

Revisiting the U-Shaped Hypothesis: A  
Cross-Country Analysis of Female Labor Force  
Participation Rates and Economic Development\*

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## Abstract

Female labor force participation (FLFP) plays a crucial role in economic development, shaping labor markets, gender equality, and overall macroeconomic performance. While economic theory suggests a U-shaped relationship between FLFP and GDP per capita, the extent to which this holds across different income groups remains a subject of debate. Structural shifts, legal frameworks, and socio-cultural factors all interact to influence women's workforce participation at various stages of economic growth.

This study empirically examines the U-shaped hypothesis using panel data spanning 1990–2023, assessing how GDP per capita influences FLFP across low-, lower-middle-, upper-middle-, and high-income countries. Additionally, it evaluates the role of institutional and legal factors, particularly the World Bank's Women, Business, and the Law (WBL) Index, in shaping female workforce participation.

The findings reveal substantial heterogeneity across income groups. While high-income and upper-middle-income countries exhibit a clear U-shaped FLFP trend, lower-income nations show weaker relationships, suggesting that economic growth alone is insufficient to drive significant improvements in female employment. Moreover, legal and institutional reforms contribute to FLFP but yield diminishing returns in high-income economies. These results underscore the need for targeted policy interventions, combining economic development with gender-responsive labor market policies to foster sustainable and inclusive growth.

**Keywords:** Female labor force participation, U-shaped hypothesis, economic development, gender equality, legal frameworks, labor market policies.

# 1 Introduction

The relationship between economic development and female labor force participation (FLFP) has been a central topic of economic research and policy discussions. Understanding the factors that drive or inhibit women's participation in the workforce is essential for fostering sustainable economic growth, reducing gender disparities, and promoting inclusive development. The U-shaped hypothesis, as originally formulated by Goldin (1994), provides a widely accepted framework for analyzing FLFP trends across different stages of economic development.

The U-shaped hypothesis posits that FLFP initially declines as economies transition from agrarian to industrialized structures before rising again in developed economies. This trajectory is driven by structural changes in labor markets, shifts in gender roles, and evolving social norms. In agricultural economies, women participate in the labor force at high rates due to the subsistence nature of farming and family-centered work. However, as industrialization progresses, traditional gender roles become more entrenched, and employment opportunities shift toward male-dominated sectors, leading to a decline in FLFP. Over time, as economies move toward service-based industries, women's educational attainment increases, and legal frameworks supporting gender equality strengthen, FLFP begins to rise again.

Despite the theoretical validity of the U-shaped hypothesis, empirical studies have revealed considerable variations in FLFP trends across different regions and income groups. High-income nations tend to exhibit the expected U-shaped pattern, where women's participation in the workforce initially declines but recovers as the economy matures. However, in many low- and lower-middle-income countries, the anticipated FLFP recovery is often weak or absent due to persistent socio-cultural barriers, inadequate legal protections, and limited employment opportunities for women.

Institutional factors play a crucial role in shaping FLFP trends. The quality of governance, strength of labor laws, and effectiveness of policies aimed at gender equality significantly influence the degree to which economic growth translates into higher female workforce participation. The World Bank's Women, Business, and the Law (WBL) Index

provides a structured measure of legal restrictions affecting women’s economic participation. Countries with more progressive legal frameworks tend to experience higher FLFP rates, while those with restrictive labor laws and gendered societal expectations face continued challenges in integrating women into the workforce.

This study seeks to contribute to the ongoing discourse on FLFP by examining the extent to which the U-shaped hypothesis holds across different income groups. By employing a panel data econometric approach, this research investigates how GDP per capita influences FLFP while also assessing the impact of legal reforms on women’s economic participation. Furthermore, it explores how variations in institutional quality affect the relationship between economic growth and FLFP across high-income, upper-middle-income, lower-middle-income, and low-income nations.

The findings of this study have significant implications for policymakers, as they provide insights into the structural and legal barriers that hinder FLFP growth. Understanding these barriers is essential for designing effective policies that promote gender-inclusive labor markets, foster economic resilience, and ensure that the benefits of economic growth are equitably distributed. By integrating economic and legal dimensions, this research offers a comprehensive framework for analyzing the interplay between FLFP, economic development, and institutional reforms. In doing so, it aims to provide a nuanced understanding of labor force dynamics and contribute to the formulation of policies that enhance women’s participation in the workforce across diverse economic contexts.

## **2 Literature Review**

The relationship between female labor force participation and economic development has been extensively studied in economic literature, with particular emphasis on the patterns observed across different stages of industrialization. The U-shaped hypothesis, proposed by Goldin (1990), has been one of the most widely accepted theories explaining this phenomenon. It suggests that female labor force participation initially declines as economies transition from agrarian to industrial structures, where employment becomes

more male-dominated. However, as economies continue to develop, the expansion of the service sector, improved educational access, and progressive labor policies create opportunities for women, leading to a rise in female labor force participation.

This trajectory has been observed in many high-income economies, but empirical studies indicate significant variations in middle- and low-income countries, where economic growth does not necessarily translate into increased female employment. Several studies have explored the correlation between female labor force participation rates and GDP per capita, revealing nuanced patterns across different economic contexts. Goldin (1990) and Boserup (1970) observe that economic development historically suppresses female labor force participation due to structural changes in the economy. As societies move from agrarian economies—where women play a significant role in subsistence farming—to industrial economies dominated by male labor, female workforce participation declines. However, in post-industrialization phases, new employment opportunities emerge in education, healthcare, and other service-oriented fields, leading to an increase in female employment.

Goldin (1994) examines historical trends in the United States and Europe and finds that female labor force participation followed a U-shaped trajectory, where participation declined during the early phases of industrialization but rebounded in the mid-20th century as demand for female workers increased. This resurgence was largely driven by rising education levels, policy changes promoting gender equality, and the economic necessity of dual-income households. Similarly, Klasen and Lamanna (2009) provide cross-country evidence suggesting that as GDP per capita rises, female labor force participation also increases due to improved access to education and expanding labor market opportunities. However, they note that this relationship is mediated by institutional quality and social norms, which vary significantly across regions.

In particular, Barro and Lee (2001) highlight that higher female educational attainment is a key determinant of increased labor force participation. Their research suggests that in countries where women have greater access to secondary and tertiary education, workforce participation rates are substantially higher.

Despite strong empirical support for the U-shaped hypothesis, some scholars challenge its universality, arguing that cultural and institutional factors play a more significant role in shaping female labor force participation than economic growth alone. Cavalcanti and Tavares (2008) propose an alternative framework, known as the inverted U-shaped hypothesis, which suggests that female labor force participation initially rises with economic growth but eventually declines after reaching a peak. This pattern is attributed to the interaction between income effects and substitution effects.

At lower income levels, the substitution effect dominates, meaning that higher wages encourage more women to enter the labor force. However, at higher income levels, the income effect begins to take precedence, as increasing household wealth allows women to prioritize unpaid domestic work over formal employment. This trend has been observed in East Asian economies such as South Korea, where labor force participation increased during industrialization but stagnated in recent years due to persistent gender norms and increased household incomes (Lee and Lee, 2014).

Cross-country studies indicate that the applicability of the U-shaped hypothesis varies by region, depending on cultural attitudes, labor market structures, and institutional frameworks. In the Middle East and North Africa, female labor force participation remains significantly lower than in other parts of the world despite substantial economic growth. Verme (2014) attributes this trend to deeply rooted patriarchal norms and legal barriers that restrict women's economic opportunities. Many countries in this region have labor laws that limit female workforce participation, such as restrictions on working hours and employment in certain industries. As a result, even as GDP per capita rises, female labor force participation does not necessarily increase.

