

ORIGINAL RESEARCH ARTICLE

Political factors, entrepreneurship, and female employment vulnerability in sub-Saharan Africa

DOI: 10.29063/ajrh2023/v27i12.6

Chensheng Wu* and Ying Yan

School of Marxism Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, 211106, China

*For Correspondence: Email: chensheng_wu0502@sina.com

Abstract

This study examines the relationship between political factors, entrepreneurship, and female employment vulnerability in sub-Saharan Africa. Using data from the World Development Indicators (WDI) and World Governance Indicators (WGI) of the World Bank for the period 2001 - 2022, the study employs the Generalised Method of Moments to control for endogeneity. The results show that there exists an elastic relationship between voice and accountability and female vulnerability to employment in these sub-regions. It implies that a percentage increase in voice and accountability will result in a 11.9%, 3.07%, 1.08% decrease in female vulnerability to employment in Central, East, West and Southern Africa, respectively. These findings suggest that improving political institutions and reducing corruption could help to promote female entrepreneurship and reduce vulnerability in Sub-Saharan Africa. (*Afr J Reprod Health* 2023; 27 [12]: 51-62).

Keywords: Political factors, entrepreneurship, vulnerable employment, social inclusion

Résumé

Cette étude examine la relation entre les facteurs politiques, l'entrepreneuriat et la vulnérabilité de l'emploi des femmes en Afrique subsaharienne. Utilisant les données des Indicateurs de développement dans le monde (WDI) et des Indicateurs de gouvernance mondiale (WGI) de la Banque mondiale pour la période 2001-2022, l'étude utilise la méthode généralisée des moments pour contrôler l'endogénéité. Les résultats montrent qu'il existe une relation élastique entre la voix et la responsabilité et la vulnérabilité des femmes à l'emploi dans ces sous-régions. Cela implique qu'une augmentation en pourcentage de la voix et de la responsabilité entraînera une diminution de 11,9 %, 3,07 % et 1,08 % de la vulnérabilité des femmes à l'emploi en Afrique centrale, orientale, occidentale et australe, respectivement. Ces résultats suggèrent que l'amélioration des institutions politiques et la réduction de la corruption pourraient contribuer à promouvoir l'entrepreneuriat féminin et à réduire la vulnérabilité en Afrique subsaharienne. (*Afr J Reprod Health* 2023; 27 [12]: 51-62).

Mots-clés: Facteurs politiques, entrepreneuriat, emploi vulnérable, inclusion sociale

Introduction

The predominant incidence of vulnerable employment is a serious challenge for developing regions like sub-Saharan Africa and is more likely to have adverse effects, especially on women¹⁻⁴. Women's care giving responsibilities play a huge role in exposing them to vulnerable work⁵. Vulnerable work for women could be defined as any form of an underpaid employment that allows for the mix of work and domestic responsibilities^{1,5}.

The concept of vulnerable employment should be inscribed into the political and ideological context of a country⁶. This type of work is characterized by low wage rate, improper work

schedules, numerous work hazards, and mentally stressful conditions^{2,3,7,8}. Women's vulnerability to employment is a multi-faceted and multi-dimensional notion as vulnerable employment vary across countries⁶. Numerous perspectives of vulnerable employment have been attributed to the differences in institutional, political and economic context of countries⁶.

Although the ratio of women to men participating in labour market rates is higher in SSA (0.79) than any other regions, underlying problems facing women are masked by this high rate⁴. This means that for every 100 men participating in the labour market, there are approximately 79 women participating. In comparison, the ratio for other

regions is 0.82, indicating a slightly higher level of female labour market participation in other regions compared to SSA. The main differences in the constraints facing women stem from unequal access to key resources and opportunities which enable productive employment such as capital, time and skills⁴. The rise of vulnerable employment affects macro-economic issues involving economic growth, welfare and policy decision⁸. Sub-Saharan Africa experiences rapid growth rates but a slow process of structural transformation which has been majorly characterized by the migration of labour from subsistence agriculture to low skill work⁹.

The effects of vulnerable employment on women also trickle down too many non-work facets, including health and well-being, family building and social life⁸. Women in vulnerable employment are decisive factors for child bearing decisions in families^{4,10}. However, Muhlberger¹¹ finds that vulnerable employment among women do not necessarily create fertility insecurities. The study suggests the role of other factors that affect vulnerable employment in its self, one of which includes social care policies.

