

Informal Economy and Gender Inequality,

Tonuchi Emmanuel Joseph (✉ tonuchijoseph@gmail.com)

Department of Economics, University of Nigeria 410001 Nsukka, Nigeria

Chinedu Miracle Nevo

Institute of Water and Energy Sciences, Pan-African University, 13000, Tlemcen, Algeria

Chinyere Ugonwa Nwolisa

Central Bank of Nigeria (CBN), Abuja Nigeria.

Research Article

Keywords: Keyword: Informal sector, informal economy, Africa, Gender Inequality, Employment

Posted Date: August 26th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-64173/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Version of Record: A version of this preprint was published at African Economic and Management Review on August 26th, 2020. See the published version at <https://doi.org/10.53790/aemr.v2i1.25>.

Abstract

The COVID-19 pandemic ravaging the global economy has exposed not just the dominant nature of informal sector in Africa economy but also the vulnerability of the women in the continent. Thus, this study investigates the relationship between gender inequality and growth of the informal sector in Africa. Using Generalised Least Square Approach, it was discovered that gender inequality indices such as equality between male and female in getting job in the formal economy under same or similar circumstances have significant impact in the growth of the informal economy in the continent. The study concludes that if adequate effort is not made to address the gender inequality in the continent especially in formal employment that have forced many females to informal sector employment, the objective of achieving inclusive growth and development in the continent might not be realistic. The study therefore recommends that the UN and other international organisations should compensate the African women by giving the women at least 60 percent chance in all their employment as a way of increasing the economic and political power of the women in the continent.

Introduction

Discussions bordering gender have generated many controversies in the last decade owing to the wide variations in the understanding of gender equality, gender discrimination and gender balance (Sethuraman, 1998), and this tends to permeate the foundations of the economic structures of different countries of the world. The situation appears to be even worse in Africa, where there is striking evidence of gender discrimination, some of which are tied to cultural practices (Jayachandran, 2015). Addressing gender imbalances to enable both men and women to contribute to and gain from economic and social development is at the helm of sustainable and inclusive development in Africa (EMM, 2014). Additionally, according to the Africa Partnership (2007), Africa can only succeed economically and development-wise if efforts are intensified to eliminate the pervasive gender-based discrimination and promote equal rights as they affect the different sectors of the African economy negatively, one of which is the informal sector.

Globally, it is estimated that approximately 2 billion employed people earn from the informal economy (ILO, 2018). These data also provide some insights into Africa's informal economy in comparison with the rest of the world. Eighty-six percent of Africa's employment is in the informal sector, and the figure is 72 percent, excluding agriculture. Table 1 below describes the informal sector in the different regions of Africa.

Region	Including agriculture	Excluding agriculture
North Africa	67%	56%
Central Africa	91%	79%
East Africa	92%	77%
West Africa	92%	87%
Southern Africa	40%	36%
Africa total	86%	72%

Table 1: Informal Employment in Africa as a Percentage of Total Employment by Region (Source: ILO, 2018)

The table above shows a remarkable distinction between the African regions, with informal employment being the highest in West, East and Central Africa. Apart from the regional variations, there are also country variations, as reported by (ILO, 2018). For instance, Benin and Burkina Faso have the highest informal employment of 95 percent, while South Africa has the lowest of 34 percent and Madagascar has approximately 64.5 percent (Nordman, Rakotomanana & Robilliard, 2010; ILO, 2018).

Moreover, the literature reveals that of all the regions of the world, Africa has the highest share of informal economy in the GDP, with as much as 86 percent of the GDP, with developed countries such as the US and Europe having an average informality of 14 – 35 percent (Hassan and Schneider, 2016; ILO, 2018). With this high presence of the informal economy in Africa, it could be said that the sector contributes reasonably to Africa's GDP (Dejene, 2009). Evidence reveals that there is general low productivity, no job security, and no health insurance in the informal economy, which explains why Africa remains uncompetitive in the global supply chain (Hassan and Schneider, 2016).

Ironically, unlike other regions, women dominate the informal economy in Africa with the harsh economic situation in the sector compared to the formal economy. Again, women experience another great discrimination and are pushed into the most vulnerable sector in Africa (UNU, 2013; Malta et al., 2019), with approximately 89.7 percent of employed women in Africa being in informal employment excluding agriculture and 92.3 percent when agriculture is included (ILO, 2018). Men and women in the informal sector face risks of unstable earnings and no access to health insurance. However, in addition to these risks faced by women, women must also balance work with child upkeep. They are also likely to risk intimidation and abuse from powerful counterparts. At the base of the informal sector pyramid are the family workers, mostly women, who are almost without any earnings because their jobs seem difficult to measure from the economic point of view (Roever & Skinner, 2018).

Jennings (1993) argued that African women in the informal sector mostly have no employment or income security, as they sometimes work from home and are largely unorganised. Ulrichs (2016) also added that the social protection schemes of Africa's informal sector are not designed to cater to the particular needs

of women in the sector, thus exposing them to many barriers, some of which are also gender-specific. This reality has created some challenges in Africa economy-wise because it rubs the continent of some of its development since the genders are not fully utilised. A situation where some highly educated women who ought to contribute to economic growth and global supply chain of Africa end-up as housewives that only take care of the family and the children and the male does not see anything wrong with but rather encourage it the more.

