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A gender-based analysis of employment, workforce productivity, and economic growth in West Africa

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Abstract

The study examined a gender-based investigation of employment, workforce productivity and economic growth in West African countries. The empirical analysis is centred on panel consisting of 16 West African countries over the period 2007-2019 using Esteve-Volarts model. The method of estimation employed are panel system generalised method of moments. The major findings suggest that there exists a positive and major relationship between male and female wage and salaried workers to economic growth although male wage contribution to growth supersedes female contribution. Also, male and female labour force participation rate are directly linked to economic growth. Likewise, female workforce productivity contributed significantly to economic growth of the selected countries. This study recommends that programmes should be put in place to facilitate more female participation in well paid jobs which will help enhance productivity as well as increase the growth in the countries. These recommendations will help to narrow the inequality of gender inequality in employment and productivity of workforce amongst West African countries. *(Afr J Reprod Health 2025; 29 [1]: 100-108)*

Keywords: Economic growth; workforce productivity; employment; gender inequality; generalised method of moments

Résumé

L'étude a examiné une enquête basée sur le genre sur l'emploi, la productivité de la main-d'œuvre et la croissance économique dans les pays d'Afrique de l'Ouest. L'analyse empirique est centrée sur un panel composé de 16 pays d'Afrique de l'Ouest sur la période 2007-2019 en utilisant le modèle Estève-Volarts. La méthode d'estimation utilisée est la méthode des moments généralisée par système de panel. Les principales conclusions suggèrent qu'il existe une relation positive et majeure entre les salaires et les travailleurs salariés des hommes et des femmes et la croissance économique, bien que la contribution salariale des hommes à la croissance supplante celle des femmes. En outre, le taux d'activité des hommes et des femmes est directement lié à la croissance économique. De même, la productivité de la main-d'œuvre féminine a contribué de manière significative à la croissance économique des pays sélectionnés. Cette étude recommande que des programmes soient mis en place pour faciliter une plus grande participation des femmes à des emplois bien rémunérés, ce qui contribuera à améliorer la productivité ainsi qu'à accroître la croissance dans les pays. Ces recommandations contribueront à réduire l'inégalité entre les sexes en matière d'emploi et de productivité de la main-d'œuvre dans les pays d'Afrique de l'Ouest. *(Afr J Reprod Health 2025; 29 [1]: 100-108).*

Mots-clés: Croissance économique; productivité de la main-d'œuvre; employ; inégalités entre les sexes; méthode des moments généralisés

Introduction

Gender inequality is a disease in most developing countries of the world. Education, income, career path, access to formal employment, managerial roles, productive resources, political participation, and household bargaining power are all areas where disparities exist between women and men in terms of output and opportunities[1]. In West African countries, job and income gaps are closing at a faster rate than in developed nations. However, gender inequality remains prevalent, especially in South Asia, the Middle East, and North Africa[2].

Women are underrepresented in senior leadership roles in most developing countries. Even in the world's most developed nations, women account for less than 30% of managerial positions on average. Women are often concentrated in fewer industrial sectors; for example, they represent over two-thirds of the global labour force in garment

manufacturing. Additionally, manufacturing employs one-fifth of the entire female workforce worldwide[3]. If gender inequality is interpreted as evidence of market failure, the disparity between men and women is basically a distortionary tax that slows economic growth. Under this approach, it is reasonable to analyse the negative influence of gender inequality on overall production[4]. The challenges confronted women and girls are a significant driver of inequality. They often experience discrimination in areas such as political representation, education, health and the labor market, which severely hampers their ability to thrive and develop. Less than half of working-age women are employed, a statistic that has scarcely changed in the last quarter-century[5].

Gender inequality reduces living quality and leads to decreased productivity, which impedes economic efficiency and growth. Gender issues have been at the forefront of international summits for more than three decades. Despite recent improvements, gender inequalities continue to exist in many aspects of life in numerous parts of the world, particularly in West African countries[6]. West Africa has the worst gender inequality in Africa, followed by Central Africa. Malawi was the only entry from Southern Africa on the list. East Africa, on the other hand, has no representative at all, implying that women in the region are not discriminated against. Southern and East Africa are the African regions with the smallest gender disparity. Chad is Africa's worst performer in terms of gender equality, making it the continent's most unequal country. Mali, the Central African Republic, Ivory Coast, and Liberia are all close behind[7].

