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WOMEN'S ECONOMIC PARTICIPATION AND GROSS DOMESTIC PRODUCT IN THE UNITED KINGDOM (UK): AN ANALYSIS OF INCLUSIVE GROWTH

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Abstract

The study investigated women's economic participation and gross domestic product (GDP) in the United Kingdom, with reference to inclusive growth. For this, an Ex post facto research design was used. The study adopted secondary data from World Bank Indicator, spanning from 1986-2025. Augmented Dickey Fuller (ADF), Bound Test and Auto-Regressive Distributed Lag (ARDL) were applied. The findings established that GDP, female labour participation rate, government expenditure on education, and inflation rate showed a stationary pattern at level, while government expenditure on health, gender equality rating and real interest rate were stationary at first degree difference level. The Bound test result confirmed a long-run nexus among sampled variable. The ARDL result showed that female labour participation rate showed zero effect on GDP, government expenditure on education with an inverse sign and significant effect on GDP, government expenditure on health was significant with a positive link with GDP, gender equality rating remained negative and significant for a long-run estimate at 5% significant level, inflation rate exhibited both positive and negative signs and significant for both short-run and long-run respectively, and real interest rate remained negative and significant for a long-run. The study concluded that the present level of women engagement in UK's economy activities is insufficient to drive inclusive growth. It is recommended that government should monetised care responsibilities that woman perform in the name of childcare, in order to eliminate undervalue of UK's GDP due to childcare, and domestic chores.

Keywords: Women's Economic Participation, Gross Domestic Product, Inclusive Growth, Auto-Regressive Distributed Lag, Female Labour Participation Rate, Gender Equality Rating

INTRODUCTION

Increase in economic productivity is frequently seen as a sign of economic participation, that reflects engagement of various individual or economic agent in the economy activities (Falade & Nejo, 2025). As a result of this, majority of nations consider gross domestic product (GDP) as a commonly used metric to determine a nation's economic performance. The whole monetary worth of products and services generated within an economy in a year is regarded as GDP. With the introduction of the global goals, otherwise known as the Sustainable Development Goals (SDGs) in 2015 and the 2024–2030 gender strategy, there has been a substantial increase in awareness of the need to involve more women in economic participation. The inclusion of gender-specific targets in the SDGs is an indicative of the growing understanding of gender roles in attaining economic growth and development, and the growing attention that multilateral organisations and the global development community play in creating a global based society devoid of gender inequity (World Bank Group, 2025; Pepin, 2024).

The Gender Strategy for 2024-2030 aims to accelerate gender equality as a process to eradicate poverty and offer a habitable world (World Bank Group, 2025). This implies that in order to create a livable environment and alleviate varying degrees of poverty within the world, women from different societal units must be involved in economic activities, without resorting to gender inequality. Despite this, data indicates that as of 2023, 708 million of the 748 million women aged 15 and over were completely unemployed because of care responsibilities (International Labour Organization (ILO), Statistics Brief, 2024). This implies that women's participation in care responsibilities has prevented them from fully participating in economic activities, to achieve an inclusive growth. Also, 45% of women worldwide are not in the workforce because of care responsibilities; the largest percentages are in Northern Africa (63%) and the Arab States (59%), while the lowest percentages are in Europe (19%) (ILO, 2024). This shows that Europe, with countries like UK and others are promoting equal opportunities for women in employment opportunities, as men received on a daily basis compare others Northern Africa and the Arab States. The rationale for having high women outside the labour force in other clans is due to childcare and household work, gender inequality, family duties, social norms and poor education quality for women (Naftaly, 2024; Vinska & Tokar, 2021; Desai & Joshi, 2019; Fioramonti et al., 2019).

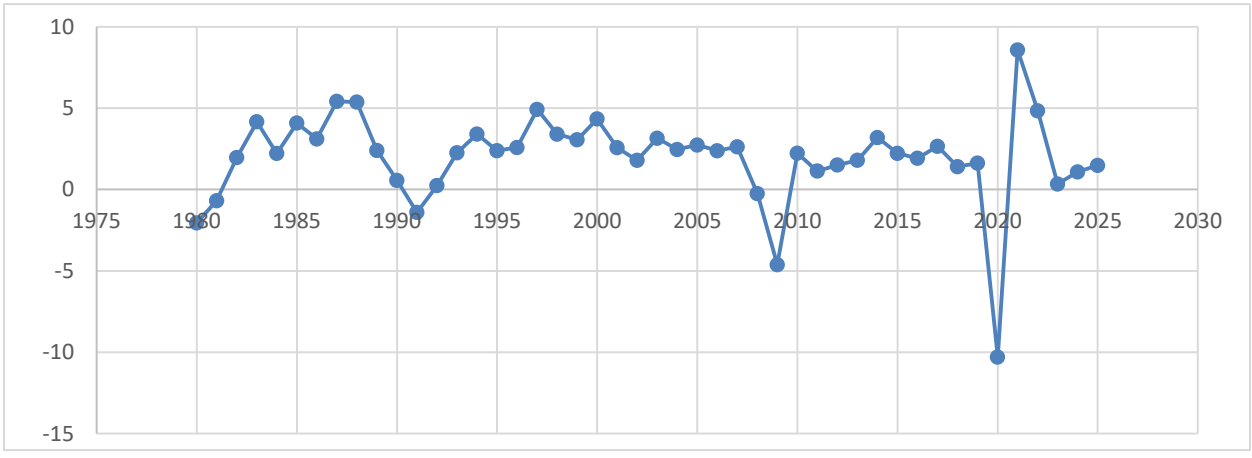
Women's economic participation in the context of this study is concerned with the involvement of women in various unit of economic activities like entrepreneurship, investment, banking and others. Over time, the UK's economic activities have seen a notable transformation, with an increasing focus on women's engagement in the workforce. Even still, a significant portion of these women continue to involve in unpaid care responsibilities, which lowers their economic value because it has no monetary value. Ferrant and Thim (2019) define unpaid care work as any

unpaid services given to members of a home, such as housekeeping, direct care of individuals, babysitting, and volunteer community work. Economically, individual labour can be employed to carry-out such tasks and get pay. Since majority of women perform such works are not paid or under-paid, it is usually excluded from the System of National Accounts.

