Historical Perspectives and Contemporary Insights of Feminization U-Hypothesis: A Brief Literature Review

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The Feminization U theory defines the preference of female labor force involvement FLFP (FLFP) to move in U pattern as the economic development of any country starts rising. At first stages of development when the country experiences structural shift from agriculture to industry, FLFP declines. When the country gets higher level of development with sound industrial base, FLFP rises again. However, the research literature provides mixed results about it. Previous studies had made it an established fact while the recent studies are proving it wrong on various empirical basis. So, this study is conducted to review briefly the existing literature from (1990-2024) to have a clear idea about the methodologies, datasets and peculiar conditions on which the U hypothesis got established and what are the general and peculiar reasons for countries whose datasets are not confirming it in their stages of development. In 2014, a study had opened various new aspects to analyze this hypothesis and from then there have been introduced various techniques to address the question of U hypothesis. So, from total 21 papers which are reviewed here, 15 fall from post 2014 while 6 are from pre 2014 era. The results reveal the sensitivity of existence of U hypothesis to GDP measures and how FLFP is calculated. Moreover, the pattern of FLFP is more of the result of structural change than economic growth. However, for developing countries its existence is more prominent so they can make policies accordingly to solve the issue of low FLFP.

Introduction

Sinha (1967) asserts that a long-term U-shape relationship may indicate the increase in women's labor market involvement and the degree of economic development. Since then, considerable theoretical and empirical study has focused on the previously mentioned link, continually yielding additional insights on this topic (Sajid et al., 2024; Idowu, O. 2023; Dhar, S. 2020; Altuzarra, et al., 2019; Belke & Bolat, 2016; Verme. 2014; Eastin & Prakash, 2013; Tam, 2011; Fatima & Sultana, 2009; Goldin, 1995; Pampel & Tanaka, 1986). Despite the consistent correlation between women's labor participation and economic growth over time, research results vary across different nations and groupings of nations. Identifying the association between economic progress and women's participation in labour markets is crucial for various reasons (Adejumo et al., 2024; Lechman & Kaur, 2015; Gaddis & Klasin, 2014; Tsani et al., 2013).

The U-shaped hypothesis posits an interaction between gender parity and economic development in the context of developing economies. Analyzing this link is essential for scholars and policymakers to understand labor force developments, enabling them to formulate appropriate policies (Alam, 2020; Lechman and Kaur, 2025; Chapman, 2015). The theoretical foundation of feminization the hypothesis connecting development with the participation of women in the labour force is as follows: During the early phases of economic development, characterized by low incomes and a predominantly agricultural workforce, a significant proportion of women engage in labor market. Fertility rates remain elevated; however, A large percentage of women participate in family farming or household businesses, allowing them to combine economic activities with child-rearing duties. It may clarify the high FLFP rates in Sub-Saharan Africa (Idowu & Qwoeye, 2019). As society attains greater wealth, the economic framework shifts towards industrial production, leading to the development of a formal sector economy, which generally reduces women's involvement in labour markets (Kumari, 2018).

 Women cannot leverage growing opportunities in industry and formal sectors due to inadequate educational attainment, the conflict between wage labour and childcare obligations, and socio-cultural barriers to female employment beyond the domestic sphere (Shultz, 1990). This could be exacerbated by societal stigma and statutory restrictions on female workers in industry or, more generally, against formal jobs of married women outside their home (Goldin, 1995). This may be especially pertinent in industries   that   necessitate   substantial   Physical   labour,   including

construction and mining activities. Furthermore, in accordance with basic labour economic theory, the general increase in efficiency and household income (mostly acquired by the male household head) negatively impacts female labour availability. As civilization advances, the participation of women in the labour force increases again (Klasen, 2019).