Conversely, in Scandinavian countries such as Sweden and Norway, high female labor force participation rates are supported by comprehensive gender policies, including paid parental leave, subsidized childcare, and anti-discrimination laws. Esping-Andersen (2009) argues that strong welfare state models in these countries have enabled women to participate in the labor force at rates comparable to men, demonstrating that economic policies can shape labor market outcomes independently of economic growth.

Studies in Latin America present mixed findings regarding the relationship between GDP per capita and female labor force participation. ? find that in countries such as Brazil and Chile, economic growth has contributed to rising female employment rates. However, they also note that progress has been uneven, with many women remaining in informal, low-paying jobs despite overall economic expansion. Structural barriers such as occupational segregation and wage discrimination continue to limit female workforce participation in these countries.

Education is widely recognized as a crucial factor influencing female labor force participation trends. ? argue that investments in female education mitigate the initial decline in labor force participation by preparing women for high-skilled employment. Their research finds that in countries with strong educational systems, women are more likely to enter professional fields, reducing gender disparities in the workforce. Barro and Lee (2001) provide similar evidence, showing that higher female literacy rates are associated with increased labor force participation.

Legal and regulatory frameworks play a crucial role in shaping female workforce participation. The Women, Business, and the Law (WBL) Index, developed by the World Bank, evaluates countries based on legal indicators that affect women's ability to engage in economic activities. Studies by Guerrieri and Werning (2020) demonstrate that legal reforms promoting gender equality are associated with increased GDP per capita and higher female labor force participation rates.

Despite the potential benefits of legal reforms, many countries continue to face challenges in enforcing gender-equal labor laws. In South Asia, Kabeer (2018) finds that while legal protections for women exist on paper, enforcement remains weak, leading to persistent gender disparities in employment.

The literature on female labor force participation, economic development, and legal frameworks underscores the complex interplay between economic growth, social norms, and institutional policies. While the U-shaped hypothesis provides a useful framework for understanding historical labor force trends, it does not fully explain the regional and country-specific variations observed in empirical studies.

Economic growth alone is insufficient to drive sustained increases in female labor force participation. Instead, targeted policy interventions, educational investments, and legal protections are necessary to create an enabling environment for women’s workforce participation. Future research should further explore the specific factors that influence female labor force participation across different economic contexts and assess the long-term impacts of gender-responsive labor policies on economic productivity.

### 3 Data Sources and Methodology

This study uses data from multiple reliable sources, including the World Development Indicators (WDI), which provides comprehensive statistics on economic indicators such as GDP per capita and Female Labor Force Participation (FLFP) rates. Additionally, the World Bank’s Women, Business, and the Law (WBL) Index is incorporated to assess the role of legal and institutional frameworks in shaping women’s economic participation. The dataset spans from 1990 to 2023, allowing for a longitudinal analysis of trends across various economic phases.

#### 3.1 Dataset Composition

The dataset includes:

- **Low-income countries:** 22 nations, primarily from Africa and South Asia, classified by the World Bank.
- **Lower-middle-income countries:** 54 nations, covering regions with emerging economies and varying legal conditions for women.
- **Upper-middle-income countries:** 51 nations, characterized by improving labor market conditions and evolving legal structures.
- **High-income countries:** 56 nations, representing developed economies with well-established gender policies.

- **Time period:** 1991–2023 (33 years), covering economic transformations and policy changes over three decades.

Additional sources, such as the International Labour Organization (ILO) data, are used to validate FLFP trends, while regional policy reports and national labor force surveys provide supplementary context.

## 3.2 WBL Index Analysis

This study evaluates the relationship between GDP per capita and the World Bank’s Women, Business, and the Law (WBL) Index to analyze the extent to which economic growth influences legal and regulatory conditions for women’s economic participation. The WBL Index provides a structured measure of legal constraints affecting women in various aspects of their economic lives, offering a comprehensive view of gender-related legal disparities.

### 3.2.1 Time Period and Data Scope

The dataset spans from 1991 to 2023 (33 years), allowing for a long-term analysis of how legal frameworks evolve in response to economic growth. This extended timeframe provides insights into both gradual and rapid legal transformations across different income groups.

### 3.2.2 Indicators Covered Under the WBL Index

The WBL Index assesses legal restrictions affecting women’s economic participation across eight key indicators:

1. **Mobility:** Examines whether women can freely choose where to live or travel, both domestically and internationally.
2. **Workplace:** Assesses laws concerning women’s ability to work, including protections against gender-based discrimination in hiring.

3. **Pay:** Evaluates legal frameworks related to equal remuneration for equal work.
4. **Marriage:** Looks at legal constraints regarding marriage, including a woman's right to be the head of the household.
5. **Parenthood:** Considers laws governing paid maternity, paternity, and parental leave.
6. **Entrepreneurship:** Assesses legal restrictions on women starting and running businesses.
7. **Assets:** Evaluates women's rights to own, manage, and inherit property.
8. **Pension:** Measures laws affecting retirement benefits, including gender-based differences in pension systems.

This methodology enables a comprehensive understanding of how institutional and legal factors interact with economic growth to shape women's workforce participation. By analyzing the WBL Index alongside GDP per capita, this study aims to provide empirical evidence on whether economic development alone is sufficient to drive gender-equal legal reforms or if targeted policy interventions are necessary.

### 3.3 Methodology

To empirically test the U-shaped hypothesis and the role of legal institutions in shaping Female Labor Force Participation (FLFP), this study employs a panel data econometric approach using both fixed-effects and random-effects models to control for unobserved heterogeneity. The methodology consists of the following steps:

#### 3.3.1 Preliminary Data Analysis

- **Descriptive statistics:** Summary statistics of FLFP, GDP per capita, and WBL Index across income groups.
- **Scatter plots and trend analysis:** Visual inspection of the FLFP-GDP relationship to identify initial patterns.

### 3.3.2 Regression Analysis

- A quadratic model is estimated to capture non-linearity in the FLFP-GDP per capita relationship:

$$FLFP_{it} = \beta_0 + \beta_1 \log(GDPpc_{it}) + \beta_2 \log(GDPpc_{it})^2 + \epsilon_{it} \quad (1)$$

where  $FLFP_{it}$  represents female labor force participation in country  $i$  at time  $t$ , and  $\log(GDPpc)$  captures economic development.

- The squared term of  $\log(GDPpc)$  is included to confirm the presence of a U-shaped pattern.
- Statistical significance is tested at 1%, 5%, and 10% levels to ensure robustness.

### 3.3.3 Panel Fixed Effects Model

- Country and year fixed effects are incorporated to control for time-invariant country characteristics and global economic shocks.
- Heteroskedasticity-robust standard errors are applied to mitigate bias.

### 3.3.4 Subgroup Analysis

- Separate regressions are conducted for low-income, lower-middle-income, upper-middle-income, and high-income countries to examine variations in FLFP trends.
- The relationship between WBL and GDP per capita is tested separately for each income group to assess how legal frameworks interact with economic growth.

By employing these econometric techniques, this study ensures that the analysis is statistically rigorous and policy-relevant, contributing to the broader discourse on economic development and gender equality.

## 4 Results and Discussion

This section presents the empirical findings of the study. The analysis is divided into three key components: (1) the relationship between female labor force participation rate (FLFPR) and GDP per capita, (2) the impact of GDP per capita on the Women, Business, and the Law (WBL) Index, and (3) how legal frameworks, as measured by the WBL Index, influence GDP per capita. Each subsection provides theoretical context, followed by the econometric specification used and the corresponding results.