High levels of social protection have been in relation with low levels of women's vulnerability to employment and so countries with low social benefits, especially for women are more likely to take on vulnerable jobs with low wages and overall bad quality⁵. Carnes and Mares⁷ examine the bi-directional relationship between vulnerability to employment and social protection. Social protection is inculcated as a form of social institution, and so governments should take responsibility for breaking down social barriers as well as cultural norms against women in order to promote women's entrepreneurial training¹².

Women entrepreneurship has been declining in sub-Saharan Africa as female entrepreneurs do not have much trust in institutional quality of their respective countries¹³. It is important for women, who consist half of the world's population to participate actively in the social and economic activities of their countries¹⁴. Central, sustainable and inclusive industrial development is necessary to harness the full potential of women in sub-Saharan Africa; and entrepreneurship remains critical for that¹⁵. Entrepreneurship development is an important strategy that allows women to bring innovative ideas, energy, and other related talents into the labour market¹⁴.

A recent theory suggested that increased income for females in households benefit children positively and serves as a pathway for the reduction of poverty⁴. Evidence also shows that when women, in relation to men, have more power in education, enrolment rates for children in schools increase⁴. Achieving gender equality in productive employment requires a strong institutional base so as to counter the numerous constraints on women. Gender equality progress is simultaneously occurring when entrepreneurship is noted as being necessary for sustainable development⁴. However, Hernandez¹² explained a form of entrepreneurship as being "necessity-based". Chakravarty *et al.*⁴ regarded this as being close to seasonal work and as vulnerable, due to low-skills, job physicality and low wages. Simply put, this is a situation where women entrepreneurship is vulnerable as well.

Literature review

Uwajumogu *et al.*¹⁶ examined the response of economic diversification to gender inequality and the results showed that gender inequality has an adverse effect on Nigeria's economy by reducing human capital pool. Furthermore, Mihai¹⁷ studied rural entrepreneurship – as an alternative for employment in Romania. The findings suggest that entrepreneurship is vital in reducing vulnerability in rural areas as these areas practice mostly subsistence agriculture and earn low wage rates. Uwajumogu *et al.*¹⁸ examined the role of economic, social and political conditions in globalization and the proportion of women in vulnerable employment. The study employed a panel data analysis in 37 sub-Saharan African countries for the period 2000-2016. The generalized method of moments (GMM) was used as the main estimator. Findings showed that political reforms in key social institutional variables promote the general wellbeing and welfare of women in sub-Saharan Africa. Berry and Bell² examined worker cooperatives as an alternative governance for caring and precarious work. Findings from the study showed there were better experiences for workers in cooperatives than workers who were not. This negative relationship suggests that worker cooperatives as an alternative for governance and institutions provided an escape for vulnerable employment.

Gottlieb¹⁹ examined the determinants and implications of gender gaps in policy prioritization.

The findings showed that improved awareness and empowerment of women as a result of institutional quality, narrows the gender gap to access to social and economic opportunities such as productive employment. Lakemann²⁰ examined the level of vulnerability of small scale and self-employed entrepreneurs in Uganda. The study employed a panel data analysis of entrepreneurs from Uganda for six years using Pooled Ordinary Least Squares (POLS). The findings from the study showed that a non-significant relationship between small-scale businesses and vulnerable employment. Carraro and Karfakis⁹ examined the interrelationship between institutions, economic freedom, and structural transformation in 11 Sub-Saharan African countries from 1990-2010 using regression analysis. The findings showed a positive relationship between institutional quality and structural reforms needed to move the economy from subsistence agriculture and hence reduce vulnerability of employment.

Kalleberg and Vallas⁸ examined the theory, research, and politics behind precarious work. The findings indicated that political factors are responsible for reducing vulnerable employment and shaping the future for economic development of citizens in both developing and developed economies. Barchiesi²¹ examined the interrelationship between wage labour, precarious employment, and social inclusion in the making of South Africa's post-apartheid transition. The paper reported that improved government effectiveness and political stability, along with social inclusion policies had promoted productive employment and reduced the number of people with vulnerable employment in the country. Sapkal and Sundar¹ examined the determinants of precarious employment in India. The study used the national sample survey of India for two periods 2009-2010 and 2011-2012, and reported that young women are more likely to have increased vulnerability to employment than men. Mckay *et al.*⁵ studied precarious work and social rights in twelve countries. The study included a questionnaire survey of 265 employment experts. The authors found that exclusion from social rights such as decent and equitable access to medical care, housing, education and pensions, drives people into vulnerable employment. The results suggest that a negative relationship exists between social rights and vulnerable employment. Samantroy and

Tomar¹⁵ examined women entrepreneurship in India using secondary data from the National Sample Survey and the economic census. The results showed that gender-friendly policies reduced vulnerability across social groups and promoted women's participation in the formal and productive labour market, characterized by high wages. Chakravarty *et al.*⁴ examined gender and youth employment in sub-Saharan Africa and reported that a larger percentage of women work in vulnerable employment in the region.

