Female Labour Force Participation and Economic Growth Nexus: Evidence from Nigerian Economy

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Abstract

This paper examines the female labour force participation and economic growth nexus in Nigeria. Time series data for the period of 1981 to 2015 were used. With the establishment of cointegrating relationships, we used the Ordinary Least Square (OLS) estimation technique to obtain the long run elasticity coefficients. The major finding shows an inverse relationship between Female labour force participation and economic growth. Therefore, the study recommends that active labour market policies are needed particularly in Nigeria to promote women's labour market participation in the interest of overall economic growth and development in Nigeria.

JEL Classification: J22, J16, N30

Keywords: female labor force participation, economic growth, feminization U

1.0 INTRODUCTION

For the last few decades, the significance of women to economic growth and development has been increasingly acknowledged in both academia and policy circles. This growing awareness represents the active involvement of women in various aspects of development, both through formal and informal production in recent years (Akyeampong & Fofack, 2012). A number of researchers have drawn on neoclassical and overlapping generation models to show that the potential contribution of women to growth would be even more significant in the absence of household occupational constraints, often exacerbated by the absence of or poor state of infrastructure in low-income countries like Nigeria (Agénor, Canuto and Pereira da Silva 2010; Fofack 2012; Shahid, 2014).

In 2015, in the population of Nigeria, women constitute 49.5 percent and men 50.5 percent of the population, and the labour force participation rate (LFPR) was 65.1 percent for women and 71.4 percent for men. In 2013, men constituted the bulk of employment in federal and state MDAs, and for the period, 2010-2015, on the average, 72.3 percent of senior positions in State Civil Service were occupied by men compared to 27.7 percent occupied by women (NBS, 2016). This is a pure indication that the number of males employed far outweighs the number of females.

Hence, the decline in women's economic activity is cause for concern to those who are interested in women's wellbeing as well as those who believe that women are valuable resources and must be utilised efficiently. Women's employment is a critical factor in their progression towards economic independence and is also considered as an indicator of their overall status in the society (Mammen and Paxson, 2000).

The percentage of female labour force participation rate (FLFPR) to the Total Female Population in Nigeria in 2014 was 42.4 % leaving the balance of 57.6% of Female Labour force Idle or simply not contributing to economic growth (World Bank, 2016). In Nigeria, poverty is prevalent among females, especially female heads of households. Female participation in economic activities is one of the existing means of alleviating poverty because it raises people's incomes through wages and related earnings. Hence, FLFP has to be promoted and the promotion requires the requisite knowledge and facts concerning the determinants of FLFP (Gift, 2013).

The empirical analysis between economic growth and the well-being of a country and female employment is well documented by previous studies (Çağatay, N. & Özler, S., 1995; Mammen

K, Paxson C , 2000; Luci, A., 2009; Shahid, M. 2014). However, in Nigeria, both qualitative and quantitative studies of women participation in the production process are scanty(Iweagu, Yuni, Nwokolo, and Bulus; 2015). Therefore this study aims to examine the female labour force participation and the impact on economic growth in Nigeria. The first section of the study gave an introduction and provides a background overview on the female labor force participation and economic growth in Nigeria. The second section provides the relevant literature review. The third section provides the research methodology. section Four consists of presentation of findings from the estimations. The last section gives the summary, conclusion and policy recommendations.

2.0 LITERATURE REVIEW

2.1 Conceptual Issues

2.1.1 The Concept of Labour Force Participation

According to McConnell, Brue and Campbell, (2009) as cited in Iweagu, Yuni, Nwokolo, and Bulus (2015) "the labour force participation rate is determined by comparing the actual labour force with the potential labour force or what is sometimes called the "age-eligible population". In the US the actual labour force consists of people who are employed and those who are unemployed but who are actively looking for a job, while the potential labour force can be categorized as the "age eligible population" which excludes young people under 16 years of age and people who are institutionalized, such as in penal or mental institutions or nursing homes or over age 64.