Several factors have been proposed as likely causes of both Africa's high informality and gender inequality. For instance, Heintz & Valodia (2008) identified three main causes of informality in Africa: rapid growth in the urban labour force that exceeds the available formal employment opportunities, thus giving people little or no option but to earn their livelihoods in the informal sector, the reduction in public sector employment due to structural adjustment programmes and the lack of investment in basic infrastructure of Africa's agricultural sector, which harbours a considerable amount of informal production. This necessitates more hands to join, leading to higher informality. ECA (2015) also opined that gender discrimination in the informal sector exists most in African countries where women have the lowest quality of numeracy and literacy attained in educational systems as well as cultural issues.

Few pieces of literature have attempted to investigate informal economy, gender, and women employment either in Africa or the global economy, focusing on a literature search without any statistical analysis. Similarly, the focus is usually on women's employment and why women are generally discriminated towards informal economies. No literature known to the researcher has made any attempt to investigate the role of gender inequality on the growth of informal economy (the unproductive sector) in Africa. Both gender inequality in general and the growing dominance of women in the informal economy should be a concern to everyone, especially given the vulnerable nature of the sector.

Thus, this article will investigate the extent to which gender inequality promotes the growth of informality in Africa using panel data. It will also attempt to make regional comparisons to identify region-specific attributes of the informal sectors in different regions of Africa.

Literature Review

Gender Inequality in Africa

According to UNESCO, gender describes a societal denotation given to being a man or a woman and reflects social attributes and not biological distinctions in defining a man or a woman (UNESCO, 2017). Gender inequality, on the other hand, explains the unequal perception or treatment of individuals based on their gender. It mostly stems from divergencies in socially designed gender roles. These inequalities may also manifest in different dimensions of our daily life. Manda & Mwakubo (2014) revealed that gender inequality still poses a large challenge in Africa and is still prevalent. Table 2 below reveals the global gender gap index for 2020, which is an improvement over the previous year according to the World Economic Forum (2020). As seen from Table 2, the Middle East and North Africa have the least gender equality, followed by Sub-Saharan Africa, an indication of gender inequality prevalence in Africa.

Table 2: Global Gender Gap Index, 2020

	Overall Index	Economic Participation & Opportunity	Educational Attainment	Health and Survival	Political Empowerment
Western Europe	0.767	0.693	0.993	0.972	0.409
North America	0.729	0.756	1.000	0.975	0.184
Latin American & Caribbean	0.721	0.642	0.996	0.979	0.266
Eastern Europe & Central Asia	0.715	0.732	0.998	0.979	0.150
East Asia and the Pacific	0.685	0.663	0.976	0.943	0.159
Sub-Saharan Africa	0.680	0.666	0.872	0.972	0.211
South-Asia	0.661	0.365	0.943	0.947	0.387
Middle East & North Africa	0.611	0.425	0.950	0.969	0.102
Global average	0.685	0.582	0.957	0.958	0.241

Source: Global Gender Gap Index

Gradin & Tarp (2019) added that it has widened over time owing to two factors: a low level of female human capital and the lower conditional employment probabilities of married women compared to men. Gender inequality in the informal sector takes different forms: either in terms of the number of men and women in the sector or the treatment meted out on each of these gender classes.

In Sub-Saharan Africa, women are seen to dominate the informal sector when compared to men, mainly because of lower education level, legal barriers, social norms and demographic characteristics (Malta et al, 2019). Magidimisha & Gordon (2015) also reported that female informal enterprise owners in Southern Africa have different attributes from their male counterparts, while women in East Africa are disproportionately self-employed in informal enterprises, which increases their vulnerability and reduces their ability to access finances and services (Golla, 2017). Hakura et al. (2016) added that gender or income inequality in any nation can serve as an impediment to economic growth, while Hearle et al. (2019) identified gender-based discrimination and occupational segmentation in the labour market as one of the key drivers of informality for women workers. Oelz & Rani (2015) suggested that minimum wages for domestic workers, who are an integral part of the informal economy, are essential for promoting gender equality within a broader approach to addressing informality and the empowerment of workers.

Informal Sector in Africa

Since it first got its name by Hart (1973), who saw it as comprising some majority that are passively exploited and are not able to either accumulate wealth or achieve strong economic growth, the informal sector continues to ignite interests across a wide range of disciplines mostly within the social and behavioural sciences (Neves & Toit, 2012; Kinyanjui, 2014; Tonuchi et al, 2020). This sector, sometimes

referred to as the informal economy or grey economy, is the part of an economy that is not within the tax regulations and is also not monitored by government agencies. The informal sector has existed on an international level, officially since the 1970s, and has also expanded since then, appearing in new guises in the context of globalization, neo-liberalism and cross-border and rural-urban migration (Chant & Pedwell, 2008). The increased expansion of the sector in the face of globalisation and liberalisation has propelled discussions about whether women's increased participation therein contributes to their impoverishment or economic emancipation (Meagher, 2010).

The informal sector in Africa dominates the economy of many countries, both in terms of employment and output (Verick, 2007), and has proven prolific in cultivating African entrepreneurs while absorbing the numerous young people entering the workforce in the region each year (Adams et al., 2013). ILO (2009), on the other hand, considers informality in Africa a development challenge. The informal economy in Sub-Saharan Africa is among the largest in the world (Medina et al., 2017). Despite making up a sizeable proportion of the economies of developing countries, mostly in Africa, it is often described as unorganised. According to ILO (2020), the unorganised but dominant nature of Africa's informal sector has made it difficult for Africa to tactfully respond to the COVID-19 pandemic ravaging the entire world. However, Sparks & Barnett (2010) have described the informal sector as a vibrant entrepreneurial part of the economy that promotes job creation and economic growth.