Meanwhile, a large number of women provide unpaid services, which helps to explain the unequal progress made toward women's economic empowerment and gender equality (Falade et al., 2020). Considering this, record has shown from the global perspective that women devote three times as much time to unpaid care responsibilities than men do, ranging from 1.5 times in North America to 6.7 times in South Asia (ILO, 2024). According to a research by Ferrant et al. (2014), this unequal allocation of care responsibilities is firmly ingrained in societal norms, with many members of their community believing that unpaid care responsibilities are the domain of women. As a result, many women find it difficult to fully engage in the waged economy. For instance, more than half of "inactive" women in Latin American and Caribbean nations between the ages of 20 and 24 mentioned their household obligations as a justification for not working (Alfers, 2015). Lack of childcare was highlighted by 20% and 40% of informal working moms in the Philippines and Guatemala, respectively, as a major deterrent to accepting formal employment (Ferrant & Thim, 2019).

However, throughout the past four decades, the UK's economic environment has seen considerable turbulence (see Figure 1). For instance, the GDP's trend and pattern over the past forty years has been unstable, with negative output in 1980, 1981, 1991, 2008, and 2020. This indicates a contracting economy with overall production dropping. There were job losses, a slump in the economy, and a decline in consumer spending throughout these years. The other years, however, showed encouraging signs, with 2021 having the highest value at 8.6%.

Figure 1: United Kingdom Gross Domestic Product



Source: Excel Output (2025) (Data from IMF, 2025)

Moreover, the adoption of inclusive growth in UK may do far more than its present GDP. Ianchovichina and Gable (2009) assert that inclusive growth suggests a clear connection between the macroeconomic and microeconomic aspects of growth. The macroeconomic aspect is consistent with the extensive body of work, which is based on balanced growth models of the Solow-Swan type (Solow, 1956; Swan, 1956), and usually ignores the significant sectoral reallocation of labour that fast-growing economies undergo. The significance of structural change for economic diversity and competition, including the inventive destruction of employment and businesses, is captured by the microeconomic dimension. In this study, inclusive growth is focused on three main areas: sharing outcome, equal opportunity, and broad-based progress. This implies that such growth increases everyone's income and well-being, provides equitable access to the market, education, and regulatory environment, and ensures that the benefits of growth are distributed equally to both genders.

The three main areas that inclusive growth encompasses suggests that any gender disparity must be eliminated in order to attain the equal opportunity of the three pillars of inclusive growth. Mozzarelli (2023) asserts that the realisation of inclusive growth would be worsened if women were not taken into account as economic agents. The unequal burden of unpaid care work is caused by the gender gap; a significant share of women exclusively participates in childcare, domestic chores, and other unproductive activities. Considering this, the current study investigates women’s economic participation and gross domestic product in the United Kingdom, with reference to inclusive growth

Statement of the Problem

Women continue to experience worse economic outcomes than males, despite a greater emphasis on women's economic empowerment. Worldwide, women's labour force participation was 54%, while men's was 81% (World Bank, 2017). The average gender pay gap in Organisation for Economic Co-operation and Development (OECD) countries is still close to 11% in 2023 (OECD, 2025), while women are disproportionately employed as paid household labourers and informal workers in developing nations (ILO, 2018). Over the course of a woman's life, gender disparities in economic involvement increase; the global gender pension gap is between 30 and 40 percent. Gender equality in the workplace is predicted to take more than 200 years at present rate (WEF, 2018).

Women in the UK have considerable obstacles when trying to participate full in the economy, particularly in formal sectors like the public sector, health care, and deposit money banks. Because women work part-time and part-time rates are often lower, it was found that women's income in the UK was only 6.9% lower than men's (UK, Parliament, 2025). Based on

the assertion of a 6.9% decrease in income, this implies that the UK's GDP is undervalued due to childcare, domestic chores, and other unproductive activities women engaging. Aside this, problem implication like unaddressed economic inequalities where large percent of women are engaged in house shore without being paid/under-paid surface. In addition, the 6.9% income gap between men and women indicates that women in the system have uneven access to opportunities and resources. This has limits their potential for wage earnings and distorts the GDP's composition in favour of industries dominated by males.

Studies reviewed (Naftaly, 2024; Sharma, 2024; Taş & Ahmed, 2024; Junying ; 2024; Osabohien et al., 2022; Jemiluyi and Yinusa, 2021; Osinubi and Asongu; 2021; Desai and Joshi; 2019) were not carried out in UK, but rather other countries in African, India, Bangladesh, U.S., and others. Furthermore, studies (Вінська & Токар, 2021; Tasseven, 2017; Brooks-Gordon et al., 2015; Lechman & Okonowicz, 2013) carried out in UK and other European countries considered female economic participation, female economic participation and GDP per capita, without the inclusion of inclusive growth. Considering this, this study examines the effect of women's economic participation on gross domestic product in the United Kingdom, with reference to inclusive growth.

LITERATURE REVIEW

Naftaly (2024) used data from 1991 to 2022 to investigate the effect of economic growth on female labour market participation in Kenya. The Feminization U hypothesis, which explains the propensity of female labour force participation to first decrease and then climb during economic expansion, served as the basis for the study. The study examined the long-term impact of economic growth on women's labour market involvement using the Granger causality test and fully modified ordinary least squares (FMOLS). The study's findings showed that, over time, women's involvement in the labour market is favourably and considerably impacted by economic growth. Also, the results of the control variables indicated that education has a positive impact on women's employment, but male labour market involvement, fertility rate, female self-employment, and urbanization rate hinder women's access to the workforce.

In a study sampling of 157 nations, Sharma (2024) investigated the connection between GDP, female labour force participation, and fertility rate from 1991 to 2018. It was discovered that female labour participation was significantly impacted by both short-term and long-term developments in GDP and fertility rates, and this connection is non-linear. Fertility is one of the most significant non-economic determinants, and the study indicates a U-shaped association between female labour participation and GDP.