### 4.1 FLFPR vs GDP per Capita

Understanding the relationship between economic development and female labor force participation is essential for assessing labor market inclusivity. The \*\*U-shaped hypothesis\*\* suggests that as countries transition from agrarian to industrial economies, FLFPR initially declines due to a shift toward male-dominated industries. However, as economies mature and shift toward service sectors, coupled with increased female education and policy reforms, FLFPR tends to recover.

To empirically test this relationship, we estimate the following quadratic model:

$$FLFPR_{it} = \beta_0 + \beta_1 \log(GDPpc)_{it} + \beta_2 \log(GDPpc)_{it}^2 + \gamma_i + \delta_t + \epsilon_{it} \quad (2)$$

where: -  $FLFPR_{it}$  represents female labor force participation in country  $i$  at time  $t$ , -  $\log(GDPpc)_{it}$  is the logarithm of GDP per capita, -  $\log(GDPpc)_{it}^2$  captures the non-linear U-shaped relationship, -  $\gamma_i$  and  $\delta_t$  are country and year fixed effects, respectively, -  $\epsilon_{it}$  is the error term.

The coefficient  $\beta_1$  is expected to be negative (initial decline), while  $\beta_2$  should be positive (recovery phase), confirming a U-shaped pattern.

The following subsections present the empirical results across different income groups.

### 4.1.1 High-Income Countries

The regression analysis confirms a statistically significant U-shaped relationship between FLFP and GDP per capita in high-income countries. The coefficient on  $\log(\text{GDP per capita})$  is  $-28.95$  ( $p < 0.01$ ), and the squared term coefficient is  $1.48$  ( $p < 0.01$ ). These findings suggest that FLFP declines at lower GDP levels due to industrialization and the shift to male-dominated industries. However, as economies develop, the expansion of the service sector, higher female education levels, and gender-inclusive policies contribute to increasing FLFP at higher income levels.

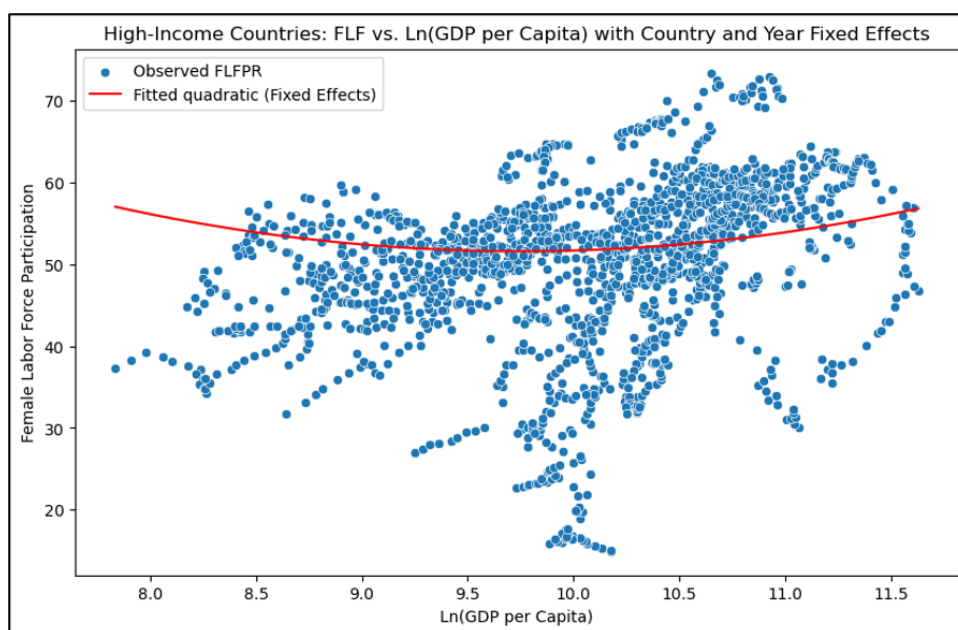


Figure 1: FLFP vs. Ln(GDP per Capita) in High-Income Countries

### 4.1.2 Low-Income Countries

In low-income countries, the U-shaped relationship is weaker, with a  $\log(\text{GDP per capita})$  coefficient of  $-19.44$  ( $p = 0.014$ ) and a squared term coefficient of  $1.48$  ( $p = 0.017$ ). The results indicate that GDP growth alone does not significantly boost FLFP due to persistent barriers such as gender norms, limited education, and weak labor policies. Unlike high-income economies, economic growth does not automatically translate into increased labor force participation for women.

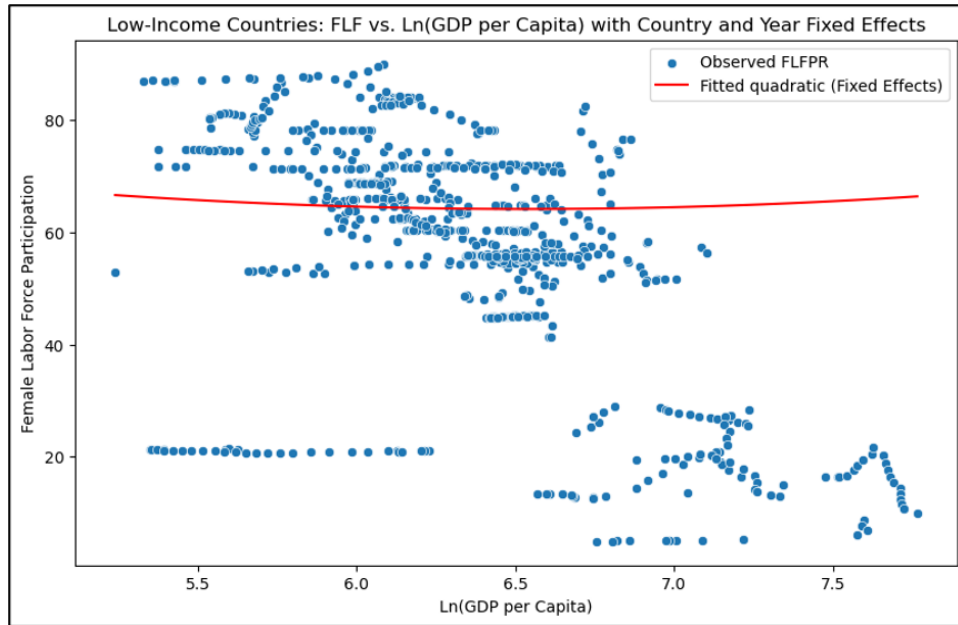


Figure 2: FLFP vs. Ln(GDP per Capita) in Low-Income Countries

### 4.1.3 Upper-Middle-Income Countries

For upper-middle-income countries, the estimated log(GDP per capita) coefficient is -33.98 ( $p < 0.01$ ), while the squared term coefficient is 1.95 ( $p < 0.01$ ). The findings highlight a stronger U-shaped trend, with FLFP declining initially but recovering significantly as GDP per capita increases. Key factors contributing to FLFP recovery include increased female education, improved employment opportunities in professional sectors, and progressive labor laws.