Methods

Data and variables

In this study, the dependent variable, female vulnerability to employment, which was proxied by Vulnerable employment, female (% of female employment) (modelled ILO estimate) was sourced from the World Development Indicators (WDI) database. The proxies for entrepreneurship and the control variables were also sourced from the WDI database. Political factors were proxied by two variables which were sourced from the World Governance Indicators (WGI) database. In order to achieve the objectives of the study, panel data analysis on Sub-Saharan Africa for the periods, 2001-2021 was carried out. The variables were summarised in Table 1.

Model specification and estimation techniques

The study used the POLS as a baseline model, as specified in equation (1)

$$\ln VEF_{it} = \beta_0 + \beta_1 \ln I'_{it} + \beta_2 \ln ENT'_{it} + \beta_3 \ln C'_{it} + \mu_{it} \quad (1)$$

Where $\ln VEF_{it}$ represents the natural logarithm of female vulnerability to employment. β_0 represents the intercept term while β_1 , β_2 and β_3 are the coefficients of the explanatory variables. Also, $\ln I'_{it}$, $\ln ENT'_{it}$ and $\ln C'_{it}$ represent the natural logarithm of the covariate of political factors, the natural logarithm of the covariate of entrepreneurship and the natural logarithm of the covariate of the control variables, respectively. The disturbance term is represented by μ , while i represents the country ID spanning from 1 to 47, and t represents the time period which spans from 1 to 21. The countries are Angola, Benin, Botswana,

Table 1: Variables, measurements, sources and expectations

Variable	Code	Measurement	Source	Expectations
Female Vulnerability to Employment	VEF	Vulnerable employment, female (% of female employment) (modelled ILO estimate)	WDI	Not Applicable
Political factor (Regulatory Quality)	RQ	Regulatory Quality: Estimate	WGI	Negative (-)
Political factor (Voice and Accountability)	GE	Voice and Accountability: Estimate	WGI	Negative (-)
Entrepreneurship (time)	TRSBF	Time required to start a business, female (days)	WDI	Positive (+)
Entrepreneurship (procedures)	SUPF	Start-up procedures to register a business, female (number)	WDI	Positive (+)
Social Inclusion	SI	CPIA policies for social inclusion/equity cluster average (1=low to 6=high)	WDI	Negative (-)
Population	PF	Population, female	WDI	Negative (-)
Fertility Rate	FR	Fertility rate, total (births per woman)	WDI	Positive (+)

NB: WDI and WGI mean World Development Indicators and Governance Indicators respectively.
 Source: Authors' Compilation

Burkina Faso, Burundi, Cameroon, Cabo Verde, Central African Republic, Chad, Comoros, Congo, Rep., Congo, Dem. Rep., Cote d'Ivoire, Djibouti, Eritrea, Equatorial Guinea, Ethiopia, Gabon, Gambia, The, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe.

To control for endogeneity, the generalised Method of Moments (GMM) is applied. One benefit of this estimation technique lies in its efficiency and effectiveness when employing instruments during the estimation process²². Additionally, GMM is well-suited for handling endogeneity issues in panel data analysis²³. The GMM estimation technique is expressed in equation (2)

$$\ln VEF_{it} = \beta_0 + \beta_1 \ln LFF_{it-1} + \beta_2 \ln I'_{it} + \beta_3 \ln ENT'_{it} + \beta_4 \ln C'_{it} + \mu_{it} \quad (2)$$

Where $\ln VEF_{it}$ represents the natural logarithm of female vulnerability to employment, $\ln LFF_{it-1}$ represents the first lag of logarithm of female vulnerability to employment. Also, $\ln I'_{it}$, $\ln ENT'_{it}$ and $\ln C'_{it}$ represent the natural logarithm of the covariate of political factors, the natural logarithm of the covariate of entrepreneurship and the natural logarithm of the covariate of the control variables, respectively. β_0 is

the intercept term, β_1 is the coefficient of the lagged dependent variable (female vulnerability to employment), β_2 , β_3 and β_4 are the coefficients of the explanatory variables, the disturbance term is represented by μ , i represents the country id spanning from 1-47 while t represents the period spanning from 1-21.

Ethical consideration

Ethical consideration is not applicable as the study made use of no human or animal subjects.