Taş and Ahmed (2024) investigated women's access to childcare, time use, and economic participation in urban Bangladesh. The study used a survey data from Dhaka's low-income neighborhoods. It was established that women with children between the ages of 0 and 5 are less likely to participate in the labour market, be employed, and earn a living. Also, all mothers with young children are penalised by the job market, but the biggest penalty is imposed on those who have small children, but do not have access to childcare assistance. Mothers of small children often spend more time on unpaid work and less time on market job, in contrast to people who are childless or have older children.

A research on the economic impact of childcare costs on women's employment decisions was examined by Junying (2024). The study used a rich dataset that includes 753 instances from the U.S. Women's labour force participation database to investigate how childcare expenditures affect women's job decisions. This study examines a variety of characteristics, such as age, income, education level, number of children, and their impact on employment outcomes, using a Multiple Linear Regression (MLR) model with interaction terms. The findings show that childcare expenses have a major detrimental influence on career prospects, especially for mothers with small children, underscoring a crucial obstacle to entering the workforce. The results validate the necessity of focused policy measures that lower childcare expenses, increase economic stability, and advance gender parity in the workforce.

Pepin (2024) studied child care subsidies, paid child care participation and labour market outcomes, evidence from the Child and Dependent Care Credit (CDCC). It was discovered that a $100 increase in CDCC generosity raises paid child care participation by 0.6 percentage points for single moms, and 2.2 percentage points for married mothers with children under 13. Also, the author discovers that CDCC benefits boost married mother labour supply, which may result in long-term income increases.

The impact of women's empowerment and development on inclusive economic growth in Indonesian provinces between 2012 and 2021 was examined by Alya et al. (2023). This study employed a panel data regression analysis. According to the regression results, women's life expectancy had a substantial negative impact on women's development factors through the gender development index indicator, but women's per capita spending and average length of education had a large positive impact. Women's participation did not significantly affect inclusive economic growth, according to the gender empowerment index indicator, while women's professional status and income contribution significantly improved inclusive economic growth between 2012 and 2021.

The impact of female involvement in agricultural and economic growth in 33 African nations was examined by Osabohien et al. (2022) from 2000 and 2018. The study used the

fixed effects approach based on the Hausman specification result and Pooled Ordinary Least Squares (POLS).

Although statistically significant, the results of the POLS and fixed effect were similar across sub-regions, indicating a negative correlation between economic growth and female engagement in agriculture. Also, there was 0.06% –2.7% decrease in economic development for every 1% increase in female engagement in agriculture. However, it was discovered that female education was favourably correlated with economic growth and statistically significant across models. Economic growth rose by 1.71% on average when women have higher levels of education. This suggests that a rise in the number of women working in agriculture without the necessary education, training, and access to agricultural resources was detrimental to economic growth.

Jemiluyi and Yinusa (2021) conducted an empirical assessment of the relationship between female economic engagement and economic growth in the sub-Saharan African region. Using data for a sample of 35 sub-Saharan African nations. The results, which were obtained using the Prais-Winsten regression, indicate that female economic engagement has a noteworthy beneficial impact on regional economic growth. In particular, economic growth increases by 0.028 percent and 0.021 percent for every percent rise in the employment rate and female labor force participation, respectively. Also, during the research period, there was a positive correlation between economic growth and the percentage of the working population, domestic lending to the private sector, and the pace of urbanization.

Women's economic engagement and the trends of GDP per capita in EU member states was the subjects of a study conducted by Fernandel et al. (2021), using the Spearman coefficient. It was shown that although Greece, Italy, Spain, and Sweden had a fall, Ireland saw the highest relative gain of 29.1%. Between 2016 and 2020, the average gender gap in economic opportunity and participation in EU member states shrank by 0.018 points. The Spearman correlation coefficient is statistically negligible. Therefore, promoting economic gender equality alone is insufficient to spur economic growth; instead, it should be seen as an unquestionable human right and combined with promoting gender equality in other domains, such as politics, health care, and education.

Lightman and Kevins (2021) investigated the gendered and classed aspects of unpaid care as well as welfare state spending. This study is the first to specifically evaluate the relationships between the gendered and classed aspects of unpaid care labour across 29 European countries, and welfare state spending. The study examined childcare and household responsibilities for individuals with at least one kid under the age of 18 using a multi-level model analysis of data from the European Quality of Life Survey. There are two important conclusions

from the analysis. First, it was discovered that childcare supply is more gendered than classed, reflecting tendencies toward "intensive mothering," when we break down various forms of unpaid care employment. On the other hand, cooking and housework have both class and gender influences, perhaps because wealthy people are more inclined to outsource them to the paid care industry. Second, the results indicated that family policy may influence the link between gender, income, and housework (but not childcare), even while overall social expenditure has no effect on the number of hours spent on childcare and housework. In particular, family policy spending is linked to a significantly reduced gender difference when compared to the amount of time spent on housework.

Vinska and Tokar (2021) examined the GDP per capita trends and women's economic activities in European Union member states from 2016 to 2020. The study employed the Spearman coefficient. It was discovered that between 2016 and 2020, the average GDP per capita increase in EU member states was 11.6%, with the highest relative rise of 29.1% was seen in Ireland, whereas there was reduction in Sweden, Greece, Italy, and Spain. Furthermore, between 2016 and 2020, the average gender gap in economic opportunity and participation in EU member states shrank by 0.018 points. The Spearman correlation coefficient is statistically negligible. The study confirmed that promoting gender equality in the economy alone is insufficient to boost economic growth; instead, it should be seen as an unquestionable human right and combined with promoting gender equality in other areas, such as education, health care, and Politics.