In Africa, gender inequality remains a key impediment to human progress. Despite significant progress made by African women and girls in the past decades, gender equality is still yet to be achieved. Gender inequality have enormous costs since the inequality affects not only the well-being of women, but also that of men and children, as well as the development of the economy[8]. Gender inequality in education, specifically, is argued to decrease the entire level of human capacity in a society. By narrowing the talent pool in education and excluding qualified women, economic performance is adversely affected. The survey suggests that women's lack of education leads to lower female human capital and poorer child care quality. Consequently, the additional return on educating females is usually more than that of educating males, highlighting an inefficient distribution of educational resources. Additional cost of restricting women's education is that it lowers the productive capacity of future generations, as education for women lowers mortality rates and fertility[9]. Additionally, Wang et al[10]. analysed gender disparities among accessibility to education, economic boom and under-5 mortality across 17 selected sub-Saharan African nations between 2005 and 2020.The result of the study shows that gender disparity, primary school enrolment as well as under-5 mortality rate has a noticeable interference with the growth of the economy.

The numerous heavy and exhausting household chores carried out by women negatively affect their health[11]. Some argue that the lack of economic resources makes it difficult for women to access proper healthcare and medical attention when they fall ill. Beyond health, the unequal distribution of land further exacerbates gender inequality. The failure to economically empower African women by denying them access to land contributes to poverty and is a significant factor in perpetuating gender imbalances in the region. Furthermore, gender inequality in employment and earnings weakens women's bargaining power within the household, which may lead to fall in investments in the education and health of their children. Concurrently, differences in access to productive resources cause a distortion in allocating resources, lowering aggregate current productivity[12]. Gender inequality negatively impacts asset accumulation and factor productivity, ultimately slowing economic growth[13]. This phenomenon in the labour market, on the other hand, creates an imbalance in the distribution of losses of inputs and output. Participating in the labour force exposes one to new ideas and people. Participation in the labour force boosts young women's optimism and aspirations for financial stability, as well as providing additional role models for balancing family and job responsibilitie[14,15] in a study found that, despite the wage gap and discrimination facing female in the job market, the rate of participation of labour both now and in the

future wage inequality and lower rates of labour force participation for women pursuing lost wages have fuelled the stay-at-home movement. This wage disparity will also cause families to put less investment in their females' education than in their sons. Gender disparities in behaviour could have an impact on aggregate spending, savings, and economic growth.

Empowering women with greater decision-making authority positively impacts overall productivity, as women tend to prioritize commodities that significantly enhance children's general welfare. Additionally, women often show a higher saving motivation, greater inclination toward capital investments and are lower risk averters[16]. Although, African countries have been narrowing the gender inequality gap in employment and workforce productivity in the last decade, this decline has been slow comparatively[17]. Also, the gender inequality gap is still a major macro-economic concern in West African Countries and as well hinders economic growth. This research intends to analyse extensively into the effects employment and workforce productivity has on economic growth in West African Countries with the usage of a gender-based approach.

Methods

The enhanced Solow model and Esteve-Volarts model are used in this research work to examine the interference of gender inequality in employment with workforce productivity and economic growth.

