study seeks to evaluate the influence of these factors on the decision of females to participate in the labor market. The findings of this study suggested that

education has a positive effect on WEMP in N-11 countries. In addition, fertility rate, workplace regulation and FDI adversely impact WEMP in this region. Lastly, the results confirm the U-feminisation relation between women's employment and economic growth particularly in N-11 nations.

Based on these findings several policies can be suggested to enhance women's participation in N-11 countries. First, providing the right policy support by the government can contribute to the growth of jobs for women. Second, female education has a positive impact on WEMP, policymakers must consider the role of education to increase the participation of women in the labor force, thus educational opportunities should be enhanced for women in all these emerging countries. Third, proper workplace legislation in each country must be approved to address gender-based discrimination, ensure equal pay, and provide family-friendly policies that can effectively combat the negative impact on women's employment. Fourth, FDI can promote women's employment through the adoption of inclusive hiring practices and gender-sensitive workplace policies, ultimately mitigating the negative effects on WEMP.

Socioeconomic factors strongly influence women's employment (WEMP) opportunities, and this study provides a framework for future research by considering other variables like trade openness, climate change, and environmental degradation's impact on WEMP. This study relies on a sample comprising N-11 countries, however, future studies may investigate the contribution of socio-economic factors on WEMP in the sub-panel of these countries or might be for a single country to better understand the association of these variables.

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