Results

Summary statistics

Table 2 shows the descriptive statistics of the variables which include female vulnerability to employment (VEF), time required to start a business, female (TRSBF) start-up procedures, female (SUPF), regulatory quality (RQ), voice and accountability (VA), social inclusion (SI), female population (PF) and fertility rate (FR) for the full sample and the individual regions.

The average female vulnerability to employment in the full sample (SSA) was approximately 77.45756%. This indicates that on average, female vulnerability to employment was 77.45756% in SSA. After analysing in the individual sub-regions, it was revealed that the average female vulnerability to employment in the

Table 2: Descriptive statistics of the variables

Variable	Full Sample		Central Africa		East Africa		Southern Africa		West Africa	
	Mean (SD)	Min (Max)	Mean (SD)	Min (Max)	Mean (SD)	Min (Max)	Mean (SD)	Min (Max)	Mean (SD)	Min (Max)
VEF	77.458 (22.010)	9.323 (98.646)	72.350 (23.843)	30.749 (98.646)	79.799 (19.131)	11.864 (96.101)	37.144 (20.860)	9.323 (74.819)	87.921 (6.468)	69.587 (98.016)
VA	4.312 (0.638)	2.452 (6.197)	3.958 (0.408)	3.287 (5)	4.239 (0.757)	2.452 (6.197)	5.147 (0.480)	4.263 (5.900)	4.383 (0.383)	3.144 (5.274)
RQ	1.812 (0.638)	-0.048 (3.697)	1.458 (0.408)	0.787 (2.5)	1.739 (0.757)	-0.048 (3.697)	2.647 (0.481)	1.763 (3.400)	1.883 (0.383)	0.644 (2.774)
TRSBF	44.230 (42.081)	2.5 (261)	66.616 (50.057)	7 (167)	36.708 (29.236)	4 (179)	64.658 (31.208)	15 (138)	34.237 (44.419)	2.5 (261)
SUPF	9.6 (3.128)	3 (18)	10.966 (3.286)	4 (18)	10.025 (2.889)	3 (17)	8.693 (1.533)	6 (12)	8.597 (3.181)	3 (17)
SI	3.168 (0.446)	2 (4.3)	2.820 (0.274)	2.2 (3.4)	3.251 (0.473)	2 (4.3)	3.198 (0.254)	2.9 (3.5)	3.269 (0.438)	2.2 (4.3)
PF	9750242 (14800000)	40294 (106000000)	7876746 (11000000)	73356 (48300000)	10900000 (11800000)	40294 (59800000)	7663667 (11500000)	905932 (30500000)	10100000 (19500000)	238957 (106000000)
FR	4.867 (1.298)	1.36 (7.695)	5.409 (0.967)	3.491 (7.231)	4.700 (1.378)	1.36 (7.582)	3.086 (0.450)	2.261 (3.827)	5.185 (1.081)	1.896 (7.695)

Source: Authors' Compilation

West Africa region (87.92125) was the largest as compared to other regions and the Southern African region (37.14384) has the least average female vulnerability to employment. Also, the country with 9.323107% female vulnerability to employment, which is the minimum value in SSA was recorded in the Southern Africa region. The country which has 98.64554% female vulnerability to employment, which is the maximum value in the entire region was also recorded in the Central Africa region.

The average voice and accountability index in the full sample (SSA) was 4.311684. This indicates that on average, voice and accountability index was 4.311684 in SSA. After analysing in the individual sub-regions, it was revealed that the average voice and accountability index in the Southern Africa region (5.146503) was the largest as compared to other regions and the Central African region (3.958035) has the least average voice and accountability index. Also, the country with 2.452274 voice and accountability index, which is the minimum value in SSA was recorded in the East Africa region. The country which has 6.196947 voice and accountability index, which is the maximum value in the entire region was also recorded in the East Africa region.

The average regulatory quality index in the full sample (SSA) was 1.811684. This indicates that on average, regulatory quality index was 1.811684 in SSA. After analysing in the individual sub-regions, it was revealed that the average regulatory quality index in the Southern Africa region (2.646503) was the largest as compared to other regions and the Central African region (1.458035) has the least average regulatory quality index. Also, the country with -0.0477257 regulatory quality index, which is the minimum value in SSA was recorded in the East Africa region. The country which has 3.696947 regulatory quality index, which is the maximum value in the entire region was also recorded in the East Africa region.

The average time required to start a business for females in the full sample (SSA) was 44.23 days. This indicates that on average, time required to start a business for females was 44.23 days in SSA. After analysing in the individual sub-regions, it was revealed that the average time required to start a business for females in the Central Africa region (66.61582) was the largest as compared to other regions and the West African

region (34.23731) has the least average time required to start a business for females. Also, the country with 2.5 days as the time required to start a business for females, which is the minimum value in SSA was recorded in the West Africa region. The country which has 261 days as the time required to start a business for females, which is the maximum value in the entire region was also recorded in the West Africa region.