The concept of labour force in Nigeria refers to the International Labour Organization (ILO) definition which classified the working age population as persons of 15 years old and over and the labour force as persons of 15 years old and over who, in the previous week, were working, were temporarily absent from work but have a job, and those who did not have work and were looking for work (Iweagu, Yuni, Nwokolo, and Bulus , 2015)

2.1.2 The Female Labour Force Participation Rate (FLFPR)

This is defined as the proportion of the female population of working age who are employed (included self-employed) or are seeking work. However, the concept seems to be particularly difficult to apply to developing countries because of the problem in defining the concepts of

work and non-work in a subsistence economy. It is quite hard for western analysts to make the distinction between work and non-work in developing countries because both activities (work and non-work) are combined. For instance, in the case of Nigeria, many married women may work in the field growing vegetables as well as taking care of the children (Julius, 2011). Basically, the female labour force participation rate is the ratio of two numbers: between the females who are classified as economically active in the labour force and the females inactive in the labour force. Economically active females include those who are unemployed and those who are unemployed but looking for work. This also includes women who already in the labour force plus the inactive population. The inactive population excludes unemployed persons such as children, inmates of institution, the disabled and the elderly. Therefore, the appropriate definition of female labour force participation is the percentage of the female population that has worked in the reference period or is willing to work.

2.2 Empirical Review

Çağatay & Özler (1995) using cross country data pooled for 1985 and 1990, analyzed the relationship between women's share of the labor force and the processes of long-term economic development, and macroeconomic changes associated with structural adjustment. They find that the relationship between long-term development and women's share of the labor force is U-shaped. Controlling for the feminization U, the study also find that structural adjustment policies have led to an increase in feminization of the labor force via worsening income distribution and increased openness.

In Nigeria, Iweagu, Yuni, Nwokolo, and Bulus (2015) looks at the participation of women in jobs with respect to the urban and rural sectors, and found that factors such as marital status, religion, poverty rate and per capita income were the significant determinants of female participation in the rural area, while age and literacy rate were the main determinants in the urban sector. Still in Nigeria, Baridam (1996) examined the determinants of female labour participation and opines that women participation in the labour force is due to economic agents, and love for children.

Mammen and Paxson (2000) use data for 90 countries from 1970 to 1985 (in five-year intervals) to trace out the relationship between economic development and female labor force participation. First, they re-assess the cross-sectional relationship by means of a non-parametric regression of

women's labor force participation on the log of GDP per capita. The results confirm a U-shaped pattern for each of the four time periods presented. Next, they run a parametric regression of female labor force participation on log GDP and its square, with and without a set of country-specific fixed effects. The fixed effect model generates a considerably more muted U-shape than the OLS model, though it still appears to confirm the feminization U hypothesis. However, the paper only uses a relatively short period of data (15 years) and does not use dynamic panel methods, which can address some of the problems inherent to the static model. Moreover, the data base for the panel analysis (the 3rd version of the United Nations' WISTAT database, with labor force estimates until 1985) is by now clearly outdated.

Luci (2009) investigated the impact of economic growth on the dynamics of gender inequality in the labour market. This study tests the hypothesis of the 'feminisation U' based on a panel data set (combination of cross country and time series data) which allows to control for problems of endogeneity. The econometric analysis confirms the hypothesis of a 'feminisation U'. This indicates that it is not sufficient in the short-term to rely on the equalising effects of economic growth to increase the entry of women into the labour force. Active labour market policies are needed particularly in developing countries to promote women's labour market participation in the interest of overall economic growth.

Shahid (2014) studied the short run and long run relationship between the economic growth, labour force participation and gross fixed capital formation. The time series data is used from the time period of 1980 to 2012 which is collected from Pakistan Bureau of Statistic, State Bank of Pakistan and World Bank. Initially Augmented Dicky Fuller and Phillip Perron tests are used to that shows gross fixed capital formation is stationary on first difference but other variable station on level and intercept. Furthermore, Johnson Co-integration test shows that the long run relationship exist between the variable. The vector error correction model indicated that economic growth has negative insignificant, gross fixed capital formation positive significant and labour force participation has negative significant relationship in short run.

Mujahid & Zafar (2012) investigated the Economic Growth-Female Labour Force Participation Nexus: An Empirical Evidence for Pakistan. They used the time series data from 1980 to 2010. They applied the ARDL technique to determine the nexus between the economic growth and

female labour force participation. The result shows that there is a long run relationship between female labor force participation and economic growth in case of Pakistan.