Osinubi and Asongu (2021) investigated how globalization affected female economic participation (FEP) in the BRICS (Brazil, Russia, India, China, and South Africa) and MINT (Mexico, Indonesia, Nigeria, and Turkey) nations from 2004 to 2018. Four globalization metrics are used and taken from the 2018 KOF Globalization Index. while the rate of female labour force participation serves as a stand-in for FEP. The Pooled Mean Group (PMG) estimator serves as the foundation for the empirical data. The results of the PMG estimator from the Panel ARDL technique showed that while social globalization has a long-term detrimental effect on FEP, political and general globalization in MINT, it had favourable effect in BRICS nations. Also, economic globalization has been found to have no long-term impact on FEP. On the other hand, none of the globalization metrics show a short-term impact on FEP. This bolsters the claim that FEP is not immediately impacted by globalization.

Sabino et al. (2020) examined how women's labour force involvement and income varied in relation to spending on children in four different nations. Using spending data from the US, Australia, Spain, and Norway, this article places these patterns in a cross-national context. It was discovered that the United States and Norway had the strongest correlations between

income, female labour force participation, and expenditure, whereas Spain and Australia have intermediate correlations. These findings imply that public provision reduces disparities in parental spending on children.

Desai and Joshi (2019) investigated the effect of The paradox of declining female work participation in an era of economic growth in India, from 2004–2005 and 2011–2012, this study investigated these various explanations and discovered that: (i) the decline in rural women's work participation rates reported by National Sample Surveys may be overstated; (ii) supply factors account for a relatively small portion of the decline in women's work participation rates; (ii) Public policies that boost women's employment possibilities, such as MGNREGS and transportation infrastructure, are linked to higher rates of female involvement in the workforce

Fioramonti et al. (2019) studied gross domestic product as it relates to wellbeing Childcare's impact on the economic empowerment of impoverished urban women in Africa of Nairobi, Kenya was examined by Clark et al. (2019). The study applied randomised control trial research. It was confirmed that poor urban women's engagement in paid labour is hampered by their lack of access to reasonably priced early childcare. Also, the women who received coupons for early childcare subsidies are on average of 8.5% more likely to be working. Married moms experienced the majority of these employment improvements. By switching to professions with more regular hours, single moms, on the other hand, were able to drastically cut down on the amount of time they worked without sacrificing their income. Also, Tasseven (2017) used panel data analysis for G8 nations between 1995 and 2013 to examine the relationship between economic development and female labour force participation rates. The findings demonstrate that the rate of female labour force participation is discouraged by unemployment. Female labour force participation is found to be positively impacted by both education and the gross domestic product.

Theoretical Framework

The current theories for this study are based on inclusive growth theory and human capital theory (HCT). Beker (1964) is credited with developing the human capital theory, but the Organization for Economic Co-operation and Development (OECD) introduced the Inclusive growth theory in 2009. According to HCT, increased productivity and economic growth can be achieved through education, training, and health support for individuals. Considering this, Jemiluyi and Yinusa (2021) assert that the theory views people as assets that require rebranding in order to increase economic development and productivity. Women's education is an investment that increases their production, which in turn raises productivity. Increased GDP

and inclusive growth would result from women's more effective contributions to the total production.

Also, inclusive growth theory places a strong focus on fostering economic progress that should benefit every member of society by lowering inequalities and expanding possibilities. Meanwhile, to eliminate any kind of gender disparity, the UK economy must have equal access to the three fundamentals of inclusive growth. Mozzarelli (2023) asserts that the realisation of inclusive growth would be worsened if women were not taken into account as economic agents. This concept essentially supports gender equality by arguing that women's economic empowerment may benefit the economy as a whole (Ogunoye & Falade, 2023). The rationale is that women who are empowered make equal and proportionate contributions to GDP

According to studies, society must remove any obstacles that prevent women from entering the workforce by making sure they both contribute to economic progress (Vinska & Tokar, 2021; Rahman, 2020). In the UK, there is lesser rate of obstacles such as the gender wage gap, restricted access to leadership positions, unpaid care duties, and occupational segregation. For instance, data indicates that women's income in the UK was only 6.9% lower than men's since women work part-time and part-time rates are often lower (UK, Parliament, 2025). This indicates that women in the system have lesser uneven access to opportunities and resources, when compare with others emerging nations.

According to human capital theory, improving people's health, education, and training is essential to raising their potential earnings and productivity (Matache, 2023). The human capital theory's mathematical form is provided.

GDP= f (H, E, T) .. …. …. (i)

Where; GDP: Gross domestic product, H: Expenditure on Health, E: Expenditure on education, T: Expenditure on skill acquisition

Equation (i) must hold for every time period to achieve higher productivity and economic growth.

Inclusive growth theory avows emphasis on creating economic growth that each member of the society should benefit from through reduction of disparities, and promotion of opportunities.

GDP = f (G,E, E) … …. ….(ii)

Where; G = Gender equality, E = Equity, and E = equal opportunities

When equation (i) equates equation (ii), we have equation (iii)

H, E, T = G, E, E .. …. …. (iv)

GDP = f (H, E, T, G, E, E, …x) … ….. …..(v)

The equation v shows that GDP is determined by many factors

METHODOLOGY

This study used a qualitative research approach by gathering data from secondary sources (see Table 1). The collection of data from secondary sources provides justification for the use of the qualitative research design. Data from 1986 to 2025 were used in the study. The 'Sex Discrimination Act amendment (1986)' served as rationale for considering 1986, while 2025 is due to accessible to data. The model for this study was built on theoretical model. The theoretical model is stated below;

GDP = *f* (*H, E, T,* G, *E,* E, …*x*) … ….. ….. (vi)

The model was modified as follow;

GDP = *f* (FLFP*,* GOED, GOVH, GEDG, INF, RINT).… ….. ….. (vii)

Where; GDP: Gross domestic product, FLFP: Female labour Participation rate, GOED: Government expenditure on education, GOVH: Government expenditure on health, GEDG: Gender equality rating, INF: Inflation rate, and RINT: Real interest rate

The model was modified for three reasons. First, FLFP was included as proxy variable for women's economic participation. Second, GEDG was added because of the inclusive growth theory adopted, that emphasises on gender equality, while GOED and GOVH were included due to human capital theory. Third, INF and RINT were added as control variables, in order to have a high statistical adjusted R-square.