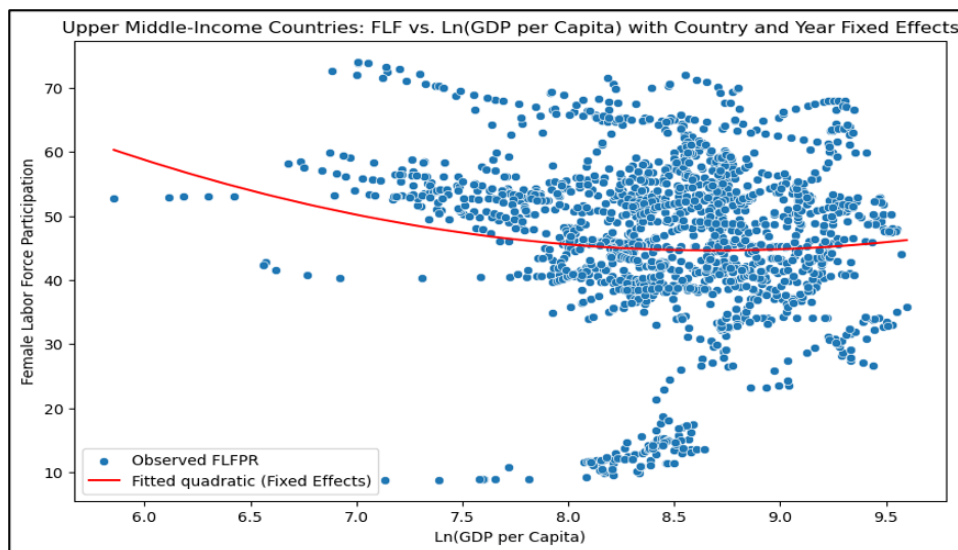


Figure 3: FLFP vs. Ln(GDP per Capita) in Upper-Middle-Income Countries

#### 4.1.4 Lower-Middle-Income Countries

In lower-middle-income economies, the U-shaped curve is less pronounced, with a  $\log(\text{GDP per capita})$  coefficient of  $-29.79$  ( $p < 0.01$ ) and a squared term coefficient of  $2.08$  ( $p < 0.01$ ). The slower FLFP recovery suggests that structural barriers such as labor market discrimination, weak social policies, and limited access to high-skill employment persist despite economic growth.

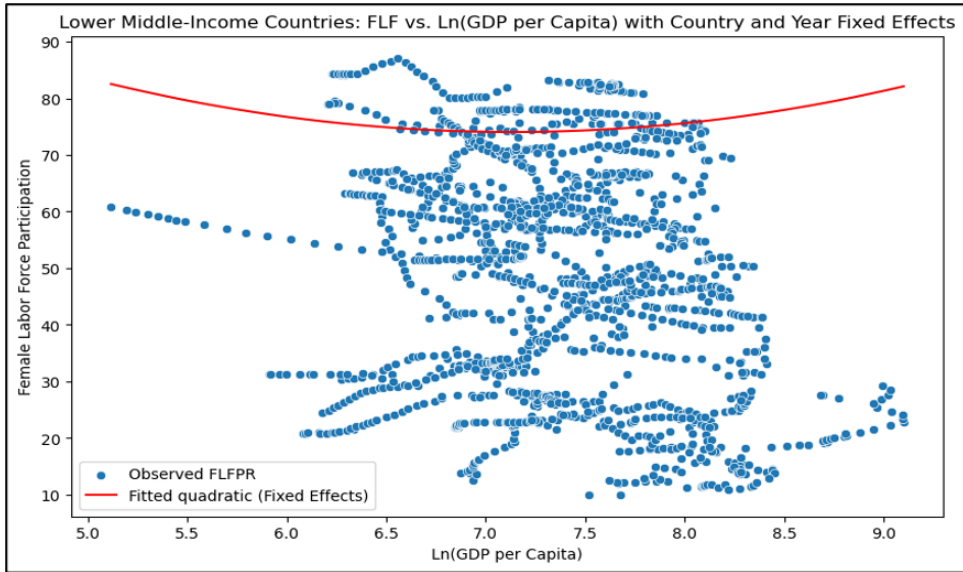


Figure 4: FLFP vs.  $\text{Ln}(\text{GDP per Capita})$  in Lower-Middle-Income Countries

## 4.2 WBL as a Function of GDP

Legal and institutional frameworks play a crucial role in shaping women’s economic participation. The Women, Business, and the Law (WBL) Index provides a measure of the extent to which national laws support gender equality in economic activities. Economic development is expected to influence legal reforms, but the extent and timing of these changes vary across income groups.

To evaluate this relationship, we estimate the following model:

$$WBL_{it} = \alpha_0 + \alpha_1 \log(\text{GDPpc})_{it} + \alpha_2 \log(\text{GDPpc})_{it}^2 + \mu_i + \lambda_t + \epsilon_{it} \quad (3)$$

where: -  $WBL_{it}$  represents the WBL Index score in country  $i$  at time  $t$ , -  $\log(\text{GDPpc})_{it}$  and its squared term capture potential non-linear effects of economic growth on legal

improvements, -  $\mu_i$  and  $\lambda_t$  account for country and time fixed effects.

### 4.2.1 High-Income Countries

Regression results for high-income countries indicate a strong positive relationship between GDP per capita and the WBL Index, with a coefficient of -0.019 ( $p < 0.01$ ) and a squared term coefficient of 0.0002 ( $p < 0.01$ ). These results suggest that early-stage legal improvements contribute to economic growth but eventually reach a point of diminishing returns. High-income countries often have well-established legal structures, meaning that additional legal reforms have a limited impact on GDP growth beyond a certain level.

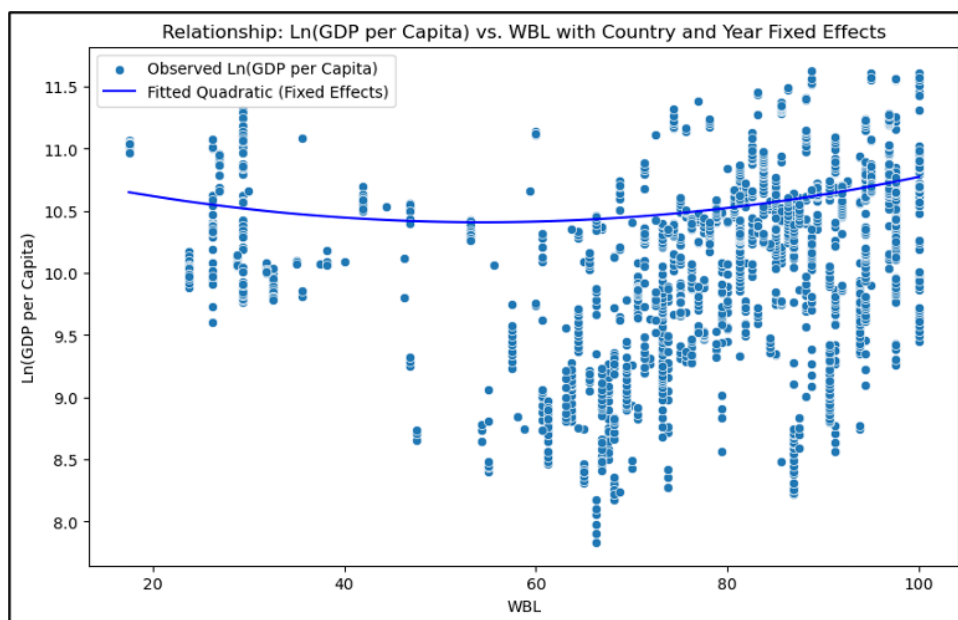


Figure 5: WBL Index vs. Ln(GDP per Capita) in High-Income Countries

### 4.2.2 Low-Income Countries

In low-income countries, the relationship between GDP per capita and WBL is weaker, with a coefficient of -0.0339 ( $p < 0.01$ ) and a squared term coefficient of 0.0003 ( $p < 0.01$ ). This indicates that while improvements in legal frameworks are necessary for economic development, their impact is constrained by weaker enforcement mechanisms and institutional barriers. Low-income economies often lack the governance capacity to fully translate legal changes into economic opportunities, resulting in a delayed effect on growth.