Informality and Gender Inequality

Informality creates serious gender inequality against women, as bulk informal jobs are dominated by women. Benjamin et al. (2014) noted that 60% of informal sector employment outside agriculture is occupied by women, and when you add agriculture, then the incidence becomes worse. They further noted that in Sub-Saharan African countries, 84 percent of all employed women are in the informal sector. A similar stance was shared by Steel and Snodgrass (2008), who found in an empirical work that between 59 and 89 percent of informal employment is occupied by women. Women, especially in Sub-Saharan African countries, are at the receiving ends of informality, as they often engage in the most precarious jobs without social security (Chen, Vanek, & Carr, 2002; Benjamin, et al., 2012).

ILO Statistics (2018) reveals that on a global scale, males dominate informal employment with 63 percent compared to women 58.1 percent on average for agriculture and non-agriculture employment. However, the reverse is the case in Africa, especially West Africa, where women dominate informal economy employment with as much as 89.7 percent employment of women in the informal economy. ILO (2018) further noted that informal economic employment at the global scale hides some important pictures and trajectories, especially as to the extent informal economic employment of women in Africa further creates gender inequality that is already in existence in the region.

Data from ILO (2018), as depicted in figure 1, revealed that over 90 percent of employment in most African countries is in the informal economy, particularly in West Africa. However, what is bigger concern is that women dominate informal sector employment in Africa compared to other regions of the world, as seen in figure 2. Women's informal employment is as high as 92.3 percent compared to men with 81 percent. In

most developed countries and elsewhere, males dominate informal employment compared to females, as revealed in figure 2.

Another major concern identified in the literature is that the majority of females in the informal economy in West Africa and Africa in general work mostly in unprotected jobs, including family business and homecare, which limits their contribution to the productivity of the continent that is struggling to boost its productivity (Benjamin, et al., 2012). Roever and Skinner (2018) argued that while males and females working in the informal economy face the risk of unstable earnings, no access to health insurance, and fear of job insecurity, females are more susceptible to this challenge. The author noted that in addition to formal work-related issues, the women must also balance work with child bearing and upkeep. At the base of the informal sector pyramid are the family workers, mostly women, who are almost without any earnings because their jobs seem difficult to measure from the economic point of view.

In Nigeria, for instance, the largest economy in Africa, the available literature reveals that women make up only 24 percent of employment in formal employment, both public and private, and only approximately 6.9 percent make up the executive position in all categories of employment in Nigeria. In the banking sector, which is often seen as the most female friendly, only 2 women (9%) of the 22 CEOs are female, and the other two women are in acting capacity (Enejeta, 2018; Orji, 2019; Benjamin, et al., 2012). In the political scene, of 469 lawmakers in Nigeria, only 29 (approximately 6.1%) are female (Algali, 2015), compared to 33% in 2014 (Aworinde, 2019).

Nigeria or African countries are not the only victims of low female managers across the globe. The region, especially North Africa, suffers the most in terms of women occupying managerial positions in formal sector employment. As seen above, although the gender gap is gradually closing in other developed countries, there is still a series gender gap in females occupying managerial positions, as seen in Figure 3.

Furthermore, the literature reveals that informality promotes poverty prevalence and lack of social security (Ogbuabor & Malaolu, 2013; Benjamin, et al., 2012). In fact, the African Development Report (2015) indicated that high gender inequality in favour of male folks in Africa, especially in formal employment, tends to hinder progress in Africa and the fight against poverty, as it leads to the forfeiture of the potential growth that could have come from the excluded women and minimizes the extent to which Africa's growth can positively influence the poverty status of African women in general.

It is believed that most policies of poverty alleviation target those in the informal sector and that approximately 80 percent of those working within the informal sector are poor and lack social securities (Tonuchi & Onyebuchi, 2019). Statistics further reveal that women make up 92.3 percent of informal sector employment in West Africa when agriculture sector employment data are added (Benjamin et al, 2014), yet most of the beneficiaries of poverty alleviation programmes are usually men (Tonuchi & Onyebuchi, 2019). Some literature has argued that women account for 70 percent of the incidence of extreme poor across the globe and, as one would expect, is more prevalent in Africa (McFerson, 2010).

Several factors are attributed in the literature as the leading cause of gender inequality in Africa, including but not limited to societal cultural settings, economic factors, political factors, legal factors, and biological factors. Of all these factors, culture and religion stand out as the leading causes of gender inequality in Africa (McFerson, 2010; Benjamin, Beegle, Recanatini, & Santini, 2014). Most African culture trains the male child to feel superior over the female child with the superstitious belief that the male child will keep the family lineage going forward, as the female girl child will eventually be married to another family where she will change her surname to the surname name of the family she is married to. This is the very reason why most African households will prefer to secure formal job opportunities for the male child first before the female child furthers the widening gender gap in formal employment in the continent (ILO, 2018; Tonuchi & Onyebuchi, 2019).

In the face of no existing studies that have investigated gender inequality and informality using econometrics from the perspective of Africa, this study adds to the body of knowledge by investigating the relationship between gender inequality and level in Africa's informal economy as well as exploring the place of poverty on the nexus between gender inequalities and the informal sector in Africa.

Methods

This section provides an overview of the methodology. The model specification, estimation techniques that will be employed to estimate the relationship and sources of data.