Gaddis & Klasen (2011) studied economic Development, Structural Change and Women's Labor Force Participation. They show that empirical support for the hypothesis is rather feeble and hinges on the data used for the assessment. The feminization U tends to vanish if they use dynamic instead of static panel data methods. Moreover, differences in levels of FLFP across the world related to historical contingencies are much more important determinants of women's employment opportunities than the muted U patterns found in some specifications. Their results suggest that agriculture, mining, manufacturing and services generate different dynamics for FLFP, but the effects are small in magnitude. They concluded that the feminization U hypothesis, especially its declining portion, has little relevance for most developing countries.

Olusoji, (2006) investigated the determinants of female labour participation in Nigeria, using a Survey carried out between January and October 2001.They used regression analysis to investigate the differences in hours put in by both women in formal and informal sectors separately. Their findings suggest that the number of hours worked were determined by the respondents income, family size, relationship with household head, sector of participation, education and location. The researcher also opines that women with tertiary education work fewer hours than older and married women.

Chukuezi, (2010) examines the participation of women in household labour in Nigeria. A survey of married women in Owerri, Nigeria reveals that women do most of the housework and childcare within the family. She explains that cultural expectations about gendered responsibilities in the home despite their level of education and earnings are mainly responsible for women doing more household work than men. She concludes that both structured and cultural factors should be examined for an appropriate explanation of gendered inequity in household labour in Nigeria.

2.3 The theoretical framework: Feminization U

One of the key hypotheses that has emerged regarding trends in FLFP in developing countries is that there is a U-shaped relationship between female labor force participation and economic development, the latter typically being proxied by GDP per capita. As the economy moves from an agrarian society with close linkages between household and market production to an industrial

and services-based formal economy, female labor force participation rates fall. Spurred by structural change as well as increases in education and declining fertility, female economic activity increases again in later stages of development. This hypothesis dates back to the 1960s (Sinha 1967), and has become a 'stylized fact' in the development economics literature, often called the feminization U hypothesis.

3.0 METHODOLOGY

3.1 Research Design

This study covers a period of 35 years (1981 to 2015) because it is within this period that data for the study is available and also given the fact that the period is long enough to take care of any reforms that have been put in place in the female labour market in Nigeria. The model captures the female labour force participation on the growth in Nigeria. The data to be used for this study are secondary data. The major sources of data for the analysis are the Central Bank of Nigeria Statistical Bulletin & reports, the National Bureau of Statistics, ILO and World Bank

3.3 Model Specification

Female labour force participation is also vital since labour is an essential input in the production process such that increases in it would lead to increase in output. This study adapted the model of Shahid (2014). The model is specified below:

$$\text{Log GDP} = \beta_0 + \log \beta_1 FLFPR_t + \log \beta_2 MLFPR_t + \log \beta_3 DPR_t + \log \beta_4 FR_t + \varepsilon \ldots\ldots\ldots\ldots \text{(i)}$$

A priori: $\lambda_0 \neq 0$, $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$

Variables

Dependent variable: GDP = Gross Domestic Product (Economic Growth Model)

Independent variables: FR = Fertility Rate, DPR = Dependency Ratio,

MLFPR= Male labour force participation rate & ε = Error term

* Log is the natural log of FLFPR, MLFPR, DPR and FR

3.4 Estimation Procedure and Method of Data Analysis

Time series data for the period from 1980 to 2015 will be used to develop an ordinary least squares (OLS) model for both the FLFP and GDP dependent variables using E-views econometrics analysis software. The use of time series data enables the use of many observations

which results in a larger representative sample. Here also, Forecast is possible through historical numerical data using time series.

4.0 Empirical results

Essentially, this study covers the following variables namely the female labor force participation (FLFP), Gross Domestic Product (GDP), Fertility Rate (FR),Dependency Ratio (DPR), Male labour force participation rate (MLFPR).

4.1 Descriptive Statistics

The descriptive statistics provide the basic statistical features of the data under consideration including the mean, the minimum and maximum values, standard deviation, skewness, kurtosis and the Jarque-Bera test for the data. The table below provide the descriptive statistics which also implies the historical background for the behavior of the data.