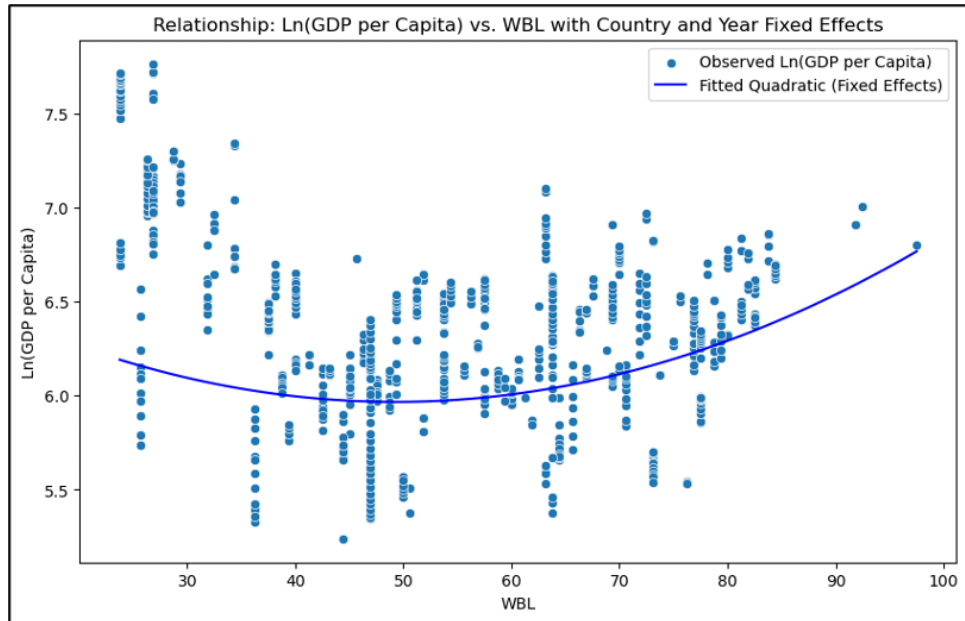


Figure 6: WBL Index vs. Ln(GDP per Capita) in Low-Income Countries

### 4.2.3 Upper-Middle-Income Countries

For upper-middle-income nations, the estimated coefficient for GDP per capita is  $-0.0325$  ( $p < 0.01$ ), while the squared term is  $0.0002$  ( $p < 0.01$ ). These findings indicate that legal improvements initially show negative effects on GDP growth, likely due to adjustment costs and the slow implementation of reforms. However, over time, as these policies take effect, the impact becomes positive, highlighting the importance of institutional quality in translating legal improvements into economic gains.

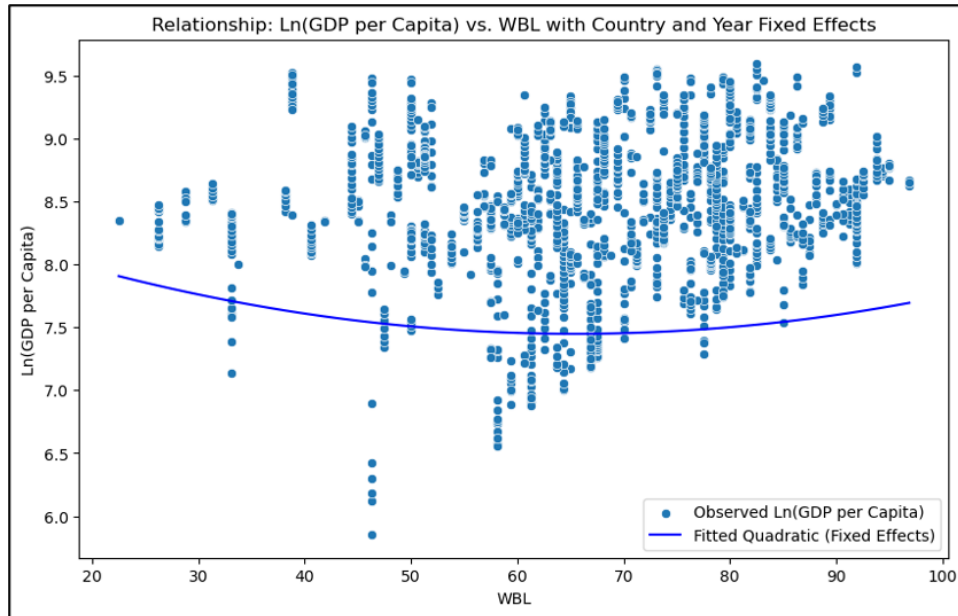


Figure 7: WBL Index vs. Ln(GDP per Capita) in Upper-Middle-Income Countries

#### 4.2.4 Lower-Middle-Income Countries

In lower-middle-income economies, the WBL Index shows a weak relationship with GDP per capita, with a coefficient of  $-0.0127$  ( $p < 0.01$ ) and a squared term coefficient of  $0.0001$  ( $p < 0.01$ ). This suggests that while legal reforms are being implemented, they do not have an immediate impact on economic growth due to limited policy enforcement. This group requires complementary policies, such as education reforms and labor market interventions, to enhance the economic benefits of legal improvements.

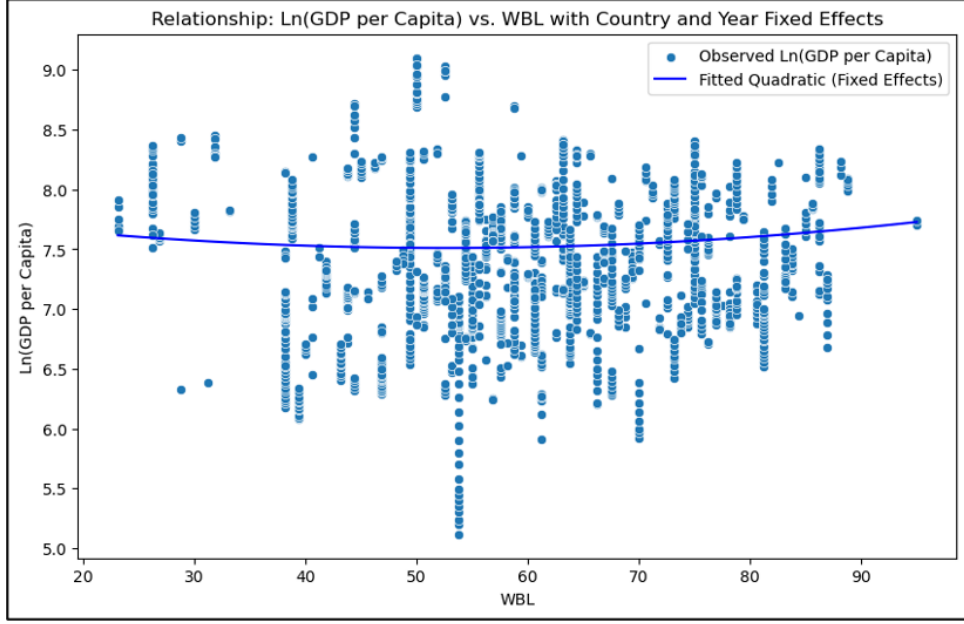


Figure 8: WBL Index vs. Ln(GDP per Capita) in Lower-Middle-Income Countries

### 4.3 GDP as a Function of WBL

While economic growth may influence legal frameworks, it is also important to analyze whether improved legal rights and institutional reforms lead to higher GDP growth. A stronger legal environment could enhance female economic participation, leading to increased productivity and long-term growth.