3.1 Model Specification

We know that informal economy size is equivalent to GDP for the formal economy, although the drivers of the growth of each sector differ but are both influenced by the application of labour and capital. As such, the study will employ a modified Cobb-Douglas production function to model gender inequality and growth of the informal economy, as given in equation 1 below.

$$Infor_{i,t} = LiT_{i,t}^{\eta} Gn_{i,t}^{\theta} \varepsilon_{i,t} \dots \dots \dots (1)$$

where Y_n = size of the informal economy % of GDP, LiT = Literacy rate, adult female (% of females ages 15 and above), Gn is the vector of other gender inequality indices. Taking the log of equation 1 leads to equation (2).

$$\ln Infor_{i,t} = + \eta (\ln LiT_{i,t}) + \theta (\ln Gn_{i,t}) + \varepsilon_{i,t} \dots (2)$$

Therefore, if other indicators of gender equality are substituted in equation (2), equation 2 can therefore be rewritten as in equation (3).

$$\ln Infor_{i,t} = + \eta (\ln LiT_{i,t}) + \alpha (\ln Cfw_{i,t}) + \beta (Equality_{i,t}) + \theta (\ln psch_{i,t}) + \phi (\ln aemp_{i,t}) + \varepsilon_{i,t} \dots (3)$$

where cfw = Contributing family workers, female (% of female employment). Equality = An index of woman can get a job in the same way as a man (1=yes; 0=no), psch = School enrolment, primary, female (% gross), and aemp = Employment in agriculture, female (% of female employment).

One indicator of gender inequality is the rising percentage of females contributing to family work compared to total female employment. It is therefore expected that there will be a positive relationship (+) between the percentage of women contributing to family work and informality. The equality index developed by World Bank gender data is a measure of the extent to which a woman can easily obtain a job in the same way as a man in the formal economy. We expect a positive relationship with informality where there is inequality or a negative relationship where there is equality (Gradin & Tarp, 2019). The assumption is based on the fact that the formal economy has a negative relationship with informal economy size, as argued by Hassan and Schneider (2016).

It is equally expected that where there is less gender inequality, female primary school enrolment percent of the total will rise fast or remain the same as that of male percent of the total. Thus, a positive sign indicates that there is no gender inequality with regard to female primary school education. Employment in agriculture percent of female employment is another powerful index of inequality against women. If the bulk of the women are employed in agriculture, then it means they will be less productive, and the bulk of their economic contribution is through the informal economy. A positive sign indicates a high level of gender inequality. Lastly, is the female literacy rate. It is argued that the more literate the female folk becomes, the less likely they will find themselves in the informal economy and the less likely they will experience gender inequality. Thus, a negative relationship with informality depicts the incidence of gender inequality, while a positive relationship indicates gender equality. The argument follows the argument made by Hassan and Schneider (2016). For the purpose of replication and comparison, all the data except for informal economy are sourced from World Bank Development Indicators and World Bank Gender data.

However, informal economy data are sourced from Hassan and Schneider (2016). The authors applied the Multiple Indicators Multiple Causes (MIMIC) model to estimate the size of the informal economy as a percentage of official GDP for 157 countries. The approach relies on multiple indicators to estimate the informal economy instead of relying on one approach.

3.3 Estimation Approach

The study will employ the Generalized Least Square in estimating the existing relationship between Gender Inequality and informal economy. The approach is chosen based on the following advantages. First, the approach accounts for cointegration among variables by estimating a single cointegrating model and therefore addresses the endogeneity bias. As argued by Hassan (2017), GLS performs semiparametric correction to modify the least square estimates and solve the problem of serial correlation and endogeneity that may arise due to cointegrating regressors. Importantly, it can be applied when the variables are integrated of the same order, especially of order one.

Carroll & Ruppert (1982) noted that when a researcher is more interested in protecting oneself against possible misspecification functional relationship error in the model, measurement error, GLS becomes the ideal estimation technique. This becomes necessary as it solves the problem of measurement error that might arise from techniques employed in generating informal economy size data by Hassan and Schneider (2016). Moreover, GLS performed even better when the assumption of homoscedasticity is relaxed, thereby solving the problem of possible heteroscedasticity.

Results And Discussion

This section discusses the results. The study started by first examining the stationarity of the data using panel unit root as presented in Table 3 below. The study employed Im, Pesaran and Shin (IPS) and Fisher-based unit roots to check for stationarity in the variables. Where IPS and Fisher test conflict, Fisher's result is chosen over IPS. Bai and Ng (2004) argued that Fisher-based unit roots have less power distortion among the first generation of panel unit roots. However, both approach outputs are similar in all instances.

The panel unit root test in Table 3 reveals that none of the key variables in the model is stationary at the level in both the IPS- and Fisher-based approaches. Moreover, given that the dimension in our model is relatively small with $N > T$ and the data are strongly balanced, the unit root result becomes trivial for the study. Following the suggestion of Bai & Ng (2004) and Moon & Perron (2004) and to clear any doubt about the parameter estimate, the series are further differenced. As seen in the model, both the Fisher-based and the IPS approaches reveal that all the series are stationary at first difference and assumed fit for estimation.

Table 3: GLS estimation (equation 2 is differenced)

Variables	Equation1 Coeff./P-value	Equation 2 Coeff./P-value
Equality	0.083 (0.002)***	0.036 (0.002)***
Litt	-0.006 (0.000)***	-0.009 (0.008)***
Lpsch	0.003 (0.000)***	0.424 (0.064)*
Lcfw	-0.059 (0.000)***	-0.410 (0.014)***
Laemp	0.002 (0.002)***	-0.060 (0.000)***
Observations	712	674
Number of c_id	36	36
Log Likelihood	-193.87	-212.2
F-stat; P-value	(0.000)***	(0.000)***

Notes: The P-value is enclosed in parentheses. All variables are logged, and significance is indicated as follows: ***, ** and * for 1%, 5% and 10%, respectively.