The econometric form of vii is stated below;

GDP = Ω_0 +Ω_1FLFP + Ω_2GOED + Ω_3GOVH + Ω_4GEDG + Ω_5INF+ ΩRINT + μ_t…….(viii)

Putting equation (viii) in autoregressive distributed lagged formats, we have equation (ix)

$$\begin{aligned}\mathrm{GDP} = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta\mathrm{GDP}_{t-i} + \sum_{i=0}^{p} \beta_2 \Delta\mathrm{FLFP}_{t-i} + \sum_{i=0}^{p} \beta_3 \Delta\mathrm{GOED}_{t-i} + \sum_{i=0}^{p} \beta_4 \Delta\mathrm{GOVH}_{t-i} \\ + \sum_{i=0}^{p} \beta_5 \Delta\mathrm{GEDG}_{t-i} + \sum_{i=0}^{p} \beta_6 \Delta\mathrm{INF}_{t-i} + \sum_{i=0}^{p} \beta_7 \Delta\mathrm{RINT}_{t-i} + \omega_1 \mathrm{GDP}_{t-1} \\ + \omega_2 \mathrm{FLFP}_{t-1} + \omega_3 \mathrm{GOED}_{t-1} + \omega_4 \mathrm{GOVH}_{t-1} + \omega_5 \mathrm{GEDG}_{t-1} + \omega_6 \mathrm{INF} + \omega_7 \mathrm{RINT}_{t-1} + \mathrm{vt}\end{aligned}$$

Where; ω_1 -ω_6 are the long run multipliers and vt is the white noise error.

Table 1: Variable Description and Sources

Variable	Description	Measurement	Source
GDP	The annual sum of aggregate output in UK at constant price,	Percentage(%)	https://www.imf.org/en/publications/weo/weo-database/2025/april/select-countries?grp=119&sg=all-countries/advanced%20economies%20/%20major%20advanced%20economies%20(g7)

FLFP	The percentage of economic active women within the age range of 15-64 in UK.	Percentage(%)	https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS?end=2024&locations=GB&start=1990
GOED	The annual sum of government expenditure on education, as a percentage of GDP at constant price.	Percentage(%)	https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS?end=2024&locations=GB&start=1990
GOVH	The annual sum of government expenditure on health, as a percentage of GDP at constant price.	Percentage(%)	https://data.worldbank.org/indicator/SH.XPD.GHED.GE.ZS?end=2024&locations=GB-HN&start=1990
GEDG	The rate of equal opportunities, as well as, treatment of women to man,	Rating (1-6)	https://data.worldbank.org/indicator/IQ.CPA.GNDR.XQ?locations=GB
INF	Annual percentage of consumer price	Percentage(%)	https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=GB
RINT	Interest rate adjusted from inflation	Percentage(%)	https://data.worldbank.org/indicator/IQ.CPA.GNDR.XQ?locations=GB

Source: Researcher's compilation (2025)

RESULTS AND DISCUSSIONS

Descriptive Analysis

Table 2: Descriptive Analysis

Statistics	GDP	FLFP	GOED	GOVH	GEDG	INF	RINT
Mean	2.018025	54.90070	4.479668	16.53528	2.937652	2.965049	3.065888
Median	2.383500	54.97250	4.845045	17.08469	2.266225	2.474158	3.218198
Maximum	8.576000	58.98000	5.906830	36.81352	10.74540	8.063461	8.988112
Minimum	-10.29700	51.82800	0.000000	1.541802	-0.330960	0.368047	-3.713890
Std. Dev.	2.875253	2.190000	1.405967	6.937671	2.224036	1.888280	2.951959
Skewness	-1.961934	0.044139	-2.381531	0.353928	1.456122	1.416289	-0.254022
Kurtosis	10.55067	1.776038	8.244289	4.717168	5.574571	4.337808	2.487919
Jarque-Bera	120.6822	2.509793	83.64888	5.749547	25.18263	16.35538	0.867226
Probability	0.091101	0.285105	0.059000	0.056429	0.034003	0.058281	0.648163
Sum	80.72100	2196.028	179.1867	661.4110	117.5061	118.6020	122.6355
Sum Sq. Dev.	322.4162	187.0479	77.09299	1877.120	192.9071	139.0585	339.8483
Observations	40	40	40	40	40	40	40

Source: E-view-12 Output (2025)

The descriptive statistics (see Table 2) revealed that government expenditure on health (GOVH) possessed highest mean value and median value, followed by others sampled variables.

This suggests that on the average value, expenditure on health received highest sum among sampled variables in the model. Also, female labour participation rate (FLFP) showed highest maximum value, while GDP, GEDG and RINT showed lowest value, with a negative sign. This implies that GDP, GEDG and RINT were not stable over the sampled years. The sampled variables showed a moderate standard deviation around the mean. The skewness showed both negative and positive. This implies bell-shaped pattern of the model that produced an unbiased inference. Lastly, the *p*-value of the Jarque-Bera was much higher than 5%. This shows a normally distributed pattern model.

Pretest Analysis

Unit Root Estimate

Table 3: Augmented Dickey Fuller (ADF)

Variable	Test-Value	5% critical value	Level	Remark
GDP	/3.251300/ {0.0000}**	/2.938987/	I(0)	*Stationary*
FLFP	/3.241066/ {0.0250}**	/2.938987	I(0)	*Stationary*
GOED	/3.805762/ {0.0060}**	/2.938987/	I(0)	*Stationary*
GOVH	/5.757696/ {0.0000}**	/2.941145/	I(1)	*Stationary*
GEDG	/5.171372/ {0.0000}**	/2.941145/	I(1)	*Stationary*
INF	/3.393199/ { 0.0174}	/2.941145/	I(0)	*Stationary*
RINT	/5.377175/ {0.0001}	/2.943427/	I(1)	*Stationary*

*{ }** indicates p-value less than 5%*

Source: E-view-12 Output (2025)

It was established that GDP, FLFP, GOED and INF showed a stationary pattern at level, while GOVH, GEDG and RINT were at first difference degree level. Statistically, all sampled variables in the above specified model confirmed absence of unit root problem at level and first level, at 5% conventional level.