The average start-up procedures to register a business for females in the full sample (SSA) was 9.6. This indicates that on average, start-up procedures to register a business for females was 9.6 procedures in SSA. After analysing in the individual sub-regions, it was revealed that the average start-up procedures to register a business for females in the Central Africa region (10.96591) was the largest as compared to other regions and the West African region (8.596743) has the least start-up procedures to register a business for females. Also, the country with 3 start-up procedures to register a business for females, which is the minimum value in SSA was recorded in the East and West Africa region. The country which has 18 start-up procedures to register a business for females, which is the maximum value in the entire region was recorded in the Central Africa region.

The average social inclusion index in the full sample (SSA) was 3.16833. This indicates that on average, social inclusion index was 3.16833 in SSA. After analysing in the individual sub-regions, it was revealed that the average social inclusion index in the West Africa region (3.269659) was the largest as compared to other regions and the Central African region (2.820442) has the least average social inclusion index. Also, the country with 2 social inclusion index, which is the minimum value in SSA was recorded in the East Africa region. The country which has 4.3 social inclusion index, which is the maximum value in the entire region was recorded in the East and West Africa region.

The average female population in the full sample (SSA) was 9750242. This indicates that on average, female population was 9750242 in SSA. After analysing in the individual sub-regions, it was revealed that the average female population in the East Africa region (10900000) was the largest as compared to other regions and the Southern African region (7,663,667) has the least average female population. Also, the country with 40294 female population, which is the minimum value in SSA was

recorded in the East Africa region. The country which has 106000000 female population, which is the maximum value in the entire region was recorded in the West Africa region.

The average fertility rate in SSA was approximately 5 births. This indicates that on average, women gave birth to approximately 5 children in SSA. After analysing in the individual sub-regions, it was revealed that the average fertility rate in the Central Africa region (5.408884) was the largest as compared to other regions and the Southern African region (3.086131) has the least average fertility rate. Also, the country with 1.36 fertility rate, the minimum value in SSA was recorded in the East Africa region. The country which has 7.695 fertility rate, the maximum value in the entire region was recorded in the West Africa region.

Pooled ordinary least squares estimation results

The result in Table 3 revealed that voice and accountability have a negative and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in voice and accountability index in Sub-Saharan Africa would result in a decrease in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in voice and accountability index would result in a 2.8% decrease in female vulnerability to employment. This was in line with the expectations established in this study.

The POLS estimates revealed that the impact of voice and accountability on female vulnerability to employment across the subregions was also negative and statistically significant except in Southern Africa, whose estimates showed a positive relationship. This explains that a percentage increase in voice and accountability index in Central Africa, East Africa, West Africa and Southern Africa would result in a 7.5%, 2.6% and 1.05% decrease, and a 38.1% increase respectively in female vulnerability to employment.

Table 3 revealed that regulatory quality has a positive and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in regulatory quality index in sub-Saharan Africa would result in an increase in female vulnerability to employment.

The POLS estimate on the full sample predicted that a percentage increase in regulatory quality index would result in a 0.55% increase in female vulnerability to employment. This was not in line with the expectations established in this study.

The POLS estimates revealed that the impact of regulatory quality on female vulnerability to employment across the subregions was also positive and statistically significant except in Southern Africa, whose estimates showed a negative relationship. This explains that a percentage increase in per regulatory quality in Central Africa, East Africa, West Africa and Southern Africa would result in a 2.7%, 0.5%, 0.4% increase and a 20.2% decrease, respectively in female vulnerability to employment. The result in Table 3 revealed that time required to start a business for females has a negative and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in the time required to start a business for females in sub-Saharan Africa would result in a decrease in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in the time required to start a business for females would result in a 0.12% decrease in female vulnerability to employment. This was in line with the expectations established in this study. The POLS estimates revealed that the impact of time required to start a business for females on female vulnerability to employment across the subregions was also negative and statistically significant except in Central Africa, whose estimates were statistically insignificant and West Africa whose estimates showed a positive relationship. This explains that a percentage increase in the time required to start a business for females in East, Southern and West Africa would result in a 0.09% and 0.29% decrease and a 0.02% increase in female vulnerability to employment.