Table 4.2: Panel Unit Root test Using IPS and Fisher Approach/ AIC Criteria

Variables	IPS @ Level	IPS @ 1st Difference	Fisher @ Level	Fisher @ First Difference
Fffgg	Statistics/P-value	Statistics/P-value	Statistic/P-value	Statistics/ P-value
Linfor	2.9955 (0.9986)	-8.2058 (0.0000)***	-2.0249 (0.9787)	-11.2036 (0.0000)***
Lpsch	0.7574 (0.7574)	-5.3780 (0.0000)***	2.2640 (0.0118)	- 4.2441 (0.0000)***
Lcfw	2.0007 (0.9773)	-6.3219 (0.0000)***	0.2690 (0.3940)	-9.0068 (0.0000)***
Litt	2.6966 (0.9965)	-3.0082 (0.0000)***	1.6119 (0.0535)	-5.3467 (0.0000)***
Laemp	5.6038 (1.0000)	-6.0726 (0.0000)***	-0.5186 (0.6980)	-8.0401 (0.0000)***
Lat	-0.6104 (0.2708)	-2.4260 (0.0076)***	0.4033 (0.3434)	-2.9033 (0.0021)***

Notes: The P-value is enclosed in parentheses. All variables are logged, and significance is indicated as follows: ***, ** and * for 1%, 5%, and 10%, respectively.

Both equations 1 and 2 are the same in terms of variable inclusion; however, equation 2 introduces the variables in their difference. From the result in equation 1 using GLS estimation techniques. It was revealed that all the gender inequality measures are significant and exhibit the expected sign. Specifically, the equality index developed by the gender statistic office of World Bank reveals that gender inequality still exists in most African countries, as the variable is statistically significant at the 1 percent level of significance given that the p-value is less than the 5 percent level of significance. The result reveals that as gender inequality increases in favour of men (men have more chances of getting job in the economy), the informal economy will keep rising, distorting the formal economy or encouraging low productivity of the continents. As argued by Manda & Mwakubo (2014), until women's chances of getting job in the formal economy is equal to that of men, the continent will struggle with low productivity.

The female literacy rate is significant at the 1 percent level with the expected sign. Our findings reveal that a one percent rise in the female literacy rate will lead to a 6 percent fall in the informal economy in Africa. The literature has revealed that female education and male education, especially primary and secondary education, are almost equal in Europe and most other continents but still lag behind in Africa, with 86 percent achievement (Sirleaf, 2019). The gap becomes worse for higher education. Statistics reveal that male dominance over females in higher education (BSc and MSc) is more than 30 percent (Sirleaf, 2019; ILO, 2018).

Like the female literacy rate, primary school enrolment is another indicator where Africa has achieved almost gender equality. As seen above, there is a positive significant relationship between informality and female primary school enrolment at the 1 percent level of significance since the p-value is less than 0.05. It is important to state that an increase in female primary school enrolment reduces female child labour in the informal economy, such as street vendors. The study expected a negative relationship between informality and female primary school enrolment, since the greater the increase in primary school enrolment, the less the rise in informality. However, if we argue in line with Gradin and Tarp (2019), who noted that females in Africa often found themselves in informal economies regardless of their level of education, then we can conclude that rising female education has not resulted in a reduction in informality. This is true especially when females cannot compete fairly with males in formal sector employment in most African countries.

Another major indicator of gender inequality in Africa is the percentage of female employment in agriculture of the overall female employment. As more women are employed in agriculture, there is a tendency for increasing informality in the continent. The rise in female employment in agriculture indicates that more women employment is in the informal economy that lacks any social security. Our data reveal that there is a positive significant impact of rising women employment in agriculture and a rise in informality in Africa at the 1 percent level of significance. This is expected, as women dominate the agriculture sector of most African counties, which house the bulk of extreme informal sector activities (Benjamin, et al., 2012). Thus, policies targeting gender inequality in Africa will also target the reduction of women in agricultural activities.

Contrary to expectation, the percentage of women contributing to the family worker of female employment turns negative instead of positive relationship. The variable is significant at the 1 percent level of significance since the p-value is less than 0.05 (5%). The negative relationship might not be far from the fact that most females employed in family work do not see this as employment and as such distort the data estimate during the survey. Another possible reason for this might be that most women employed in other jobs in both formal and informal jobs still contribute to family work.

The general influence of the gender inequality variables on informality in Africa, as indicated by the F-test p-value, is significant at the 5 percent level. This implies that gender inequality is a major promoter of informality in Africa, leading to a low level of productivity in the continent.

Conclusion

Policy Implication

This study investigates the informal economy and gender inequality in Africa. Several studies have been carried out on factors promoting gender inequality or gender discrimination, especially in Africa, and possible solutions. Nonetheless, very few studies have been dedicated to informality and gender inequality, and to the knowledge of the researcher, no studies have particularly attempted to explain this dimension from an econometric perspective. Several factors can be adduced as the cause. Prominent is the fact that there is generally no available time series data on the size of the informal economy except for the Hassan and Schneider estimate at the global scale, which most gender inequality researchers may not be aware of, or most researchers simply feel that the data cannot be sufficiently applied.