The expansion of post-secondary education for women and the emergence of a white-collar service sector introduces substantial appealing work prospects for women, free from stigmatization (or where stigmas and limits diminish with time) (Gehringer & Klasen, 2017; Goldin & Mitchell, 2017; Olivetti & Petrongolo, 2016). Furthermore, the decline in childbearing rates, increased availability of part-time job, and improved access to childcare facilities boost women's ability to reconcile external work with child-rearing duties. At this developmental stage, the effect of substitution linked to significantly higher anticipated female earnings dominates the income effect, leading to a positive association among female workers and per head income (Rouanet & Traore, 2022; Erdem, 2016).
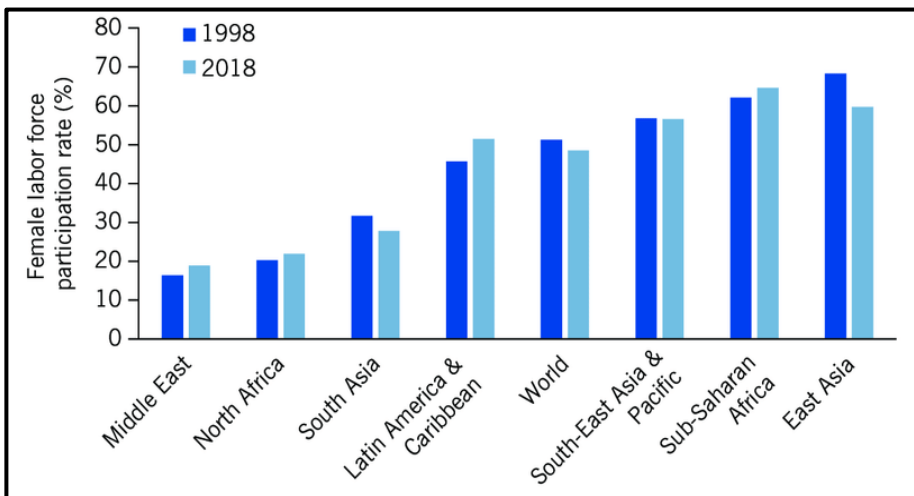

Figure 1. Regional estimates of female workforce participation rates across various geographies and time spans. (Source ILO statistical Database)
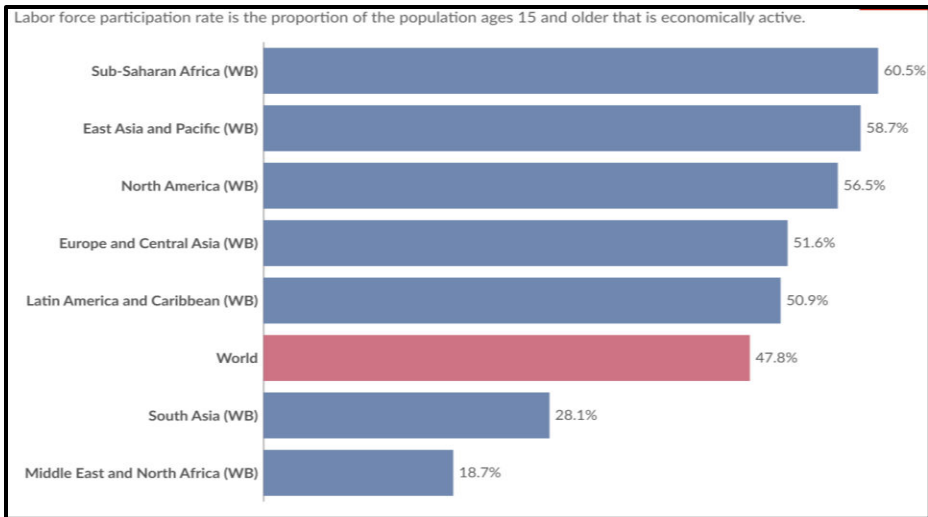
Figure 2. Female labor force participation rates, 2022 (Source: World Bank 2024)

Although this concept is credible and could clarify certain trends, an examination of the ranges and trends in figures 1–2 indicates that it cannot account for the entire narrative. The reduction in rates from high levels in lower-income emerging regions, such as Southeast Asia, the Middle East, and Eastern Europe, is surprising, as these countries are expected to be experiencing growth on an upward trend. Secondly, the declining trend in South Asia coincides with lowering fertility rates and rising female education, both of which are associated with the ascending portion of a U (Avlijas, 2015). Ultimately, the middle-income MENA countries have markedly lower FLFP than their middle-income equivalents in East Asia or Latin America. Therefore, to understand this contradiction, this study concisely reviews the literature on the female empowerment U-hypothesis about FLFP (Siddiqi, 2015).