Table 3 revealed that start-up procedures required to start a business for females has a positive and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in the number of start-up procedures required to register a business for females in sub-Saharan Africa would result in an increase in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in the start-up procedures required to start a business for females would result

Table 3: Pooled ordinary least squares estimates

Variable	Full Sample	Central Africa	East Africa	Southern Africa	West Africa
logVA	-2.764*** (0.000)	-7.481*** (0.007)	-2.619*** (0.000)	38.106*** (0.000)	-1.049** (0.031)
logRQ	0.551*** (0.000)	2.656*** (0.008)	0.472*** (0.000)	-20.165*** (0.000)	0.351* (0.069)
logTRSBF	-0.119*** (0.000)	0.044 (0.321)	-0.087*** (0.003)	-0.289*** (0.000)	0.015* (0.061)
logSUPF	0.152*** (0.000)	-0.364*** (0.009)	0.213*** (0.001)	0.490** (0.022)	-0.016 (0.327)
logSI	1.109*** (0.000)	-0.884*** (0.005)	0.834*** (0.000)	0.667 (0.400)	-0.015 (0.755)
logPF	-0.045*** (0.000)	-0.018 (0.327)	-0.009 (0.415)	-0.036 (0.677)	-0.003 (0.479)
logFR	0.952*** (0.000)	1.051*** (0.000)	0.877*** (0.000)	2.663*** (0.000)	0.073*** (0.002)
Cons	5.994*** (0.000)	13.660*** (0.000)	5.482*** (0.000)	-42.657*** (0.000)	5.732*** (0.000)
R²	0.6470	0.4412	0.8032	0.9610	0.1781
F-Stat	208.71*** (0.0000)	18.04*** (0.0000)	152.74*** (0.0000)	225.23*** (0.0000)	8.88*** (0.0000)

Note: *, **, *** means significant at 1%, 5% and 10%, respectively.

Source: Authors' Compilation

in a 0.15% increase in female vulnerability to employment. This was in line with the expectations established in the study.

The POLS estimates revealed that the impact of start-up procedures required to start a business for females on female vulnerability to employment across the subregions was also positive and statistically significant except in Central Africa, whose estimates showed a negative relationship and West Africa whose estimates were statistically insignificant. This explains that a percentage increase in start-up procedures required to start a business for females in Central, East and Southern Africa would result in a 0.36% decrease and a 0.21% and 0.49% increase in female vulnerability to employment.

The result in Table 3 revealed that social inclusion has a positive and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in social inclusion index in sub-Saharan Africa would result in an increase in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in social inclusion index would result in a 1.11% increase in female vulnerability to employment. This was in line with the expectations established in this study. One important part of social inclusion is the

advancement of well-being through increased participation in employment and work life^{24,26-28}. The POLS estimates revealed that the impact of social inclusion on female vulnerability to employment across the subregions was heterogeneous in Central and East Africa, with Southern and West Africa showing statistically insignificant estimates. A percentage increase in social inclusion index in Central Africa and East Africa would result in a 0.88% decrease and a 0.83% increase, respectively in female vulnerability to employment.

Table 3 revealed that female population has a negative and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in female population in sub-Saharan Africa would result in a decrease in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in female population would result in a 0.05% decrease in female vulnerability to employment. This was in line with the expectations established in this study. The POLS estimates revealed that the impact of female population on female vulnerability to employment across the subregions were statistically insignificant and so strong conclusions cannot be made about the relationship.

The result in Table 3 revealed that fertility rate has a positive and statistically significant impact on female vulnerability to employment for the full sample. This indicates that an increase in fertility rate in sub-Saharan Africa would result in an increase in female vulnerability to employment. The POLS estimate on the full sample predicted that a percentage increase in fertility rate would result in a 0.95% increase in female vulnerability to employment. This was in line with the expectations established in this study. The POLS estimates revealed that the impact of fertility rate on female vulnerability to employment across the subregions was also positive and statistically significant. This explains that a percentage increase in fertility rate in Central, East, Southern and West Africa would result in a 1.05%, 0.88%, 2.66% and 0.07% increase, respectively in female vulnerability to employment.

Generalised method of moments results

Table 4 revealed that voice and accountability have a negative and statistically significant impact on female vulnerability to employment in sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in voice and accountability index is associated with a 3.23% decrease in female vulnerability to employment, in sub-Saharan Africa, in the short run, *ceteris paribus*. This estimate indicates an elastic relationship between the two variables. The GMM estimates revealed that there were also negative and statistically significant impacts at 10% levels in all the sub regions, excluding Southern Africa whose estimates showed a positive relationship. There also exists an elastic relationship between voice and accountability and female vulnerability to employment in these sub regions. A percentage increase in voice and accountability index will result in a 11.9%, 3.07%, 1.08% decrease and a 38.5% increase in female vulnerability to employment, *ceteris paribus*, in Central, East, West and Southern Africa, respectively.