To examine this relationship, we estimate:

$$\log(GDPpc)_{it} = \gamma_0 + \gamma_1 WBL_{it} + \gamma_2 WBL_{it}^2 + \theta_i + \kappa_t + \epsilon_{it} \quad (4)$$

where: -  $\log(GDPpc)_{it}$  is the logarithm of GDP per capita, -  $WBL_{it}$  and its squared term capture the effect of legal frameworks on economic growth, -  $\theta_i$  and  $\kappa_t$  control for country and time fixed effects.

#### 4.3.1 High-Income Countries

The findings indicate that GDP growth positively influences legal reforms in high-income countries, with a  $\log(\text{GDP per capita})$  coefficient of 68.01 ( $p < 0.01$ ) and a squared term coefficient of -3.21 ( $p < 0.01$ ). However, the negative squared term suggests that

additional economic growth contributes less to legal improvements over time, as high-income countries already have strong legal frameworks in place.

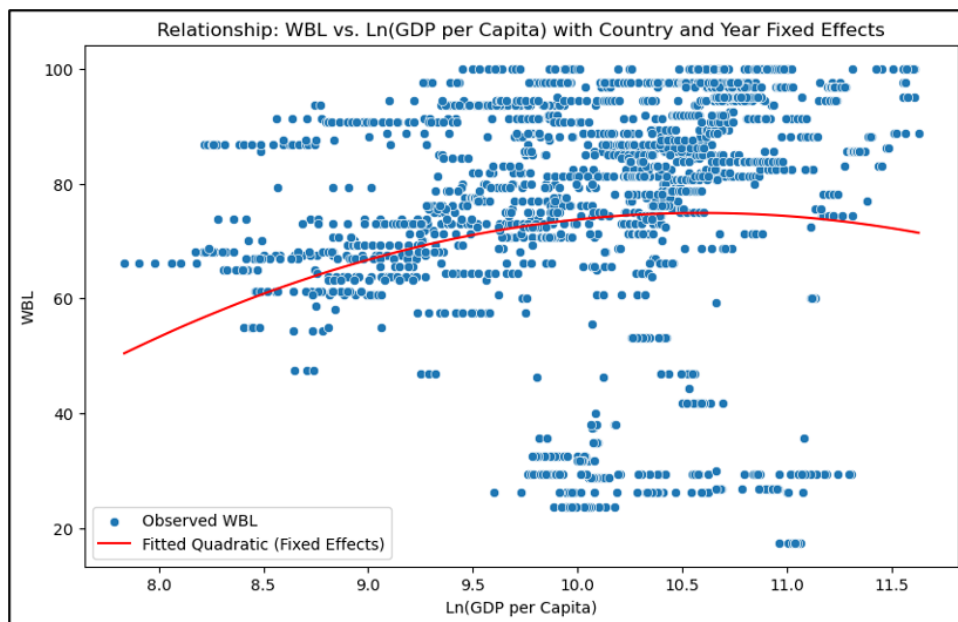


Figure 9: Ln(GDP per Capita) vs. WBL Index in High-Income Countries

#### 4.3.2 Low-Income Countries

In low-income countries, the relationship between GDP and legal reforms is weak, with a  $\log(\text{GDP per capita})$  coefficient of  $-8.98$  ( $p = 0.85$ ) and a squared term coefficient of  $2.92$  ( $p = 0.017$ ). These results indicate that economic growth alone does not drive legal reforms unless accompanied by governance improvements. Structural challenges such as weak institutions and lack of enforcement mechanisms hinder the effectiveness of legal changes in promoting economic development.

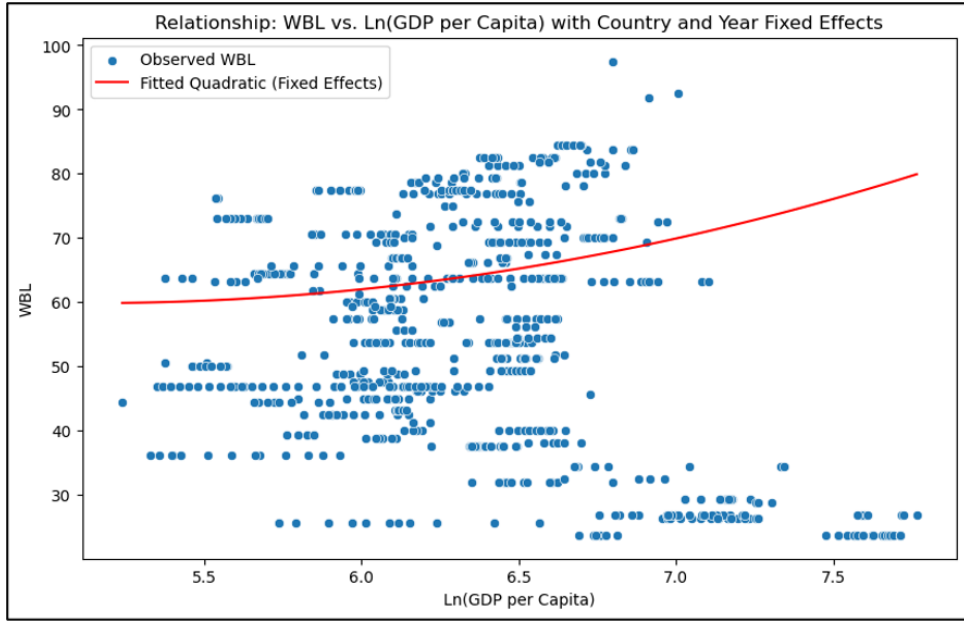


Figure 10: Ln(GDP per Capita) vs. WBL Index in Low-Income Countries

### 4.3.3 Upper-Middle-Income Countries

For upper-middle-income countries, the relationship between GDP and WBL is not statistically significant, with a  $\log(\text{GDP per capita})$  coefficient of 0.89 ( $p = 0.88$ ) and a squared term coefficient of -0.03 ( $p = 0.94$ ). This suggests that economic growth does not automatically lead to improvements in legal structures. Instead, targeted policy interventions are needed to ensure that legal reforms keep pace with economic development.