This study evaluates mixed results in literature about the Feminization U hypothesis, as previous studies portrayed this idea as an established truth while the recent studies challenge its validity considering various aspects prompting a need for a comprehensive review. The specific focus of this study is on the unique conditions which determine the conformity of countries to this pattern (Gaddis & Klasen, 2014; Gaddis & Klasen, 2012). The range of methodologies and datasets which were employed in all reviewed studies are also an interest of this study. The study reveals that FLFP trends are more influenced by structural changes, such as shifts from

agriculture to industry, than by economic growth alone. It highlights how metrics, such as GDP measures and FLFP calculation methods, affect findings, emphasizing the need for standardized approaches (Akhtar et al., 2023). The research also identifies why certain countries deviate from the U pattern, offering valuable insights for developing nations, where the hypothesis is more prominent, to design policies supporting women's transitions into formal and industrial employment. Moreover, by contrasting pre-2014 and post-2014 studies, the research underscores advancements in empirical techniques, contributing to the academic debate and providing actionable recommendations for addressing low FLFP in developing economies (Altuazarra et al., 2019).

Aims and Objectives

This narrative review aims to aggregate and integrate published material to comprehensively understand this problem. The significance of understanding the trends of FLFP in various development stages is vital. Dozens of studies in the era of 70's and 80's had confirmed the existence of U styled pattern of FLFP with economic development (Sinha, 1967; Pampel & Tanaka, 1986; Goldin, 1995; Cagaty & ozler, 1995; Mammen & Paxson, 2000). Conversely, new research present empirical findings that refute this hypothesis, asserting that the conformity of the U hypothesis is highly dependent on the data source and estimation methodologies employed (Gaddis & Klasen, 2014; Gaddis & Klasen, 2012). This issue has prompted the researcher to investigate and examine the pertinent literature to understand the fundamental causes. The explicit purposes of this review are:

(i)   to examine the wide range of methods and techniques used for evaluating the U hypothesis
(ii)   to identify the dynamics responsible for existence of U hypothesis
(iii)   to provide policy recommendations to increase FLFP in light of these results

Methodology

Gaddis & Klasen, (2014) demonstrated that empirical evidence for this cyclical trend of U is weak and contingent upon data bases utilized, particularly GDP estimates. The U also disappears with progressive panel estimations. Moreover, disparities in FLFP across nations attributable to historical factors, are more significant than the subdued U trends observed in many models. This work established a robust platform for analyzing this

concept through many innovative methodologies. Consequently, this study incorporates 12 papers from post-2014 literature and 5 from pre-2014 to explain the differences in methodology and datasets utilized in these studies and their distinct approaches to hypothesis analysis.

A brief description about the papers is presented in the table.1 (descending order).

	Study	Variables & data	Results	Design	Geo-area
1	Insan Tunalı (2021)	1988-2013 decomposition of age, year, and cohort effects,	Turkey presently at turning point of U,	synthetic panel approach.	Turkey
2	Anyanwu et al., (2021)	Time series 1981 and 2015,	inverse relationship between FLFP and economic growth.	OLS	Nigeria
3	Durmus and Hilal (2020)	2001–2016	U trend found	dynamic panel approach. P(OLS), Fixed Effects model	Middle income countries
4	Rahman (2020)	1980-2018, GDP measure in 2 ways. (1) Ppp (2) Local currency	Unidirectional causality when ppp employed No causality otherwise in local currency	Granger causality test	151 countries for ppp 154 for GDP in local currency
5	Goh Han Hwa et al., (2020)	Data from 1990 to 2018 from WDI. Per capita income as eco-development.	a significant inverted-U-shaped association found	bounds test and Toda-Yamamoto granger non-causality	Malaysia