The results from Table 4 revealed that regulatory quality has a positive and statistically significant impact on female vulnerability to employment in sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least

Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in regulatory quality index is associated with a 0.57% increase in female vulnerability to employment, in sub-Saharan Africa. This estimate indicates an inelastic relationship between the two variables. The GMM estimates revealed that there were also positive and statistically significant impacts at 10% levels in all the sub regions, excluding Southern Africa whose estimates showed a negative relationship. A percentage increase in regulatory quality index will result in a 4.14%, 0.54% and 0.34% increase and a 20.3% decrease in female vulnerability to employment in the short run, *ceteris paribus*, in Central, East, West and Southern Africa respectively.

Table 4 revealed that the time required to start a business for females has a negative and statistically significant impact on female vulnerability to employment in Sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in the time required to start a business for females is associated with a 0.08% decrease in female vulnerability to employment, in Sub-Saharan Africa, in the short run, *ceteris paribus*. This estimate indicates an inelastic relationship between the two variables.

The GMM estimates revealed that there were also negative and statistically significant impacts at 10% levels in all the sub regions, excluding Central Africa and West Africa whose estimates showed a positive relationship. There also exists an inelastic relationship between the time required to start a business for females and female vulnerability to employment in these sub regions. A percentage increase in time required to start a business for females will result in a 0.04% and 0.02% increase and a 0.08% and 0.28% decrease in female vulnerability to employment in the short run, *ceteris paribus*, in Central, West, East and Southern Africa respectively. The results from Table 4 revealed that start-up procedures required to start a business for females has a positive and statistically significant impact on female vulnerability to employment in Sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted

Table 4: GMM results

	Full Sample	Central Africa	East Africa	Southern Africa	West Africa
logVA	-3.227*** (0.000)	-11.851*** (0.000)	-3.075*** (0.000)	38.457*** (0.000)	-1.079*** (0.000)
logRQ	0.566*** (0.000)	4.138*** (0.000)	0.544*** (0.000)	-20.313*** (0.000)	0.339*** (0.000)
logTRSBF	-0.077*** (0.000)	0.039*** (0.000)	-0.085*** (0.000)	-0.282*** (0.000)	0.021*** (0.000)
logSUPF	0.048*** (0.000)	-0.327*** (0.002)	0.179*** (0.000)	0.465*** (0.000)	-0.023*** (0.000)
logSI	1.487*** (0.000)	-0.713*** (0.000)	1.056*** (0.000)	0.398 (0.368)	0.006 (0.517)
logPF	-0.083*** (0.000)	-0.028*** (0.000)	-0.007*** (0.000)	-0.081* (0.090)	-0.0003 (0.706)
logFR	0.820*** (0.000)	1.068*** (0.000)	0.782*** (0.000)	2.328*** (0.000)	0.054*** (0.000)
Cons	7.096*** (0.000)	19.003*** (0.000)	6.020*** (0.000)	-41.729*** (0.000)	5.749*** (0.000)
AR (1)	3.16*** (0.007)	-4.02*** (0.007)	-6.68*** (0.003)	5.38*** (0.004)	8.43*** (0.002)
AR (2)	-0.44 (0.658)	0.77 (0.441)	-0.61 (0.542)	-5.67 (0.503)	-1.22 (0.224)

Note: *, **, *** means significant at 1%, 5% and 10%, respectively.

Source: Authors' Compilation

that a percentage increase in the start-up procedures required to start a business for females is associated with a 0.05% increase in female vulnerability to employment, in Sub-Saharan Africa, in the short run, ceteris paribus. This estimate indicates an inelastic relationship between the two variables.

The GMM estimates revealed that there were also positive and statistically significant impacts at 10% levels in all the sub regions, excluding Central and West Africa whose estimates showed a negative relationship. There also exists an inelastic relationship between start-up procedures required to start a business for females and female vulnerability to employment in these sub regions. A percentage increase in the start-up procedures required to start a business for females will result in a 0.33% and 0.02% decrease and a 0.18% and 0.46% increase in female vulnerability to employment in the short run, ceteris paribus, in Central, West, East and Southern Africa respectively. Table 4 revealed that social inclusion has a positive and statistically significant impact on female vulnerability to employment in Sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in social

inclusion index is associated with a 1.49% increase in female vulnerability to employment, in sub-Saharan Africa, in the short run, ceteris paribus. This estimate indicates an elastic relationship between the two variables. The GMM estimates revealed that there were heterogeneous results across sub-regions, with Southern and West Africa having statistically insignificant results. A percentage increase in social inclusion index will result in a 0.71% decrease and a 1.06% increase in Central and East Africa respectively.