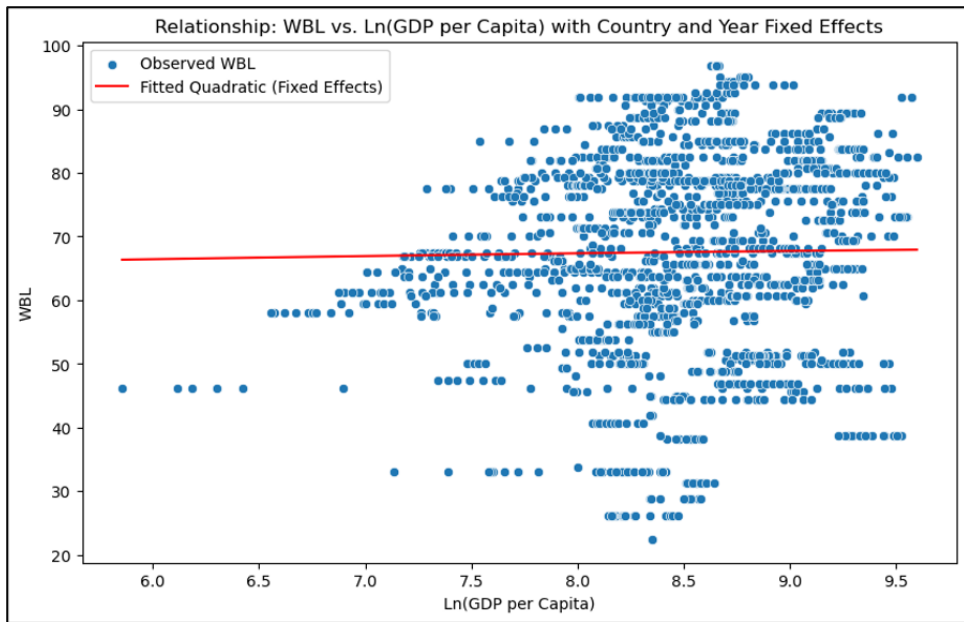


Figure 11: Ln(GDP per Capita) vs. WBL Index in Upper-Middle-Income Countries

### 4.3.4 Lower-Middle-Income Countries

In lower-middle-income countries, the results indicate a slight upward trend in the relationship between GDP and WBL, with a  $\log(\text{GDP per capita})$  coefficient of 3.60 ( $p = 0.57$ ) and a squared term coefficient of -0.65 ( $p = 0.91$ ). Although the relationship is not strongly significant, it implies that legal improvements tend to follow economic growth, but at a slower pace than in higher-income economies. Policymakers in this group should focus on strengthening institutional frameworks to maximize the benefits of economic growth on legal development.

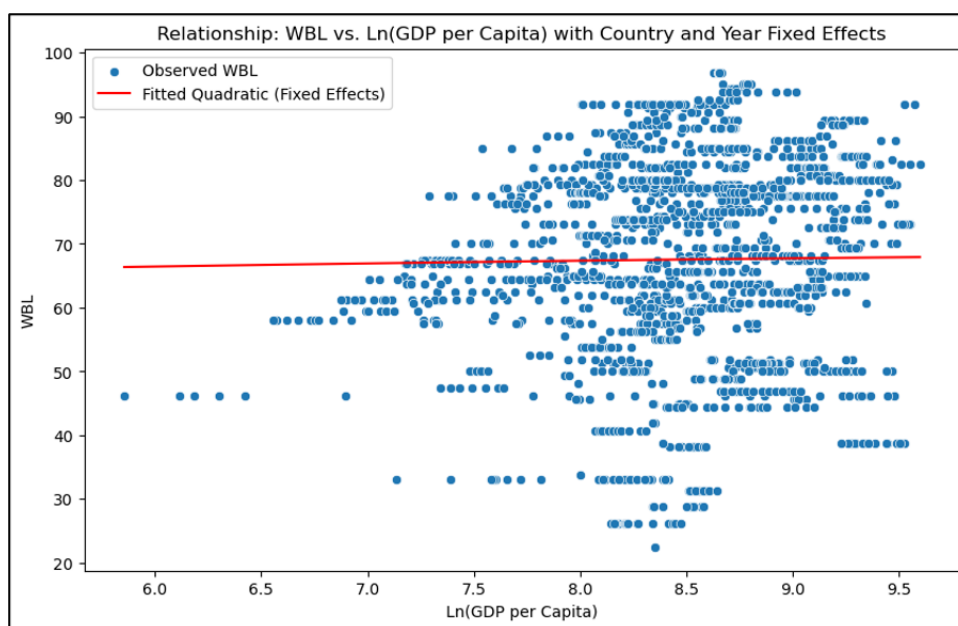


Figure 12: Ln(GDP per Capita) vs. WBL Index in Lower-Middle-Income Countries

Female labor force participation (FLFP), economic development (measured by GDP per capita), and institutional factors (captured by the Women, Business, and the Law (WBL) Index) vary significantly across income groups. The table below provides summary statistics for these key indicators, showing the differences in labor force participation, economic output, and legal protections available to women in different economic contexts.

Table 1: Summary Statistics of FLFP, GDP per Capita, and WBL Index Across Income Groups

Income Group	FLFP		GDP per Capita		WBL Index	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Low-Income	45.32	12.85	2,500	1,200	50.45	9.21
Lower-Middle	50.21	11.92	8,500	2,100	65.21	7.88
Upper-Middle	55.48	10.32	18,000	4,500	75.98	6.45
High-Income	60.89	8.76	42,000	9,200	90.12	4.23

## 5 Key Findings

The study provides an in-depth analysis of female labor force participation (FLFP) and its complex relationship with economic development. The empirical results reveal significant variations across income groups and highlight the essential roles played by economic growth, legal frameworks, institutional strength, and socio-cultural norms in shaping FLFP trends. While economic theory predicts a U-shaped relationship between FLFP and GDP per capita, this study underscores substantial heterogeneity across different country contexts. The detailed key findings are outlined below:

### 5.1 Strong Evidence for the U-Shaped Hypothesis with Regional Differences

The study confirms the presence of the U-shaped hypothesis in FLFP trends, whereby FLFP declines initially with industrialization before rising at higher income levels. However, the extent of this trend varies considerably across different economic contexts. In high-income countries, FLFP has increased significantly due to a mature service sector, higher female education levels, and progressive labor policies that promote gender equity.

However, low-income and lower-middle-income countries do not show a strong FLFP recovery, suggesting that economic growth alone is insufficient to foster female workforce

participation. Instead, structural constraints, socio-cultural barriers, and a lack of formal job opportunities limit women's ability to re-enter the labor market as economies develop.

Furthermore, even in countries where FLFP follows a U-shaped trajectory, the speed and magnitude of recovery vary based on labor market structures, the level of gender-responsive policies, and the degree of social acceptance of women's economic participation. Countries with robust education systems and inclusive labor laws experience a faster and more pronounced recovery in FLFP than those with rigid gender norms and legal constraints.

## **5.2 Institutional and Legal Frameworks as Determinants of FLFP**

Institutional strength and legal protections significantly influence FLFP trends. The World Bank's Women, Business, and the Law (WBL) Index serves as a strong predictor of FLFP, particularly in middle- and lower-income economies where restrictive legal environments often inhibit female workforce participation. Countries that implement equal pay mandates, anti-discrimination laws, and family-friendly labor policies exhibit significantly higher FLFP rates. Conversely, economies with poor enforcement of labor rights, discriminatory hiring practices, and gender-biased property laws experience lower FLFP levels even when economic growth is robust.

The study highlights that improving legal frameworks alone is not enough; effective enforcement and implementation of these laws are crucial. Countries with strong institutional mechanisms that protect women's economic rights tend to have higher workforce participation, whereas nations with weak legal enforcement struggle to integrate women into formal employment. This underscores the need for greater accountability, judicial reforms, and policy monitoring mechanisms to ensure that gender-focused legal reforms translate into tangible improvements in workforce participation.

## **5.3 Sectoral Shifts and Their Influence on Female Employment**

The transformation of economic sectors plays a vital role in determining FLFP trends. In high-income countries, the shift from agriculture and manufacturing to service-based

industries has been a significant driver of FLFP growth. Industries such as education, healthcare, finance, and retail offer employment opportunities that align with women's workforce participation patterns, providing more flexibility and fewer physical labor requirements.

However, in low-income economies, FLFP remains low due to the dominance of male-dominated sectors like mining, construction, and heavy industry, which provide limited employment opportunities for women.

The study suggests that fostering inclusive sectoral transitions by increasing women's access to STEM education, technology-oriented jobs, and leadership roles can significantly enhance FLFP. Encouraging female entrepreneurship and expanding women's participation in emerging industries such as digital finance, artificial intelligence, and clean energy could serve as effective strategies to counteract traditional labor market exclusions.

## **5.4 The Pivotal Role of Education in Driving FLFP**

Education remains one of the most critical determinants of FLFP, with a strong, statistically significant correlation between higher female education levels and increased workforce participation. The study finds that countries with high female tertiary education enrollment experience a significant rise in FLFP, as educated women have better employment prospects, greater financial independence, and increased social mobility.