6	Yaseen Mamdouh Altarawneh (2020)	economic development (per capita GDP) time series data for time spans (1990-2017)	U shaped association as predicted between the economic development and FLFPR was confirmed.	Dynamic Lease Squares (DOLS) approach	Jorden
7	Shah alam (2020)	Qualitative analysis	Policy framework should be based upon new foundations (both demand & supply side)	Analytical reasoning	Developing countries
8	Stephan Klasen (2019)	1980-2005 GNI as economic development	not get strong confirmation of U-hypothesis	Regression, Fixed Effects, Micro-level regression	Many regions & selected countries
9	Mujahid N. et al., (2019)	1990-2017	U trend confirmed	ARDL approach	Pakistan
10	Chaudary and Elhorst (2018)	40 countries and 45 years panel data (1960-2005) Ten age groups are lumped together for FLFPR k/l ratio as proxy for economic development	The impact of demographic transition on the labor force participation (LFP) rate is examined concerning its U-shape relationship with the growth of the economy, specifically by calculating the turning points	Estimation of fixed effects, demographic change, interactive modelling, Arellano–Bond estimations	45 countries of different income groups

			for various explanatory variables.		
11	Ustabaş, A., & Gülsoy, T. Y. (2020).	1990-2015 GDP per capita as economic development	The empirical evidence indicates a robust association among the rate of FLFP in the industrial and service sectors and economic growth.	Correlation analysis	Turkey
12	Khaliq et al., 2017	time series data 1990-2014.	U hypothesis confirmed	Johansen cointegration	Pakistan
13	Belk,.M and Bolat, S. (2016)	1991-2014,	The U-shape hypothesis holds true in developing nations regardless of the estimating methodology employed.	fixed effects model and (GMM)	(36 advance & 112 developing countries).
14	Rahul Lahoti and Hema Swaminatha (2016)	State-level data covering the period from 1983–1984 to 2011–2012. Per capita GDP as eco-development	At the state level, no regular U-shaped correlation exists between the domestic product level and the FLFP rate.	(OLS) (Time fixed effects, region fixed effects)	Many states of India
15	Kelsey A. Chapman (2015)	Panel data (1990-2012) GDP per capita as	The study validates a U-shaped correlation.	pooled OLS estimation, fixed	20 countries of Middle

		economic development	The low FLFP rates may be partially attributed to these countries' progression towards the lower segment of the U-shaped curve.	effect estimation	East, North Africa
16	Isis Gaddis · Stephan Klase (2014)	1980-2005 Structural change as agriculture value added	No convincing empirical evidence U-shaped b	Fixed effect model	World data
17	Tam (2011)	The log of real GDP per capita used as eco development FLFP from ILO 1950-1980 dataset	The U-shape pattern clearly manifests as an intertemporal interaction	dynamic panel data estimation GMM	130 countries
18	Luci 2009	panel dataset (a combination of cross-sectional and time series data)	U found for developing while developed are on rising part of U.	Dynamic panel, GMM	175 countries
19	Fatima and Sultana (2009)	Eco dev (fuel consumption of household). 3year pooled data	U hypothesis confirmed.	simple fixed effect test.	Pooled data of three years from all regions of Pakistan

20	Goldin (1994)	40 states of USA with 40 years of data	Found evidence of U-hypothesis	Correlation	USA

Table 1. Brief description of literature juxtaposing past and present of feminization U-hypothesis.

Results

The most historic paper included in this study is of Golden, (1990). Similar to previous empirical evaluations of the feminization U hypothesis, this analysis is predicated on straightforward cross-sectional associations among the female workforce participation rate and GDP per capita across several states in the USA. The results generally validated the U-shaped correlation in accordance with (Tilly & Scott, 1987; Psacharopoulos & Tzannatos, 1989). However, the most recent works criticize it for not determining the dynamic effects of the data as U hypothesis is typically time series trend in its nature. Mammen and Paxson (2000) analyse data collected in 90 countries from 1970 to 1985, at five-year periods, to investigate the association among economic advancement and (FLFP). They first reassess the cross-sectional relationship with a non-parametric regression on the logarithm of GDP per capita. The results confirm a U-shaped pattern throughout all four designated time periods. The authors then do a linear regression of FLFP in relation to log GDP and its square, incorporating both country-specific fixed factors and a model without them (Gaddis & Klasen, 2014).