The results from Table 4 revealed that female population has a negative and statistically significant impact on female vulnerability to employment in sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in female population is associated with a 0.08% decrease in female vulnerability to employment, in Sub-Saharan Africa, in the short run, ceteris paribus. This estimate indicates an inelastic relationship between the two variables. The GMM estimates revealed that there were also negative and statistically significant impacts at 10% levels in all the sub regions, excluding West Africa whose estimates were

statistically insignificant. There also exists an inelastic relationship between female population and female vulnerability to employment in these sub regions. A percentage increase in female population will result in a 0.03%, 0.01%, and 0.08% decrease in female vulnerability to employment in the short run, *ceteris paribus*, in Central, East and Southern Africa respectively. Table 4 revealed that fertility rate has a positive and statistically significant impact on female vulnerability to employment in sub-Saharan Africa. This finding corresponds with the Pooled Ordinary Least Squares estimates summarized in Table 3. Furthermore, GMM estimates in Table 4 predicted that a percentage increase in fertility rate is associated with a 0.82% increase in female vulnerability to employment, in Sub-Saharan Africa, in the short run, *ceteris paribus*. This estimate indicates an inelastic relationship between the two variables. The GMM estimates revealed that there were also positive and statistically significant impacts at 10% levels in all the sub regions. A percentage increase in fertility rate will result in a 1.07%, 0.78%, 2.33% and 0.05% increase in female vulnerability to employment in the short run, *ceteris paribus*, in Central, East, West and Southern Africa respectively.

Discussion

This study aims at contributing to the extant literature by examining the interrelationship between politics, entrepreneurship and women vulnerability to employment. This study employed the Pooled Ordinary Least Squares as the baseline estimator and the one-step system GMM to address problems of endogeneity. Results are consistent for the full sample using the two techniques. The results showed the two indicators of politics (voice and accountability and regulatory quality) to be statistically significant but negative and positive, respectively, in explaining women vulnerability to employment in sub-Saharan Africa. The results also showed the two indicators of entrepreneurship (time required to start a business and start-up procedures required to register a business) to be statistically significant but negative and positive, respectively, in explaining women vulnerability to employment in sub-Saharan Africa. As such, this study emphasizes that a strong institutional quality in SSA countries is required to promote women inclusiveness in formal labour force, equitable

access to employment opportunities, growth for advancement and increased wage rate. This will also trickle down to entrepreneurial policies and help remove barriers and hindrances to female entrepreneurship as a means of reducing women vulnerability to employment.

The lower ratio of women to men participating in the labour market in Sub-Saharan Africa has significant policy and pragmatic implications for women's development in the region. Firstly, political factors play a crucial role in shaping the labour market dynamics for women in SSA. Governments and policymakers need to prioritize gender equality and women's empowerment in their policy agendas. This includes implementing laws and regulations that promote equal opportunities for women in the labour market, such as anti-discrimination laws, maternity leave policies, and measures to address gender-based violence in the workplace. Furthermore, there is a need for political will to invest in education and skills training for women to enhance their employability and access to higher-paying jobs.

Secondly, promoting entrepreneurship among women can be a pragmatic solution to increase female labour market participation in SSA. Governments and organizations can support women entrepreneurs through access to finance, business development training, and networking opportunities. Encouraging women to start and grow their own businesses can not only create more job opportunities for women but also contribute to economic growth and poverty reduction in the region. Lastly, the study's findings highlight the vulnerability of female employment in SSA. Women are more likely to be employed in informal and precarious jobs with low pay and little job security. Therefore, there is a need for pragmatic interventions to improve the quality of female employment, such as promoting decent work standards, providing social protection for informal workers, and addressing gender-based wage gaps.

Strengths and limitations

Political factors, entrepreneurship and female employment vulnerability in sub-Saharan Africa possesses a high level of novelty in the body of knowledge, and this could serve as the strength of this study. In the same vein, this study has a clearly stated research question, and comprehensive

econometric analysis, which would make the contents of the study to be easily understood by both experts and laymen. This study is limited to African countries, further studies could be extended to include newly emerging economies.

Conclusion

This study therefore concludes that the two indicators of entrepreneurship (time required to start a business and start-up procedures required to register a business) are statistically significant but negative and positive, respectively, in explaining women vulnerability to employment in sub-Saharan Africa.

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