Table 4.1: Descriptive Statistics of the variables

	FLFP	**GDP**	**FR**	**DPR**	**MLPR**
Mean	46.14143	30723.6	6.210486	89.17134	62.91657
Median	47.45	22332.87	6.159	88.46192	62.86
Maximum	50.36	69023.93	6.779	92.74294	77.2
Minimum	36.7	13779.26	5.591	86.59807	57.2
Std. Dev.	4.392103	17308.63	0.35285	2.062069	3.398121
Skewness	-1.54203	0.948702	0.117164	0.409047	1.975466
Kurtosis	3.754387	2.519243	1.872844	1.736288	10.07336
Jarque-Bera	14.70078	5.587266	1.932861	3.304942	95.72836
Probability	0.000642	0.061198	0.380439	0.191576	0
Sum	1614.95	1075326	217.367	3120.997	2202.08
Sum Sq. Dev.	655.8794	1.02E+10	4.233105	144.5723	392.6058
Observations	**35**	**35**	**35**	**35**	**35**

Source: Author's compilation, 2018

From the table above, the skewness of the data series indicates an asymmetric or non-normal data distribution as the series relatively deviates from normality maintaining negative skewness. Considering that PLPR and MLPR Kurtosis' values are greater than 3, long-right tail skewness and similarly, since the kurtosis' valulues of GDP, FR and DPR are less than 3, they mirror

normal skewness and are also platykurtic. Based on the probability of Jarqe-Bera, FLFP, GDP, and MLPR are normal distribution and the FR and DPR does not follow a normal distribution. It important to note that the multivariate framework does not always require the normality assumption (Salisu, 2005)

4.3 Correlation Matrix

Table 4.3 Correlation Matrix result

correlation	FLPR	FR	DPR	MLPR	GDP
FLPR	1.0000				
FR	-0.78676	1.0000			
DPR	-0.45101	0.759066	1.0000		
MLPR	-0.2019	0.435744	0.405201	1.0000	
GDP	0.604523	-0.90166	-0.53777	-0.4876	1.0000

Source: Author's computation from Eviews 9, 2018

4.4 Unit root result

Variables	At level	At first difference	Critical Value (%)			P- Vale	Order of Integration
			1	5	10		
LFLPR		-5.606138*	-4.262735	-3.552973	-3.209642	0.0003	I(1)
LGDP		-3.602984**	-4.262735	-3.552973	-3.209642	0.0450	I(1)
LFR	3.582450**		-3.661661	-2.960411	-2.619160	1.000	1(0)
LDPR		-3.602984*	-4.262735	-3.552973	-3.209642	0.0450	I(1)
LMLPR	-5.0178**		-3.639407	-2.951125	-2.614300	0.0002	I(0)

Source: Authors computation from Eviews 9, 2018. Note: *, ** and *** imply significance at 1%, 5% and 10% respectively.

4.5 Result of Co-integration Test

Since the models are a single equation models, we adopted a single equation co-integration test. All the variables were found to be integrated at first difference; and as such they all satisfied the Engle-Granger residual-based tests for cointegration approach which necessitates every variable in the equation to be static at first modification. The Engle-Granger test uses a parametric augmented Dickey-Fuller (ADF) approach and necessitates that at least one variable among the linear combination is significant at 5%. The result of Engle-Granger procedures showed that we reject the null hypothesis of no cointegration as shown in Table 4.5 which represented equation. The cointegration test result thus shows that there is long run equilibrium relationship among the variables used in the model. This was captured by highly significant values.

Table 4.5: Engle-Granger -Cointegration (Test) Results

Dependent	**tau-statistic**	**Prob.***	**z-statistic**	**Prob.***
GDP	-4.52021***	0.0888	-21.6721	0.2095
FLFP	-4.38157	0.1178	181.1304	1
MLPR	-8.04779*	0	-44.9612	0
DPR	-4.61432***	0.0753	-21.9069	0.2
FR	-4.77308***	0.0565	-22.6469	0.1718

Note: *, ** and *** indicate asymptotic critical values of Vogelsang and Perron (1998) test at 1%, 5% and 10% levels respectively. Source: Author's computations (2018), using Eviews-9.