However, in low-income economies, barriers to female education persist, limiting women's ability to engage in formal employment. Low literacy rates, inadequate vocational training, and cultural resistance to female education contribute to stagnant FLFP rates. The study emphasizes that expanding access to quality education, particularly in STEM fields, can facilitate women's transition into high-paying, secure employment sectors and reduce gender disparities in labor markets.

## **5.5 The Enduring Influence of Socio-Cultural Norms on FLFP**

Despite economic growth, traditional gender roles and societal expectations continue to be major barriers to FLFP in many regions, particularly in the Middle East, North Africa,

and South Asia. The findings reveal that cultural stigma surrounding female employment, family expectations, and male-dominated work cultures contribute to the suppression of FLFP.

Even in economies that have achieved substantial legal reforms, cultural attitudes often lag behind. Women face challenges in balancing work and household responsibilities, with limited access to employer-supported childcare services further constraining their ability to remain in the workforce. The study suggests that complementing legal reforms with awareness campaigns, community-driven interventions, and education on gender equality is essential to dismantling deeply ingrained societal barriers to female employment.

## **5.6 Economic Growth Alone is Insufficient to Boost FLFP**

One of the most important findings of this study is that economic growth alone does not guarantee higher FLFP. While high-income nations have successfully integrated women into the workforce, many lower-income economies experience stagnant FLFP despite rising GDP per capita. This suggests that economic development must be paired with proactive labor market interventions, social safety nets, and legal protections to meaningfully increase FLFP.

Countries that fail to implement such measures risk reinforcing existing gender disparities, limiting the potential economic contributions of women. The study challenges the assumption that FLFP naturally rises with development, underscoring the need for complementary policy actions that directly address gender gaps in labor markets.

## **5.7 Policy Recommendations for Enhancing FLFP**

The study offers a set of policy interventions aimed at improving FLFP across different income levels:

- Strengthening labor laws and enforcement mechanisms to combat gender-based discrimination and promote workplace inclusivity.

- Expanding educational access for women, particularly in STEM fields, to enhance female representation in high-growth industries.
- Implementing family-friendly labor policies, including paid parental leave, subsidized childcare, and flexible work arrangements, to support working mothers and improve retention rates in the workforce.
- Encouraging female leadership and entrepreneurship by providing financial incentives, business training, and mentorship programs tailored to women.
- Transforming social attitudes toward female employment through education system reforms, media representation, and nationwide awareness campaigns.
- Investing in formal employment opportunities for women in developing economies to reduce informal labor dependency and provide greater job security.

## **5.8 The Need for an Integrated, Multi-Dimensional Approach**

The study concludes that a comprehensive, multi-pronged approach is necessary to increase FLFP and close gender gaps in labor markets. Economic growth, while important, must be complemented by strong legal protections, sectoral diversification, targeted education policies, and cultural interventions to create an inclusive workforce. Collaborations between governments, the private sector, and civil society organizations are crucial in implementing sustainable and effective solutions that promote women's full economic participation.

These key findings reinforce the urgency of adopting gender-responsive labor market policies to address structural and social barriers to female employment. By tackling these challenges in a systematic and evidence-based manner, countries can create more equitable labor markets and harness the full economic potential of their female workforce for long-term, sustainable development.

## 6 Conclusion

This study confirms the presence of a U-shaped relationship between female labor force participation (FLFP) and economic development, with variations observed across different income groups. The analysis reveals that FLFP initially declines as economies transition from agriculture-based to industrial structures, with male-dominated labor markets limiting female employment opportunities. However, as GDP per capita increases, the expansion of the service sector, increased education levels among women, and improved labor laws contribute to a reversal in this trend, leading to increased FLFP in high-income and upper-middle-income nations.

In high-income countries, FLFP follows a strong U-shaped pattern, where economic growth, coupled with progressive labor policies and social support systems, leads to a rise in female participation. The regression results indicate statistically significant coefficients for both the linear and quadratic terms of GDP per capita, confirming a robust U-shaped trend. However, the results also highlight diminishing returns to legal reforms in these economies, suggesting that further increases in legal protections may not substantially impact FLFP.

For upper-middle-income countries, FLFP exhibits a moderate U-shaped pattern, where economic development plays a significant role, but legal and social institutions are still in transition. The results indicate that as these economies develop, targeted policy interventions and better enforcement of gender-related laws can accelerate FLFP growth. While structural constraints exist, the potential for labor market improvements remains high.

In contrast, low-income countries exhibit a weaker U-shaped relationship, primarily due to persistent socio-cultural barriers, restrictive labor laws, and lower female educational attainment. The regression results show weaker statistical significance in the quadratic term, indicating that economic growth alone does not necessarily lead to FLFP improvements. Institutional quality, legal frameworks, and policy enforcement play a crucial role in determining whether women can effectively integrate into the workforce. Moreover, economic development in these regions remains highly dependent on informal

labor markets, where legal protections for female workers are often lacking.

Lower-middle-income countries present mixed findings, with some economies showing gradual FLFP recovery at higher GDP levels, while others remain stagnant due to weak institutional frameworks. The statistical analysis suggests that labor market policies and educational improvements are necessary to enhance women’s participation in the workforce. Without such reforms, economic growth alone will not lead to significant increases in FLFP in these economies.

This study also highlights the role of the Women, Business, and the Law (WBL) Index as an essential determinant of FLFP. The relationship between the WBL Index and GDP per capita varies across income groups, with high-income economies exhibiting a saturation effect—where additional legal reforms yield minimal impact—while lower-income economies show a delayed response due to enforcement challenges. The regression results suggest that while legal reforms are necessary, they must be accompanied by strong implementation mechanisms and supportive labor market policies to drive FLFP increases effectively.

In answering the research questions, this study finds that the U-shaped hypothesis holds in high-income and upper-middle-income countries but is weaker in lower-income nations. Additionally, the findings indicate that GDP per capita has a significant but nonlinear effect on FLFP, requiring complementary institutional policies to maximize its impact. Finally, the study confirms that legal frameworks play a crucial role in shaping FLFP trends, but their effectiveness depends on the broader economic and institutional context. The findings suggest that while FLFP declines during the initial stages of industrialization, it begins to rise again as economies advance and structural shifts occur. However, the strength and timing of this U-shaped relationship vary across income groups, influenced by legal, institutional, and socio-cultural factors.

In high-income countries, the recovery of FLFP at higher GDP levels is strongly driven by expanded educational opportunities, greater service-sector employment, and progressive labor laws. These economies have successfully integrated policies that promote gender inclusivity, which has facilitated higher participation of women in the workforce.

However, diminishing returns to legal reforms suggest that additional gender-based legal improvements may not significantly impact economic growth beyond a certain threshold.

In contrast, low-income countries exhibit a weaker U-shaped relationship due to persistent structural barriers, such as restrictive gender norms, inadequate educational access, and limited formal job opportunities for women. Economic growth alone does not appear to be a sufficient driver of increased FLFP in these nations. The legal framework, as measured by the WBL Index, also plays a critical role in shaping FLFP trends. However, its effectiveness depends on enforcement capacity and institutional quality, which remain challenges in lower-income economies.

Upper-middle-income and lower-middle-income countries show varying degrees of FLFP recovery as economic growth progresses. In these regions, investments in education, labor market policies, and regulatory improvements have contributed to gradual increases in FLFP. However, the pace of progress is often hindered by inadequate policy enforcement and labor market rigidities.

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