



## RESEARCH ARTICLE

### THE IMPACT OF FINANCIAL INCLUSION ON EMPLOYMENT IN WEST AFRICA

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#### ABSTRACT

Restricting financial services to a tiny percentage of individuals in sub-Saharan Africa hinders employment creation and economic growth. Encouraging financial inclusion is essential for economic growth because it enables marginalized people to create jobs via entrepreneurship. Ensuring affordable access to a variety of financial products and services helps mitigate the negative consequences of financial exclusion, which occurs when people struggle to find suitable financial solutions. Using panel data for the 13 West African nations between 2009 and 2021 and 10 variables, the empirical study focuses on the relationship between financial inclusion and employment in West Africa and the role of economic growth in it. It used econometric methodology to analyse the interactions between our variables. This methodology starts with analysing the existence of unit roots in our variables, then exploring the cointegration relationship between these variables, and, finally, estimating the model parameters using the fully modified ordinary least squares (FMOLS) method. The study found that financial inclusion has a positive and statistically significant impact on employment and financial inclusion has a positive and statistically significant impact on economic growth. In one-word, financial inclusion is a tactic used to boost employment and economic expansion in sub-Saharan Africa. The study suggests that commercial banks should increase ATM numbers per 1000 km<sup>2</sup> and grant some economic benefits if used. Financial education should be integrated into national education policies to promote financial inclusion. Public actors should improve the business climate and establish the rule of law to encourage foreign direct investment (BoP, current USD) while increasing the use of mobile money for populations in rural areas to promote financial inclusion.

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## INTRODUCTION

More than a concept, employment is a multi-faceted enigma with countless interpretations and definitions. In macroeconomics, employment encompasses the use of the entire working-age population (JDN, 2019). A person in employment, as defined by the International Labour Office, is a person aged 15 or over who has done at least one hour of paid work in a given week or who is absent from work for specific reasons (annual leave, illness, maternity leave, etc.) and a certain period (Insee, 2021). One of the Sustainable Development Goals (SDG 8) widely regarded as a potential contributor to world peace is the promotion of employment. Policymakers and governments have stressed that the employment issue requires a sustainable solution. Numerous studies have established a direct and positive relationship between financial development (e.g. access to finance) and employment (Ayadi *et al.*, 2019; Molefhi, 2019; Mehry *et al.*, 2020; Bui, 2020; Sakanko, 2020; Ndubaku *et al.*, 2021). It has been theoretically and empirically proven that financial inclusion can reduce unemployment (Bayar, 2016). Financial progress over time leads to increased labour productivity and capital accumulation (Zoaka et Güngör, 2023).

Access to finance is an essential issue for economic growth in sub-Saharan Africa, as it aims to enable disadvantaged units of the labour market to create jobs through entrepreneurship. Financial inclusion is achieved via this technique. It defines the possibility for individuals and businesses to access a range of valuable financial products and services adapted to their needs at a lower cost (WB, 2019; Capó, 2019; Laabid, 2019; Sarra, 2022), while financial exclusion is «when an individual who seeks assistance from the major players in the market faces obstacles in utilising or gaining access to suitable financial products or services that allow them to lead a regular social life within their community » (Brouyaux, 2008). This study extends the literature on financial inclusion by analysing its impact on employment in West Africa, one of Africa's most financially inclusive regions, as shown by Saïdane (2015), and proposes a robust approach to measure the relationship between financial inclusion and employment in West Africa. In addition to the introduction (section 1), the rest of our study is structured as follows: Literature review and theoretical analysis (section 2), research design (section 3), empirical results (section 4), analysis of mechanisms (section 5), conclusion and recommendations (section 6).