In general, the literature reviewed reveals that gender inequality remains one of the biggest challenges facing the African continent despite several efforts that have been made to address the torn (Nordman et al, 2010). Using GLS, it was discovered that women in Africa still struggle with gender inequality, especially in employment. This has forced several women into the informal sector, contributing more of their employment in agriculture, family work, and other informal jobs that are characterised by many insecurities with numerous risks. It was discovered that men in Africa have a better chance of getting formal employment than women with the same or similar qualifications.

The study concludes that while Africa has made significant progress in primary and secondary school education of female children, closing the gap in the female literacy rate percentage of the total literacy rate. There is a need for more effort to encourage women's education in advanced education that can improve their competitive level in formal jobs.

It is therefore imperative that if Africa wants to compete favourably with other continents, especially in the event of transforming the global supply chain with the outbreak of the Covid 19 pandemic, African women must be given their fair chance of contributing their quota to the growth of the continents. Leaders in Africa should expedient actions to remove every policy or fundamentals limiting women's participation in politics, economic activities, and other key areas that involve decision making.

There is a need for various stakeholders, women NGOs, UN, and concerned individuals to increase campaigns for the establishment of federal character principles on the African continent. A policy that requires the executive alms and the political parties to give certain percentage of their cabinet or elective chance to the women. UN can even condition aids Africa in implementing policies of gender equality in the continent

As a way of encouraging female employment in the formal economy, the UN and other international organizations should compensate African women by giving the women 60 percent chance of all their employees as a way of increasing the economic and political power of the women.

Declarations

Competing interest: There is no competing interest in this paper. All authors have given approval for the preprint.

References

Adams, A.V., de Silva, S.J. & Razmara, S. (2013). Improving Skills Development in the Informal Sector: Strategies for Sub-Saharan Africa. *International Bank for Reconstruction and Development / The World Bank 1818 H Street NW, Washington, DC 20433*

Africa Partnership Forum (2007). Gender and Economic Development. *8th Meeting of the Africa Partnership Forum Berlin, Germany 22-23 May 2007*

African Development Report (2015). Gender Inequality: A Double Break on Poverty Reduction. *Growth, Poverty and Inequality Nexus: Overcoming Barriers to Sustainable Development*

Algali, A. (2015). *Nigerian first lady wrong to claim 70% of ministers are women*. Retrieved from africacheck: <https://africacheck.org/reports/nigerian-first-lady-wrong-to-claim-70-of-ministers-are-women/>

Aworinde, T. (2019). *Ministers: Women kick as only seven females make Buhari's 43-nominee list*. Retrieved from Punch: <https://punchng.com/women-kick-as-only-seven-females-make-buharis-43-nominee-list/>

- Benjamin, N., Beegle, K., Recanatini, F., & Santini, M. (2014). *Informal economy and the World Bank*. Policy Research Working Paper.
- Benjamin, N., Mbaye, A. A., Diop, I. T., Golub, S. S., Haughton, D., & Niang, B. B. (2012). *The informal sector in Francophone Africa Firm size, productivity, and institutions*. Geneva: The World Bank.
- Carroll, R. J., & Ruppert, D. (1982). A comparison between maximum likelihood and generalized least squares in a heteroscedastic linear. *Journal of the American Statistical Association*, 1-12.
doi:10.1080/01621459.1982.10477901
- Chant, S. & Pedwell, C. (2008). Women, Gender and the Informal Economy: An Assessment of ILO Research and Suggested Way Forward. *London School of Economics*
- Chen, M. A., Vanek, J., & Carr, M. (2002). *Mainstreaming informal employment and gender in poverty reduction*. London: Commonwealth Secretariat.
- Dejene, Y. (2009). Promoting Women's Economic Empowerment in Africa. *African Development Bank (AfDB)*
- ECA (2015). Harnessing the Potential of the Informal Sector for Inclusive Growth in Africa. *United Nations Economic Commission for Africa (ECA) Contribution to the 2015 United Nations Economic and Social Council (ECOSOC) Integration Segment*
- EMM (2014). The State of Gender Equality in Africa: Trends, Challenges and Opportunities. *Quality Assurance and Results Department, Gender and Social Development Monitoring Division of the African Development Bank (AfDB)*
- Enejeta, E. (2018, 03 08). *List of current bank CEOs in Nigeria 2018*. Retrieved from Financialwatngr: <https://www.financialwatchngr.com/2018/03/08/list-of-current-bank-ceos-in-nigeria-2018/>
- Golla, A.M. (2017). Engaging Informal Women Entrepreneurs in East Africa: Approaches to Greater Formality. *An ILO-WED Issue Brief*
- Gradin, C. & Tarp, F. (2019). Gender Inequality in Employment in Mozambique. *South African Journal of Economics 87(2)*
- Hakura, D., Hussain, M., Newiak, M., Thakoor, V. & Yang, F. (2016). Inequality, Gender Gaps and Economic Growth: Comparative Evidence for Sub-Saharan Africa. *IMF Working Paper WP/16/111*
- Hassan, M (2017). The impact of the shadow economy on aid and economic development nexus in Egypt. *Munich Personal RePEc Archive (MPRA), 1-34*
- Hassan, M., & Schnider, F. (2016). *Size and development of the shadow economies of 157 countries worldwide: updated and new measures from 1999 to 2013*. IZA DP No. 10281. Retrieved from <http://ftp.iza.org/dp10281.pdf>