Empirical model

This study adopts the Esteve-Volarts gender unbalance and growth technique that explains the basic overview of variables used in the model[18]. This model predicts that economies with gender inequality will experience a lower per capita GDP. The model is based on the premise that gender discrimination in labour market result in the reduction of available human capital and changes the allocation of talent of entrepreneurs across different jobs. The implicit function of the technique is seen in equation;

$$GDP_{it} = f(WS_{it}, LBF_{it}, WFP_{it}) \quad (1)$$

Where GDP_{it} means Gross Domestic Product for country WS_{it} means wage and salaried workers for nation i at time t, LBF_{it} is labour force participation for country i at time t, WFP_{it} t is workforce productivity for nation i at time t. Explicit Form of the model with respect to nation and time is shown in equation 2 as;

$$GDP_{it} = \beta_0 + \beta_1 FWS_{it} + \beta_2 MWS_{it} + \beta_3 FLBF_{it} + \beta_4 MLBF_{it} + \beta_5 FWFP_{it} + \varepsilon_{it} \quad (2)$$

Where; $i = 1,2 \ldots I, t = 1,2 \ldots T$; β_0 is a constant, $\beta_1 - \beta_5$ indicates coefficient estimates of each variable; GDP_{it} is gross domestic product used as a representation for economic growth of nation $_i$ i at time t. FWS_{it} is female wages and workers on salary of nation $_i$ at time $_t$ in percentage. It is an explanatory variable; MWS_{it} is male wages and workers on salary of nation i at time t in percentage. this is an explanatory variable $FLBF_{it}$ is the representation of participation rate of female in the labour force of nation i at time t. This is an independent variable; $MLBF_{it}$ is a proxy of participation rate of male in the labor force of country i at time t. This is an independent variable; $FWFP_{it}$ is a measure of female workforce productivity of country i at time t. This is an explanatory variable; ε_{it} is error term.

GMM estimates are short run estimates that makes use of ceteris paribus assumption. It employs moment conditions, which are instruments resulting from the model parameters and the data, ensuring that their likely value is zero when the parameters are at their true values. GMM called Generalized Method of Moments takes care endogeneity and unobserved panel heterogeneity[19-25].

Using the GMM estimator to assess the correlation between gender inequality in employment and workforce productivity effectively addresses the complex endogeneity issues commonly associated with panel data. The system-GMM estimator addresses bias from dynamic endogeneity and, in theory, provides robust and efficient methods to account for simultaneity while controlling for unobserved heterogeneity[20, 21]. When the data series are persistent, system-GMM is more effective than the differenced GMM estimator in managing finite sample bias, thanks to the incorporation of additional

moment conditions, root mean square error, and multivariate dynamic panel models[22]. Given these considerations, the system GMM estimator is deemed suitable for use in this study.

Data sources and description

Dependent variable

GDP: Gross Domestic Product (GDP) has long been utilized in various literature as a reliable indicator or proxy for economic growth. It represents the gross value in monetary terms of every final items and services manufactured within the geographical boundaries of a country within a specified time period. As a broad measure of overall domestic production, GDP provides a comprehensive assessment of a nation's standard of living. It serves as an emblem of a nation's economic health, helping to gauge its size and growth rate. The calculation of GDP comprises all household consumption, government expenditures, investments, and the net balance of trade.

Independent variable

The independent variables used in this paper in calculating gender inequality in employment and workforce productivity are: male and female labour force participation, male and female wage and salaried workers, female workforce productivity. All explanatory variables are assumed to have positive relationship with gross domestic product, gender-based variables are used separately in order to avoid multicollinearity problems; the data is from World Bank Development indicators (WDI).

MLBF: The rate of male labor force participation, this represents the proportion of the working population with an age bracket of 16 to 64 that is either in a current employment or actively seeking employment.

FLBF: The female labor force participation rate indicates the proportion of the working population within an age bracket of 16 to 64 that is either employed at present or actively seeking work. This rate is a key metric for assessing the working-age population within an economy. It encompasses all females who are either employed or looking for employment. Individuals not participating in the labor force, such as students in full time studies, full time parents, and those over the age of 64, are excluded from this data set.