4.6 General Regression Result

With the establishment of cointegrating relationships, we used the Ordinary Least Square (OLS) estimation technique to obtain the long run elasticity coefficients as presented in Table 4.6a and Table 4.6b below:

Table 4.6: Regression result for equation

Dependent Variable: LGDP

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LFLPR)	-0.07954	0.152776	-0.52064	0.6066
LMLPR	0.395713	0.150035	2.637466	0.0133
D(LDPR)	0.915484	1.370839	0.667827	0.5095

LFR	-0.53835	0.13949	-3.85943	0.0006
C	-0.61255	0.524433	-1.16803	0.2523
R-squared	0.368666	**Mean dependent var**		0.044393
Adjusted R-squared	0.281585	**S.D. dependent var**		0.042419
S.E. of regression	0.035954	**Akaike info criterion**		-3.67809
Sum squared resid	0.037488	**Schwarz criterion**		-3.45362
Log likelihood	67.52751	**Hannan-Quinn criter.**		-3.60154
F-statistic	4.233612	**Durbin-Watson stat**		1.135939
Prob(F-statistic)	0.008058			

Source: Author's computation from Eviews 9, 2018

4.6.1: Discussion of Result

The result shows an inverse relationship between Female labour force participation and economic growth. The coefficient of determination (R-square) indicates that about 36.6 per cent of the variation in the Gross Domestic Product (GDP) is accounted for by joint variation in female labor force participation (FLFP), Male labour force participation rate (MLFPR), Dependency Ratio (DPR) and Fertility Rate (FR). While the remaining unaccounted variations of 63.4 percent is captured by the white noise error term. It shows that the model has a poor fit as large proportion of the variation in the dependent variable is accounted for by the error term. The F-statistic test which was used to test the joint significance of the coefficients. Testing for multicolinearity**,** we check if the independent variables are correlated, a correlation matrix will be used (see table 4.3) . High multicolinearity will be reflected by a correlation coefficient that is greater or equal to 0.8 (Gift 2013); (Enders 1995). For model there is is no trace of present of multicolliarity as non of the independent variables are correlated.

For Model Specification and Significance of the Model, the significance of the model is determined by the F-Statistic report after running the regressions. If the *p-value* is less than the significance level you are testing, say 0.05, you reject the null hypothesis that all slope coefficients are equal to zero. For the table above, the *p-value* of F Statistics are essentially zero,

so we reject the null hypothesis that all of the regression coefficients are zero. Thus, the model have joint significance for their parameters.

Testing for heteroscedasticity, the number of observations available from 1981 to 2015, which is 35 observations, allows us to utilise the Breusch-Pagan-Godfrey test to test for heteroscedasticity. From the regression results the number of observations (n) multiplied by R squared (nR^2) is computed and compared to a chi square distribution with m degrees of freedom (where m is the number of explanatory variables). If nR^2 is greater than chi square critical value with m degrees of freedom, the null hypothesis of homoscedasticity is rejected (Murray, 2006; Gift 2013). for model, the nR^2= 35(0.368666) = 12.9033 and a chi square distribution (χ_4^2) with 4 degrees of freedom, at 1 per cent level of significance will give 13.277. Since the value of nR^2 is less than the a chi square distribution, then, there is absence of heterocedasticity in the model and this implies that the model is good for forecasting.

Testing for autocorrelation, the presence of first order correlation and higher order serial autocorrelation will be tested using the Breusch-Godfrey test. The hypothesis of no serial correlation will be rejected if the $(n-p)R^2$ is greater than chi square distribution (χ_p^2). For the model, the $(n-p)R^2$ = (35-4)0.368666 = 11.428646 and a chi square distribution (χ_4^2) with 4 degrees of freedom 5 percent and 10 percent level of significance will give 11.070 and 9.236 respectively. Therefore, since the value of (n-p) R^2 is greater than the chi square distribution, then, there is presence of autocorrelation in the model.

5.0 Conclusion and recommendation

The significance of women to economic growth and development has been increasingly acknowledged in both academia and policy circles. In attempt to conduct recent empirical analysis on the Nigerian context, this study examined the female labour force participation and its effect on the economic growth of Nigeria .Female labour force participation is also vital since labour is an essential input in the production process such that increases in it would lead to increase in output. Time series data for the period of 1980 to 2015 were used. The result of Engle-Granger procedures showed that we reject the null hypothesis of no cointegration since manufacturing sector outputs, real interest rates and monetization ratio are significant. With the establishment of cointegrating relationships, we used the Ordinary Least Square (OLS) estimation technique to obtain the long run elasticity coefficients. Although, the results shows an

inverse relationship between Female labour force participation and economic growth. This is also in line with assertion that survey of labor force participation trends has suggested that economic growth, fertility decline, and an expansion of female education need not translate into commensurate increases in female participation. However, this study recommends that active labour market policies are needed particularly in Nigeria to promote women's labour market participation in the interest of overall economic growth and development in Nigeria.

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