- Hearle, C., Baden, S. & Kalsi, K. (2019). Promoting Economic Empowerment for Women in the Informal Economy. *Women and Opportunities for Women (WOW) Helpdesk Guidance No. 1*
- Heintz, J. & Valodia, I. (2008). Informality in Africa: A Review. *WIEGO Working Paper No 3*
- ILO (2009). The Informal Economy in Africa: Promoting Transition to Formality: Challenges and Strategies.
- ILO (2020). The Impact of the COVID-19 on the Informal Economy in Africa and the Related Policy Responses. *ILO Brief*
- ILO. (2018). *Women and men in the informal economy: A statistical picture (third edition)*. Geneva: International Labour Office.
- Jayachandran, S. (2015). The Roots of Gender Inequality in Developing Countries. *Annual Review of the Economy 7, 63-88*.
- Jennings, M. (1993). Gender Issues in the Informal Sector: Constraints and Opportunities. *Trocaire Development Review, Dublin, 49-66*
- Kinyanjui, M.N. (2014). Women and the Informal Economy: From the Margin to the Centre. *Zed Books Ltd, 7 Cynthia Street, London N1 9JF*
- Magidimisha, H.H. & Gordon, S. (2015). Profiling South African Gender Inequality in Informal Self-Employment. *Journal of Gender Studies, 24(3), 275-292, DOI: 10.1080/09589236.2013.841569*
- Malta, V., Kolovich, L., Leyva, A.M. & Tavares, M.N. (2019). Informality and Gender Gaps Going Hand in Hand. *IMF Working Paper WP/19/112*
- Manda, D.K. & Mwakubo, S. (2014). Gender and Economic Development in Africa: An Overview. *Journal of African Economies, 23, AERC Supplement 1, i4-i17*
- McFerson, H. M. (2010). Poverty among women in Sub-Saharan Africa: A review of selected issues. *Journal of International Women's Studies, 11(4), 50-72*.
- Meagher, K. (2010). The Empowerment Trap: Gender, Poverty and the Informal Economy in Sub-Saharan Africa
- Medina, L., Jonelis, A. & Cangul, M. (2017). The Informal Economy in Sub-Saharan Africa: Size and Determinants. *IMF Working Paper WP/17/156*
- Neves, D. & Toit, A. (2012). Money and Sociality in South Africa's Informal Economy. *Africa 82 (1), 131-49*
- Nordman, C.J., Rakotomanana, F. & Robilliard, A. (2010). Gender Disparities in the Malagasy Labour Market, in Arbache, J.S., Kolev, A. & Filipiak, E. (Eds.) *Gender Disparities in Africa's Labour Market*.

The International Bank for Reconstruction and Development (The World Bank) 1818 H Street NW, Washington DC 20433

Oelz, M. & Rani, U. (2015). Domestic Work, Wages and Gender Equality: Lessons from Developing Countries. *ILO Working Paper No. 5/2015*

Ogbuabor, J. E., & Malaolu, V. A. (2013). Size and causes of the informal sector of the Nigerian economy: Evidence from Error Correction Mimic Model. *Journal of Economics and Sustainable Development, 4(1)*, 85-103.

Orji, R. (2019, 02). *List of banks in Nigeria, CEO's, head offices and contact details 2019*. Retrieved from Finance NGR: <https://financengr.com/list-of-banks-in-nigeriac-eos-head/>

Roever, S. & Skinner, C. (2018). Women's Informal Employment in Africa: New Terrain of Worker Struggles. *A Journal on African Women's Experiences 9, 29-33*

Sethuraman, S.V. (1998). Gender, Informality and Poverty: A Global Review. *Gender Bias in Female Informal Employment and Incomes in Developing Countries*

Sparks, D.L. & Barnett, S.T. (2010). The informal Sector in Sub-Saharan Africa: Out of the Shadows to Foster Sustainable Employment and Equity? *International Business & Economics Research Journal, 9(5)*.

Sirleaf, E. J (2019). Education is the way to gender equality in Africa. Retrieved [Online] <https://mo.ibrahim.foundation/news/2019/education-way-gender-equality-africa>

Tonuchi, J. E., & Onyebuchi, N. A. (2019). Economic diversification in Nigeria: The role of agriculture and manufacturing sector. *International Journal of Research in Electronics and Computer Engineering., 7(3)*, 916-919

Tonuchi, E. J., Idowu, P., Adetoba, O. O., & Mimiko, D. O. (2020). How large is the size of Nigeria's informal economy? A MIMIC approach. *International Journal of Economics, Commerce, and management, VIII(7)*, 204-227

Ulrichs, M. (2016) 'Informality, Women and Social Protection: Identifying Barriers to Provide Effective Coverage', *ODI Working Paper April 2016. London: ODI*.

UNESCO (2017). UNESCO and Gender Equality in Sub-Saharan Africa. *United Nations Educational, Scientific and Cultural Organization, 7, place de Fontenoy, 75352 Paris 07SP, France*

UNU (2013). Women in the Informal Economy: Experiments in Governance from Emerging Countries. *United Nations University Policy Brief*

Verick, S. (2007). The Impact of Globalization on the Informal Sector in Africa. *Economic and Social Policy Division, United Nations Economic Commission for Africa (ECA) And Institute for the Study of Labor*