The fixed effect model exhibits a markedly less strong U-shape than the OLS model; however, it appears to corroborate the female empowerment U hypothesis. Nonetheless, the paper employed a restricted data range of 15 years and does not incorporate dynamic panel techniques, which could alleviate specific problems linked to the static model (Gaddis & Klasen, 2014). Moreover, the third iteration of the United Nations' WISTAT database, which includes labour force statistics up until 1985, is now seemingly obsolete. Fatima and Sultana (2009) explored the U hypothesis for Pakistan on three years pooled data set of all provinces and regions. For economic development the measure of fuel consumption is used which makes this estimation weak to get its targeted objective as the prevalence of sharp income inequality and gross difference in mobility patterns in different regions may make this proxy unfit to serve as economic development. Simple fixed effects were calculated which would not have captured the dynamism of the data which was taken in different time spans of the years 1992-1993, 1996-1997, and 2001-2002.

   The results confirm the existence of U movement in FLFP. The research by Avlijaš (2015), Tam (2011) & Luci (2009) examined correlation among FLFP and development employing the static and dynamic panel methodologies. The authors contend that the women empowerment U theory is also substantiated within countries across time; yet, certain identified turning moments seem to be unusually low. Equally concerning is that authors appear to utilize labor force participation rates from the fourth or earlier iterations of the ILO's EAPEP database, neglecting to consider the more recent data revisions. Furthermore, Tam (2011) employs 5.5 reconsideration of the PWT from 1993, which is evidently obsolete at this point. A further limitation is that the authors fail to address the latent endogeneity in GDP, despite the capability of dynamic estimators to tackle this concern. The existing empirical work examining the feminization U hypothesis generally lacks sensitivity studies.

Gaddis & Klasen (2014) extensively examine the feminization U hypothesis, utilizing many iterations of labor force and income data, and use sophisticated panel models that consider the endogeneity of GDP. The authors demonstrate that empirical validation of the feminization U hypothesis depends on the data utilized for evaluation. The periodic revisions of international PPP estimates and PWT, GDP database significantly influence outcomes, although the feminization U hypothesis lacks substantial evidence in PWT 6.3; however, the U-shape reappears in PWT 7.1. The association is significantly influenced by the iterations of the ILO data about FLFP, as historical and contemporary estimates are frequently updated. Furthermore, the U association typically dissipates when employing dynamic rather than static panel data methodologies. They determined that the evidence for the feminization U as an increasingly secular phenomenon in the development process is weak and lacks resilience, owing to dependence on data revisions and methodology. Moreover, it has been shown that even when a U is empirically substantiated, it remains so superficial that it neglects to address a substantial percentage of the inequalities in levels and trends of FLFP rates worldwide.

They found that initial conditions, factor endowments, and historical contingencies (assessed using fixed effects in a regression model) are considerably more significant predictors of FLFP rates worldwide than the secular trend identified by the U. Their study was the first examination of FLFP trends in connection with sectoral growth. Agriculture, mining, manufacturing, and services demonstrate unique dynamics concerning FLFP; yet, the impacts are typically negligible and unable to explain the

diverse fluctuations in women's economic engagement noted in many developing nations in recent decades. The authors assert that there is insufficient empirical data to support the feminization U as a secular trend in development phase.