Bound Test Estimate

Table 4: Bound Test Estimate

Test Statistic	**Value**	**K**
F-statistic	5.847267	6
	Critical Value	
Significance	**I0 Bound**	**I1 Bound**
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

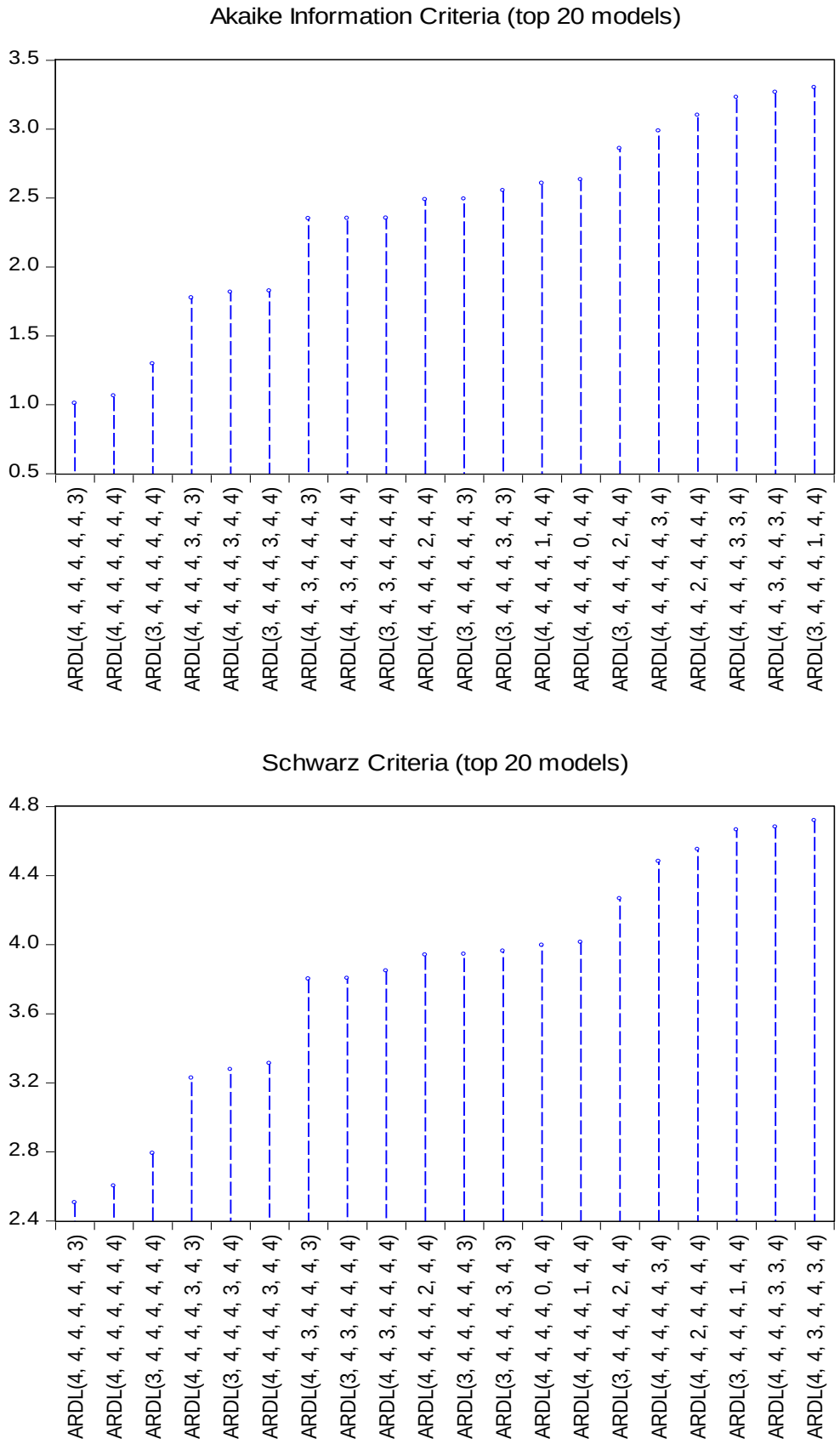
Source: E-view-12 Output (2025)