MWS: Male Wage and Salaried workers are individuals who work for public or private-sector employers and are paid as salary, wage, commission, or in-kind benefits. Male wage and salaried workers (those who work in areas where employment ties exist) are regarded as an important and skilled segment of the workforce, with the majority of them being of working age and employed in industries and service sectors where labour productivity and standards are higher. They are those who hold positions categorized as "paid employment jobs

FWS: Female Wage and Salaried workers are individuals who work for public or private-sector employers and are paid as salary, wage, commission, or in-kind benefits. They are regarded as an important and skilled segment of the workforce, with the majority of them being of working age and employed in industries and service sectors where labour productivity and standards are higher. They are individuals employed in roles classified as "paid employment jobs." These positions involve explicit (written or verbal) or implicit contracts that guarantee a basic salary, independent of the unit's revenue

FWFP*:* The term "productivity" refers to the ratio of output to efficiency. The number of goods and services produced by a female worker in a given length of time is known as female workforce productivity. It is one of numerous types of productivity measured by economists. Table 1**.**

Results

Econometric result

Table 2 presents three essential conditions to accept the results from the panel system generalized method of moments (GMM). These conditions include the Sargan statistic test for significance, first and second orders tests for serial correlation, and the difference between the number of instruments and the number of groups. The Sargan test (J statistic/Hansen test) assesses the exogeneity of the instrumental variables.

Table 1: Summary of data sources and description

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Data	Indicator	Description	Source of Data	Measurement
Gross Domestic Product	GDP	Gross Domestic Product.	WDI 2020	(Current US$)
Female Wage and Salaried Workers	FWS	Wage and Salaried workers, female.	WDI 2020	% Of female employment
Male wage and Salaried workers	MWS	Wage and Salaried workers, male.	WDI 2020	% Of male employment)
Female Labour Force Participation Rate	FLBF	Labour force participation rate, female.	WDI 2020	% Of female population ages 15+)
Male labour Force Participation Rate	MLBF	Labour force participation rate, male.	WDI 2020	% Of male population ages 15+)
Female Workforce Productivity	FWFP	Workforce Productivity, Female.	WDI 2020	% Estimates

Table 2: Panel system generalised method of moments dependent variable: GDP

Variables	(1)	(2)
LNGDP (-1)	1.094*	0.69581*
	(0.000)	(0.000)
FWS	0.00895***	
	(0.090)	
MWS		0.28925*
		(0.002)
FLBF	0.10067	2.2496*
	(0.652)	(0.000)
MLBF	3.254*	2.23988
	(0.001)	(0.436)
LNFWFP	0.31869**	0.69556*
	(0.011)	(0.000)
Constant	-17.802*	-4.7649*
	(0.000)	(0.002)
No. of observation	208	208
No. of Groups	16	16
Wald chi2	5889.81*	30917.31*
	(0.000)	(0.000)
AR (1)	-4.52*	-3.61*
	(0.000)	(0.000)
AR (2)	-0.83	-0.47
	(0.404)	(0.642)
Sargan Test	8.21	24.49
	(0.769)	(0.079)

The null hypothesis posits that the instrumental variables, as a group, are
exogenous, while the alternative hypothesis asserts otherwise. According to the findings in Table 3, the probability value of the Sargan test for both results meets the rule of thumb that, at a 5% significance level, values should be greater than 0.05.

The AR(1) and AR(2) tests evaluate the presence of serial correlation at the first and second orders, respectively. The probability values for

AR(1) and AR(2) are both greater than 0.05, indicating the absence of serial correlation at both orders (statistically insignificant). A general rule of thumb when comparing the amount of instruments to the amount of groups is that the number of groups should surpass the number of instruments. In this instance, the individual statistics are reliable, as the number of groups (16) exceeds the number of instruments (2). The primary variables of interest are FWFP, MWS, and FWS. The probability of the t-statistics reveal that the coefficients for FWS, MWS, and FWFP are statistically significant at the 10%, 1%, and 1% levels, respectively.

Furthermore, the coefficients of FWS, MWS and FWFP are 0.009, 0. 289 and 0. 696 respectively. These coefficients show direction of impact between the regressors and the regress and. All variables have positive impact on gross domestic product in West African countries except for male labour force participation rate in the second model. Additionally, in terms of size, a unit increase in FWS in West Africa is associated with a positive change of 0.00895 in gross domestic product (GDP), whereas a unit increase in MWS in the region corresponds to a direct change of 0.28925 in GDP.

Finally, a unit increase in female workforce productivity in West Africa is associated with a positive change of 0.696 in gross domestic product (GDP).