Chapman (2015) examined the correlation between FLFP and economic growth in Middle Eastern and select North African countries using a panel dataset of 20 nations from 1990 to 2012. Education, urbanization, fertility and unemployment were used as control variables. He utilized the identical data employed by several cross-country studies. The dataset is an imbalanced panel, characterized by several missing observations across various variables, nations, and years. The absence of some observations may be associated with idiosyncratic errors, potentially resulting in biased and inconsistent estimators. Lahoti & Swaminathan (2016) examine the feminization U hypothesis in India through a state-level analysis, revealing the association between output levels, economic development composition, and women's employment. The findings indicate an absence of a significant correlation between NSDP and FLFP rate. Economic development in India is not highly labor-intensive, resulting in a disproportionate impact on women relative to men.

The manufacturing and agricultural sectors, typically marked by high labor intensity, have not propelled India's economic growth. The primary catalyst of development lies in the service sector, which demands a high level of proficiency that many women do not possess. Furthermore, the significant fixed effects indicate that deep-rooted historical factors influencing FLFP demonstrate considerable persistence and may elucidate the high-level disparities that overshadow most temporal changes in India. They utilized time and regional fixed effects in OLS, pooling data from two distinct time series (Lahoti & Swaminathan, 2016).

Ustabaş & Gülsoy, (2020) analyzed the feminization U trend for Turkey employing panel data from (1990-2015). It was first study to see FLFP trend with sectoral growth in Turkey. After Gaddis and Klasen (2014), this trend to divide the growth in sectorial categories had been set as overall GDP is not fit for comparing with FLFP. The empirical evidence indicates a robust correlation among the rate at which of FLFP in the industrial and service sectors and economic development. Ordinary Least Squares, Fixed Effects, and Dynamic Generalised Method of Moments models were employed. Belke and Bolat (2017) investigate the long-term determinants of FLFP, namely structural economic changes, through the assessment of the U hypothesis. The dataset includes 148 countries during various periods from 1991 to 2014. The ILO dataset contains missing values; hence, it is

classified into two categories according to IMF methodology: 36 advanced developed nations and 112 emerging and other developing nation.

The fixed-effects approach and the GMM estimator were both developed, and the results indicate that the U-shaped hypothesis holds true in developing countries, regardless of the estimating technique utilised. While, for developed countries only GMM results deny the existence of U trend. On the other hand, Khaliq et al., (2017) investigated U hypothesis for Pakistan on a time series dataset from 1990-2015. ECM and Johansen cointegration results found long term relationship between the two variables and presence of U trend for Pakistan. Chaudary & Elhort (2018) conducted a significant study to attain a thorough understanding of FLFP and its correlation with economic growth through a series of statistical tests. The dataset comprised 40 countries over a span of 45 years (1960–2005). They chose observations at five-year intervals (1960, 1965, …, 2000). The nations are categorized into distinct income classes; hence the study encompasses all aspects of the U-shaped association. The dependent variable comprises ten five-year age cohorts (15–19, 20–24, …, 60–64). Furthermore, they present the consolidated results (ages 15–64) as a baseline.

The study presents evidence supporting the U-shape correlation. For each age category and explanatory variable in the model, there is a distinct point at which the trend of decreasing participation rates shifts to an increasing trend in participation rates. The novelty of their work was to use capital to labor ratio as indicator of economic development of a country. They are right in this decision as GDP per capita cannot be a good parameter for comparing the growth level of various countries at same level or even at different levels of development. Schultz (1991) identifies that alterations in the sectoral makeup of the labor force delineate the U-shaped association among the FLFP rate and economic growth. The outcomes of this investigation align with what was found.

Klasen (2019) used data of various regions and selected countries and performed micro level regression for every region, country and sector to get a deep insight of differences of FLFP in various regions and countries at their similar or different stages of development. He dismisses the U hypothesis as a stylized reality and demonstrates that variations in FLFP levels are profoundly affected by historical inequalities in economic frameworks that persistently constrain women's economic opportunities today. Shocks can induce significant transformations, with the exposure of socialism being the most pivotal shock to FLFP. Trends are significantly influenced by the extent to which FLFP is contingent upon their household's

economic circumstances. Mujahid et al. (2019) examined a U-shaped dynamic relationship between economic growth and female labor supply in Pakistan from 1990 to 2017. The study utilized a dynamic perspective by applying the ARDL approach. This particular strategy has evaluated both the long and short-term associations among fundamental variables. The dataset for Pakistan indicates a notable U-shaped correlation between economic development and female labour supply (Ejaz, 2007).