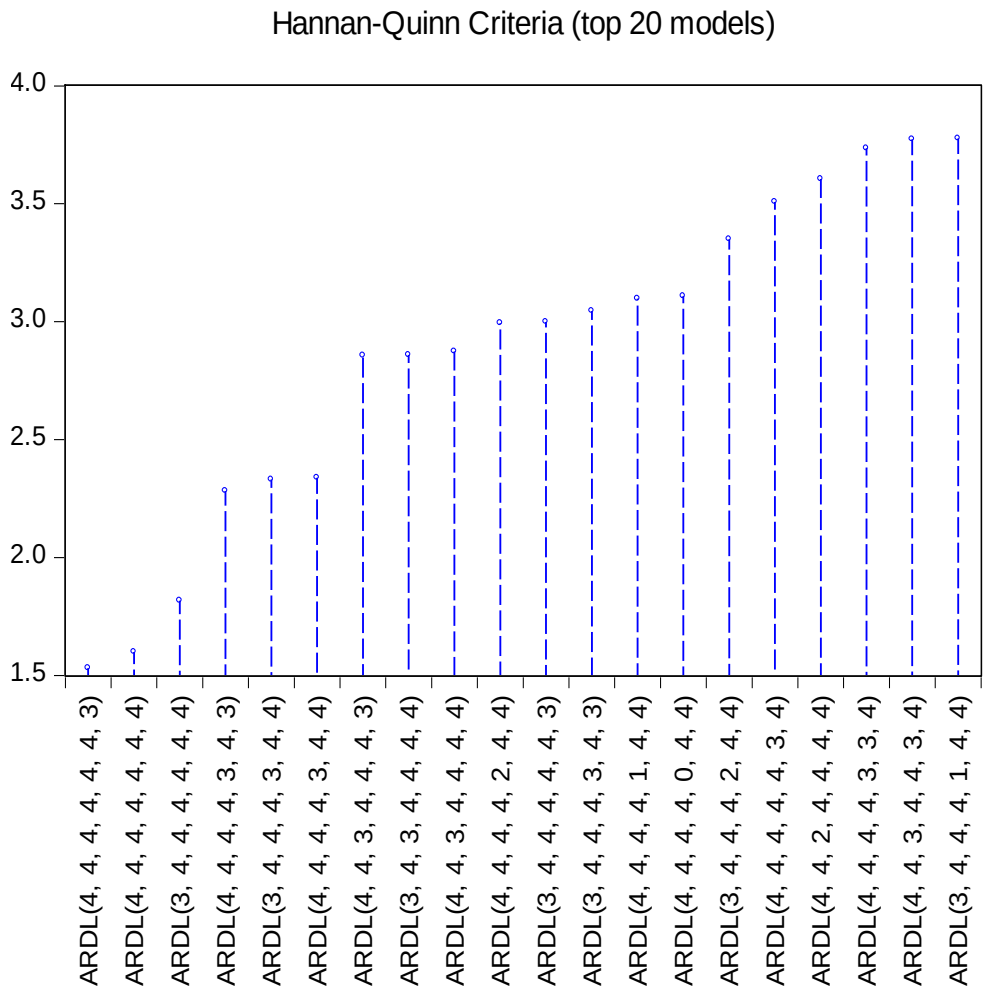
The bound test result confirmed a long-run nexus among sampled variable, including gross domestic product (GDP), female labour participation rate (FLFP), government expenditure on education (GOED), government expenditure on health (GOVH), gender equality rating (GEDG), inflation rate (INF), real interest rate (RINT) and government expenditure on health (GOVH). This shows that change in each of the variable impact one and other in the long-run.

Lag Order Selection

According to Pesaran et al. (2001), ARDL requires the selection of a proper lag order to produce unbiased inferences. Considering this, Akaike information criterion (AIC) lag order criterion was selected because it has the lowest value when compared with, Schwarz information criterion (SIC) and Hannan–Quinn information criterion (HQ) (See Figure 2).

Figure 2: Lag Order Selection Trend





Auto-Regressive Distributed Lag

Table 5: Short-run & Long-run Estimates

Short-run Estimates				
R^2= 0.997048**; Adjusted R^2 =** 0.948345**; Prob.(F-statistic)=** 0.047604				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
ΔFLFP	3.679237	1.694648	2.171092	0.1621
ΔGOED	-1.866401	0.403708	-4.623145	0.0057**
ΔGOVH	0.437119	0.100106	4.366561	0.0080**
ΔGEDG	-0.147147	0.195602	-0.752276	0.5304
ΔINF	2.254238	0.202298	11.14317	0.0080**
ΔRINT	-0.125932	0.201094	-0.626234	0.5951
Constant	-2.083216	2.911313	-0.715559	0.5485
ECT_t	-4.370686	0.643333	-6.793814	0.0210**

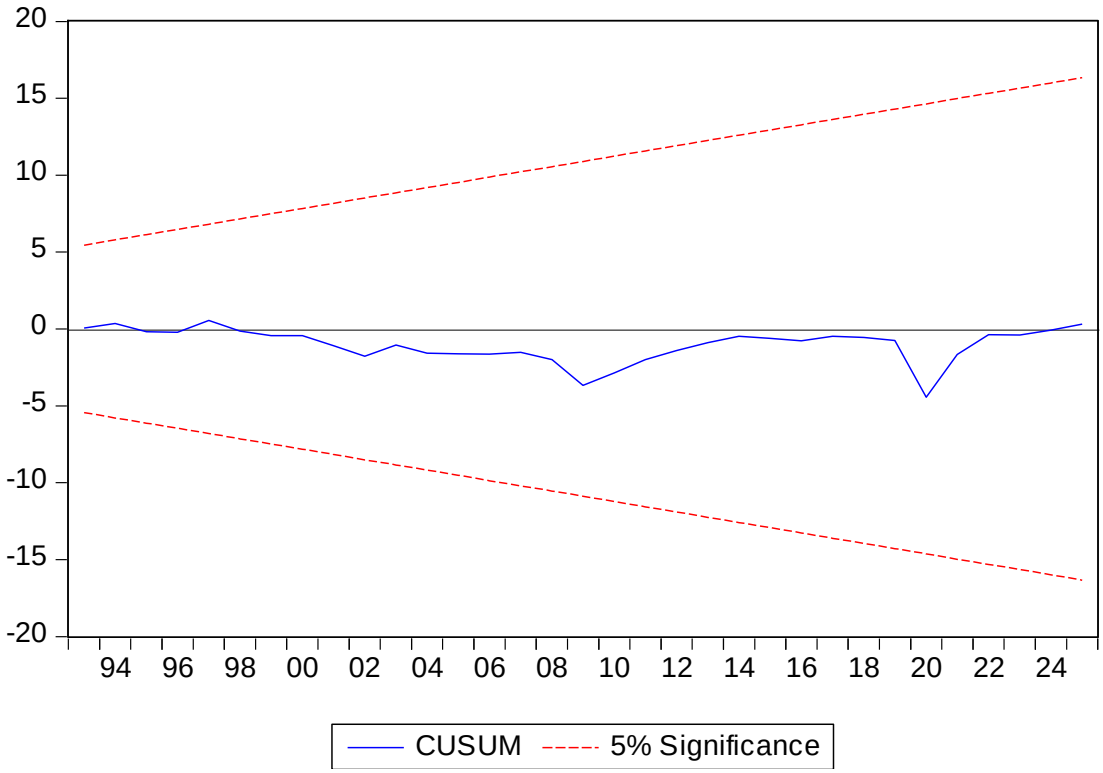
Long-run Estimates				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
FLFP	0.809081	0.204758	3.951398	0.0585
GOED	-5.238975	0.711458	-7.363717	0.0179**
GOVH	0.265283	0.029195	9.086708	0.0119**
GEDG	-1.180339	0.292553	-4.034618	0.0563**
INF	-1.419513	0.269346	-5.270220	0.0342**
RINT	-0.654244	0.166198	-3.936546	0.0589**
Constant	-4.766336	6.476311	-0.735965	0.5384
Note: ** indicates significance @ 5%				

Source: E-view-12 Output (2025)

Diagnostic Test

CUSUM Test

Figure 3: CUSUM Test



The values of the CUSUM lie within 5% conventional level, suggesting a structural stability. Therefore, the variables analysed in the model was adjudged to be stable overtime.