Figures

Panel A. Including agriculture⁹

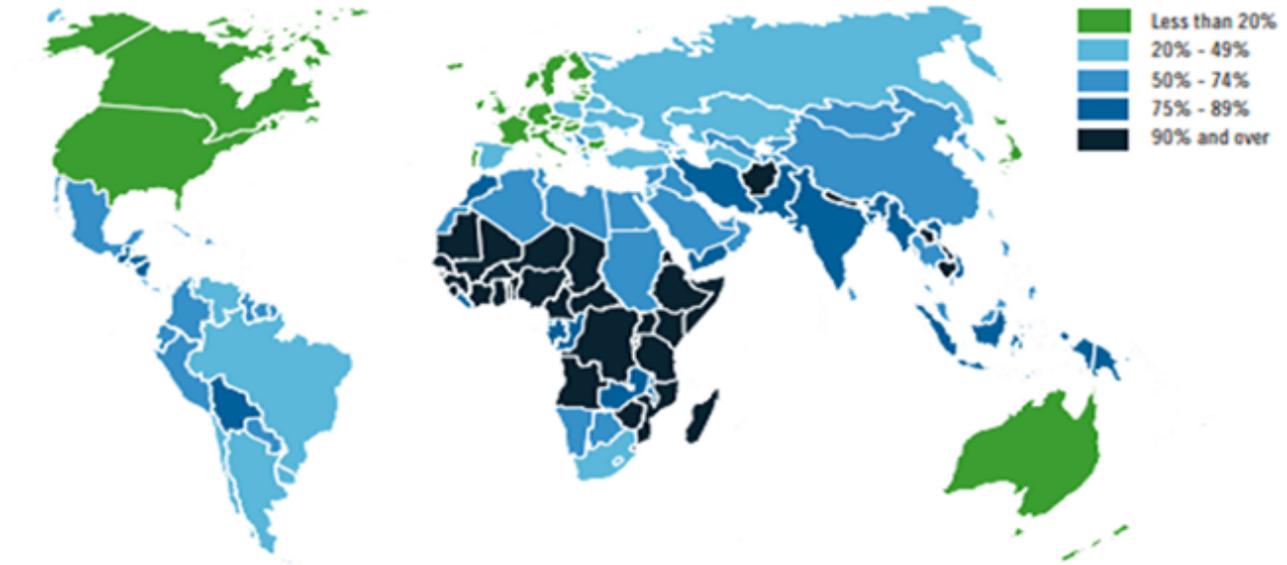


Figure 1

Share of informal employment, including and excluding agriculture (percentages, 2016). Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.

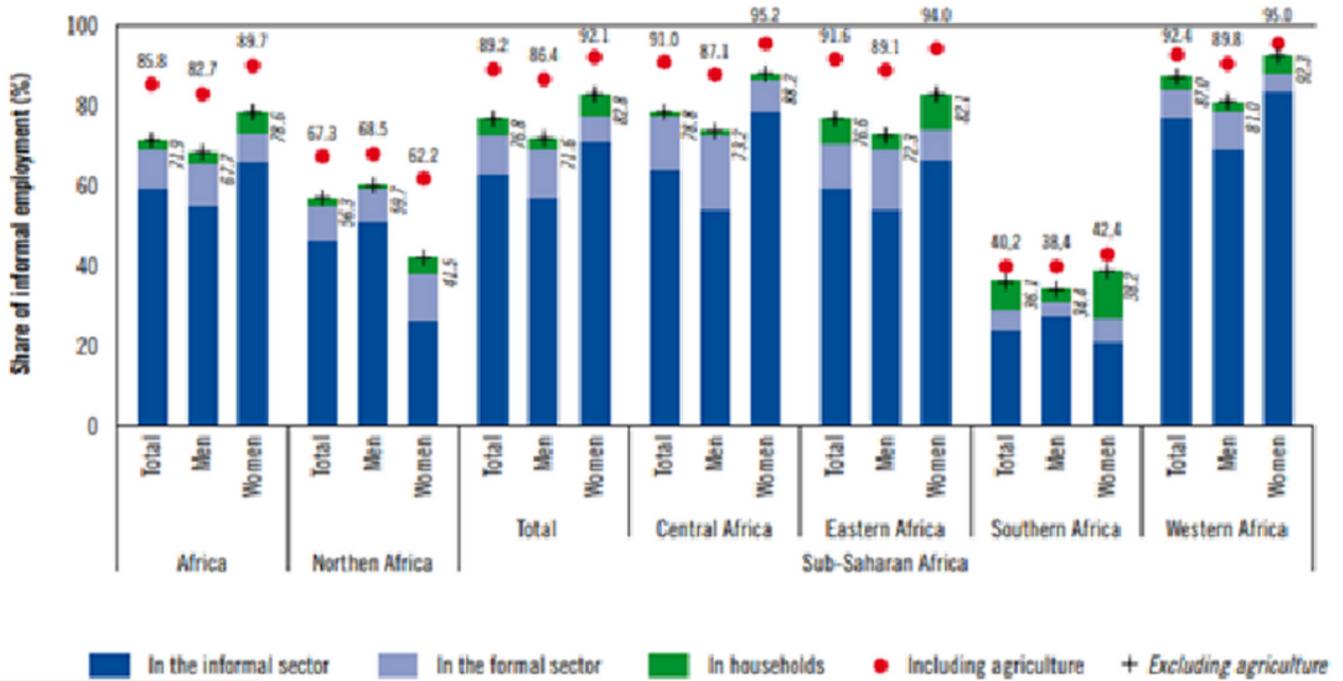


Figure 2

Components of informal employment as a percentage of total employment: the informal sector, formal sector and household sector



Figure 3

Share of Firms with Female top Managers, 2017 (World Bank, 2017)

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [DataonInformalityGenderandInequality.docx](#)