Altarawneh, (2020) investigate the U-shaped hypothesis between economic development measured by per capita GDP and FLFPR in Jordan. The time series data on a macro level for the period of 1990-2017 were extracted from the World Bank Indicators. Additional control variables, including female education, female unemployment rate, and urbanization, were included to elucidate the dynamics of FLFPR. The Dynamic Least Squares (DOLS) method was employed to estimate the econometric model. The data supported the hypothesized U-shaped association between economic progress and FLFPR. Moreover, the data indicated that the Added Worker Effect predominated over the Discouraged Worker Effect, as GDP per capita had a negative and substantial influence on the FLFPR. Overall, the data indicate that economic expansion in Jordan alone was inadequate to improve FLFPR, unless labor market conditions are modified to better accommodate more female employment.

Goh et al. (2020) investigated the subject utilizing the limits test and the Toda-Yamamoto Granger non-causality approach. The study's results demonstrate a robust long-term link among the factors. Moreover, a substantial inverted U-shaped correlation has been identified between FLFP and economic growth in Malaysia. The outcomes of Granger causality tests provide robust evidence of bidirectional causality between education and economic growth, as well as female labor participation. Furthermore, the findings indicate a notable unidirectional connection from FLFP and fertility to economic growth. This study is unique in a way that it employed ARDL approach for testing the hypothesis.

Alam, (2020) conducted a qualitative study to explore the various aspects of the relationship between FLFP and economic development. Upon analyzing several methodologies concerning FLFP trends, he concluded that while cross-sectional data suggest a (weak) U-shaped correlation between FLFP and GDP per capita, this relationship lacks robustness and consistency at the national level. Ultimately, women's employment is influenced by multiple factors, such as societal norms, education, job creation, and the characteristics of economic growth. Consequently, in addition to conventional labor force participation rates, governments must guarantee

women's equitable access to superior employment and emerging labor market prospects. The emergence of these opportunities and the generation of new employment in the labor market facilitate the development process. Furthermore, the policies must take into account both supply-side and demand-side factors.

Yıldırım & Akinci, (2020) utilized 16 years of data from middle-income nations and discovered evidence supporting the U hypothesis through a dynamic panel technique. Pooled OLS and FEM estimations are computed as a criterion for selecting the appropriate GMM method. This study is innovative as it utilizes both difference and system GMM estimators, while also incorporating key explanatory variables such as fertility, education and total labor force rate. Rehman (2020) examines the existence of the U hypothesis by conducting a Granger causality test. This study measures economic growth through two methods: GDP at PPP (constant 2011 international dollars) and GDP in local currency units. The analysis employs a fully balanced panel dataset covering 28 years, from 1990 to 2018, utilizing data from 151 nations for PPP and 154 countries for GDP in local currency units. The results reveal unidirectional causality from growth to FLFP. However, the results of analysis when GDP is taken in national currency neither growth granger caused FLFP nor FLFP granger caused growth. So, it clearly depicts how much the results are sensitive to the measure of GDP.

Anyanwu et al. (2021) investigated the association between FLFP and economic growth in Nigeria. Time series data from 1981 to 2015 were utilized. Upon establishing cointegrating correlations, we employed an OLS estimate method to derive the long-run elasticity coefficients. The primary finding indicates an adverse correlation between FLFP and economic growth. The report advocates for the implementation of active labor market policies in Nigeria to enhance women's engagement in the labor market, hence fostering general economic growth and development in the country.