Serial Correlation

Table 6: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.361453	Prob. F(2,31)	0.6996
Obs*R-squared	0.911525	Prob. Chi-Square(2)	0.6340

Source: E-view-12 Output (2025)

The model confirmed absence of serial correlation, judging from the *p*-value of the F-statistics that was higher than 5% conventional level.

Discussion of Findings

The ARDL estimates for both long-run and short-run established that female labour participation rate (FLFP) was positively related to GDP and insignificant at 5% significant level. This suggests that positive link did exist between FLFP and GDP, with FLFP having zero effect on GDP. The implication is that the present level of women's economic participation in UK is not sufficient to promote the desirable level of aggregate output, that leads to inclusive growth. Also, the long-run estimate affirms short-run result, with implication that the continued denial of women in critical economic positions cannot sustain inclusive growth. These findings confirmed the discovery of ILO (2024) that showed that 45% of women worldwide are not in the workforce because of care responsibilities; the largest percentages are in Northern Africa (63%) and the Arab States (59%), while the lowest percentages are in Europe (19%). The insignificant nature of FLFP may be attributed to gender disparity, unpaid care responsibilities, etc. Aside these, studies also stated factors like childcare and household work, gender inequality, family duties, social norms and poor education quality for women as factors promoting such practices (Naftaly, 2024; Vinska & Tokar, 2021; Desai & Joshi, 2019; Fioramonti et al., 2019). Past studies (Vinska & Tokar, 2021; Alya et al., 2023) supported the study finding, with the discovery that women's participation did not significantly affect inclusive economic growth, while some studies (Naftaly, 2024; Jemiluyi & Yinusa, 2021) have contrary discoveries, with the notion that over time, women's involvement in the labour market is favourably and considerably impacted by economic growth.

It was confirmed that government expenditure on education (GOED) was significant for both long-run and short-run, with an inverse sign at 5% significant level. The inverse nexus between GOED and GDP was contrary to the established a-*priori* expectation. The implication of the finding is that higher government spending has not translated to higher aggregate output, but rather low aggregate output. The rationale for such negativity co-efficient is due to poor

funding of education in UK. For instance, record shows that UK educational spending is approximately within 4.1% of national income of 2024-25 financial year. The finding was contrary with Osabohien et al. (2022), that confirmed that female education was favourably correlated with economic growth and statistically significant across models. Furthermore, government expenditure on health (GOVH) showed a significant value, with a positive link to GDP. This suggests that higher government spending on health care sector in UK boosts higher aggregate output. Lightman and Kevins (2021) support the finding and discovered a direct link between GOVH and GDP. Meanwhile, gender equality rating (GEDG) showed an inverse and significant sign for a long-run estimate at 5% significant level, with a short-run estimate showing insignificant sign. This suggest the presence of high gender disparity in UK, resulting to women contributing low to GDP. It was discovered that 45% of women worldwide are not in the workforce because of care responsibilities; wit Northern Africa having 63%, the Arab States (59%), and Europe (19%) (ILO, 2024); while women's income in the UK was only 6.9% lower than men's (UK, Parliament, 2025).

Also, the control variables included in the model, inflation rate (INF) and real interest rate (RINT) were significant at various degree. Inflation rate (INF) was positive for short-run estimate, while negative for long-run. This implies that a moderate inflation encourages growth. Also, RINT estimate showed that low RINT encourages investment, resulting in higher GDP.

CONCLUSION AND RECOMMENDATIONS

The study investigated the effect of women's economic participation on gross domestic product in the United Kingdom, with reference to inclusive growth from 1986-2025. The ARDL result showed that female labour participation rate showed zero effect on GDP, government expenditure on education with an inverse sign and significant effect on GDP, government expenditure on health was significant with a positive link with GDP, gender equality rating remained negative and significant for a long-run estimate at 5% significant level, inflation rate exhibited both positive and negative signs and significant for both short-run and long-run respectively, and real interest rate remained negative and significant for a long-run. The study concluded that the present level of women engagement in economy activities is insufficient to drive inclusive growth.

i. It was confirmed from the analysis that due to unpaid care responsibilities, gender disparity and many other factors, women's economic participation is not having the desire impact on gross domestic product. It is recommended that government should monetized care responsibilities that woman perform in the name of childcare, in order to eliminate undervalue of UK's GDP due to childcare, and domestic chores.

ii. It was discovered that the present government expenditure on education is not translating to increase in GDP. It is advised that UK government should reassess her education budget, skill and training, particularly for women through adequate annual funding, promotion of STEM education concept for girls, and training of teachers.

iii. The positive and significant effect of GOVH on GDP suggests that investing in health is desirable for increased GDP. It is recommended that present expenditure on health should be prioritised and maintained through focusing on health programmes that support women health, workforce, maternity and mental health services.

iv. The gender equality rating estimate suggest the presence of high gender disparity in UK. It is advised that government should implement policies that promote gender equality, especially the likes of payment transparency, mentorship programmes, as well as, quota for women in echelon position.

v. Future studies should expand the scope to other European countries in order to come to reality if the findings can be generalised across Europe. Also, real gross domestic product or potential GDP could also be considered by future studies for dependent variable.

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