The "*a priori"* expectation is met by all independent variables, as they should be positively correlated with the dependent variable (GDP). This is correct because increase in female workforce productivity, the presence of FWS, as well as MWS, contributes to an increase in economic growth[26-41].

Discussion

The result of the study shows that female wage and salaries and male wage and salary have a direct and statistically significant relationship with growth of gross domestic product. However, the result shows that male wages and salary have a greater impact on economic growth. This implies that men are still hold a larger proportion of the country's wealth which makes them contribute to the country's growth.

Furthermore, the result proves that the participation of female in labour force has increased over the years making them to contribute more to the growth in the selected countries. However, female is still more involved in non-paid work and less paid work in the selected countries. This can also be deduced to be a reason for their lower influence on the growth of the surveyed nations. The result in panel 2 also shows that male participation in labour force have a reduced impact on growth although this is not significant. Although there is a decline in male contribution to growth considering their participation rate, they still control a significant proportion of the country's wealth. This changes experienced may be as a result of social and economic factors in this countries.

On the other hand, female work force productivity has a noticeable direct impact on the growth of the selected countries[41-46]. This may be as a result of a rise in the proportion of participation of female labour force as well as several policies put in place to reduce work discrimination and employment of the female gender in some organisation. In the two panels, female work force productivity is contributing significantly and positively to economic growth of the selected countries. This proves that the more female participate in labour force and the more productive female are in the economy increases the chances of development of the country.

Strengths and limitations

The study successfully analysed the impact of employment and workforce productivity on the labour force by assessing the individual effects of each gender. However, a significant limitation of this study is found in lack of extensive time series data for West African countries, which experienced considerable attrition. However, the estimating approach accommodated the limitations to the best of its ability. Also, this research work did not take into consideration gender inequality that exists in employment and productivity in the non-formal sector of the economy.

Due to a lack of substantial gender inequality data in developing economies in Africa, it is often difficult to create evidence-based causal correlations between the effect of gender disparity in employment and workforce productivity on growth and development.

There is still potential for development in terms of data and analysis. Future researchers can go ahead and make use of qualitative and primary research techniques to get a better understanding of key aspects in gender inequality, workforce productivity and employment. Expansion of independent variables of indicators for employment, workforce productivity, or perhaps another determinant to indicate gender-based analysis, could be added as well. However, this paper demonstrates that, despite its difficulty in investigating and interpreting, the link between employment, workforce productivity and economic growth remains undeniable.

Conclusion

This study conducted a gender-based analysis of employment and workforce productivity in relation to the growth of the economy of West African countries. The study embraced panel data estimation data from 16 West African countries within 13 years. In West African Countries, gender inequality is still a major macroeconomic issue of concern to government and policy makers. This prompted the need to analyse the effects of employment and workforce productivity has on economic boom in West African nations using a gender-based approach.

This study using Esteve-Volart model analysed the variables of concern with the use of GMM, the result of the system GMM concludes that based on empirical results on employment and workforce productivity, form a gender perspective, is important for the growth of any society.

The recommendations for this study are that policy makers should postulate active labour market policies in West Africa to embark on promotion of women participation in the labour market for the advancement of overall economic growth for countries in West Africa. Government should also enhance workforce productivity of the labour force and this will lead to economic growth. There should be implementation of policies targeted at encouraging females to participate in the labour market in order to improve the general welfare and growth of West African countries. Due to a lesser magnitude of female wage workers in comparison to male wage workers, policy makers need to enhance women financial status as well as investing in women skills for the future world of work, this would improve the magnitude of female wage workers on economic growth. Finally, it is evident from this paper that any policy aimed at assisting and empowering women to achieve gender equality should be accompanied by a similar program aimed at stimulating male participation in the labour force as well as changing men's beliefs of women as inferior. To most males, urging them to respect women as equals is similar to telling them to abandon their cultural way of life. As a result, such a policy should also aim to prepare men for any culture shock they may face as a result of finding themselves on an equal footing with women, or under the leadership of women.

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