Tansel, 2002 & Tunali et al. (2021) analyzed the collective FLFP trends of women in Turkey over a 25-year period using a synthetic panel approach. Three APC models were developed based on age, year, and cohort effects. The demographic characteristics of the locality and educational attainment are also analyzed. All methods clearly demonstrate an M-shaped age profile resulting from childbearing interruptions in rural areas and among low-educated women in urban environments. Less-educated younger women demonstrate an increased propensity for participation, contradicting the belief that cultural factors hinder engagement. The data confirm that Turkey has attained the inflection point of the U-shaped trajectory in FLFP found in

countries where agriculture comprises a substantial segment of employment. The assessment emphasizes methodological challenges encountered during the study and investigates the causes of the sporadic instability of the methodologies. The variation in the linear trend of the cross-sectional age profiles explains the inconsistencies in the results.

Discussion and Policy Recommendations

Gaddis and Klasen (2014) assert that the correlation between economic development and FLFP is more complex than indicated by much of the existing empirical evidence. The feminization U hypothesis asserts that economic progress involves substantial structural changes and socio-economic transformations, factors inadequately represented by GDP levels, even in a non-linear context, and contingent upon the unique characteristics of each country's growth process. This study gets proves of this claim as it can be clearly observed that Rehman, (2020) performed granger causality for two groups of countries. For one group the measure of economic development was PPP and for other it was GDP in local currency. For countries which were measured by PPP showed causality from economic development to FLFP whereas the other group of local currency did not reveal any. Similarly, the datasets from earlier versions of ILO (which have missing values) present different results as compared to balanced datasets which are the revised versions with filled values as can be seen the difference of results of Gaddis & Klasen, (2012), Tam, (2011) and Gaddis & Klasen, (2014).

The identified inequalities support the claim by Gaddis and Klasen (2014) that specific patterns of structural change markedly affect female labour force participation, hence potentially strengthening a core mechanism of the feminisation U hypothesis. Thus, they directly assess the influence of disaggregated sectoral growth on FLFP. By employing sector-specific growth statistics, they may address numerous non-linearities and the differing impacts of growth on FLFP across countries at different developmental stages, without relying on cross-country GDP comparisons. This idea of disaggregation was a milestone and from then numerous studies have been conducted at country level for various sectors. In many studies cross country comparisons have been done like (Lahoti & Swaminathan (2016); Chaudary & Elhort, 2018; Tunali et al. (2021).

The suggested sectoral viewpoint is consistent with the original female empowerment U hypothesis, which emphasised structural change as a vital factor influencing the economic empowerment of women. The sectors of agriculture, mining, manufacturing, and services demonstrate unique

dynamics concerning FLFP; yet, the effects are typically negligible and unable to explain the diverse shifts in women's economic engagement noted in many developing countries in recent decades. As Lahoti and Swaminathan (2016) found that services sector was key driver of economic development in India and the women are labor intensive in agriculture and manufacturing, so, the economic growth could not bring any change in FLFP there. Such results reiterate the Gaddis and Klasen (2014) claim that FLFP is more sensitive to structural change, norms, historical background, policies, macroeconomic conditions, trade, fertility, education, economic background and take off phase of any country than its economic growth.

While numerous studies have corroborated the U hypothesis and fewer have refuted it, a thorough analysis of the phenomenon leads to the conclusion that Empirical evidence for the feminization U as a secular tendency in the developmental process is scant. Nonetheless, research suggests that structural change patterns are affecting female involvement rates in accordance with the concept. The inconsistency of feminization U is also seen in country research. Thus, to increase the FLFP in developing countries, policies should be devised keeping in views the dynamics of age, skill, education and income group of females in particular sector. All above studies have discussed the control variables of education, fertility, urbanization and family income as regressors for FLFP and found positive association for education and urbanization, negative for fertility and mixed for family income. So, increasing education and urbanization (security boosting) FLFP can be enhanced.

Education itself works to decrease the fertility so their interplay automatically gets positive results. Family income does not affect much when opportunity cost for not doing work is high for the females (when female have higher education or skill). So, increasing education this effect can also be mitigated. Secondly, the mothers having children under age of five years were analyzed in cohort studies on Tunali (2021) and Chaudary & Elhort (2018) have seen little participation in FLFP (FLFP); thus, policies promoting excellent daycare facilities at subsidized rates could significantly enhance FLFP engagement in underdeveloped countries.

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