## LITERATURE REVIEW AND THEORETICAL ANALYSIS

### The research on the outcome of financial inclusion:

Financial inclusion aims to ensure everyone can access the financial services they need daily. Additionally, it seeks to shield and assist those facing financial difficulties (Banque de France, 2022). Capital accumulation, innovation and entrepreneurship, income and employment, diversification opportunities, productivity and financial security are some pathways through which financial inclusion can stimulate economic development (Abor *et al.*, 2020). Inclusion plays a stabilising role, as shown in the literature based on empirical data (Abor *et al.*, 2020). The study by Azare and Hongli (2020) examined the relationship between financial inclusion and poverty alleviation in West Africa from 2004 to 2015. It used panel data methods like unit root and cointegration tests to analyse data. The findings indicated that while the quantity of commercial banks has a negative effect, financial inclusion favours reducing poverty. Government effectiveness and regulatory quality also had positive impacts on poverty alleviation. To ascertain the effect of financial inclusion on income inequality between 2004 and 2016, Sawadogo et Semedo (2021) examined a sample of 28 sub-Saharan African nations. They discovered that countries with better quality institutions had a greater chance of seeing financial inclusion, which led to a decline in income disparity. Marcelin *et al.* (2021) analysed the macroeconomic impact of foreign banks' inclusion and ownership structure on 44 developing countries between 2004 and 2017. They found that foreign banks can improve the efficiency of the banking sector. Still, this advantage is reduced when intermediation is restricted or inhibited, which can reduce the per capita GDP and production growth. Additionally, the availability of deposit accounts and automatic checks can positively impact economic performance.

### The research on the influence factors of employment:

Employment is one of the fundamental needs of human beings because it is a factor of integration and empowerment (Olihide, 2015). Researchers have identified factors affecting employment based on empirical data. Nazir R. *et al.* (2013) studied six developing Asian countries: China, Indonesia, Malaysia, Pakistan, Philippines and Thailand. Their research data, collected from 1996 to 2011, was tested using the FE technique and the GMM. Their research findings affirmed that regulatory quality is linked to job creation. Li and Zhang (2020) examined the potential correlation between electricity demand, GDP, and employment in Shandong Province, China. Analysis of the cointegration equation coefficients revealed a direct relationship between electricity demand, GDP and jobs, with one positively influencing the others. The Granger causality test showed a unidirectional causal relationship between electricity demand, GDP and employment. Moudjahid *et al.* (2022) analysed macroeconomic data from 1990 to 2019 to examine the long-term impact of foreign direct investment on job creation in Morocco. They adopted an ARDL approach and used the cointegration test. They found that foreign direct investment, trade openness and public investment spending have a significant and rational positive effect on job creation, while money supply does not. Prindandani *et al.* (2023) examined the impact of public spending, investment and education levels on employment and the general well-being of the population. Path analysis was used as an estimation technique using the secondary data.

The results of their analysis revealed that public spending, investment and education levels all have a significant and positive influence on employment in districts and cities.

### The impact of the financial development (or the financial inclusion) on employment:

Researchers have used the impact of financial development (or financial inclusion) on employment to determine the factors that stimulate employment. Pagano and Pica (2012) studied the effect of finance on employment and job distribution. They proposed a model that suggests financial development can boost employment, labour productivity, and wages, but less in developed systems. It can also lead to job redistribution and amplify output during crises. The study found that financial development is positively associated with employment growth in non-OECD countries and negatively correlated with sector disparity. Ndubuaku *et al.* (2021) demonstrated a positive and statistically significant effect of financial development on the employment rate. Also, they confirmed an inverse relationship between the inflation rate and the unemployment rate with the Phillips curve while contradicting Okun's law, suggesting a negative correlation between economic growth and unemployment. Molefhi's study (2019) on employment creation in Botswana shows that the availability of bank branches, account ownership, and borrowing from commercial banks positively impact short-term employment creation. However, deposits with commercial banks negatively affect employment creation. Using the ARDL approach, Sakanko's study (2020), based on the effect of financial inclusion on women's employment participation in Nigeria from 1980 to 2020, discovered a positive association across the long and short terms. Leading economists and policymakers have examined financial inclusion in light of the above information. However, more research needs to be done on our study's topic. This research aims to fill this gap and examine how financial inclusion impacts employment in West Africa. Having carefully examined the above analysis, we put forward the following hypothesis.

**H1:** Financial inclusion has a positive impact on employment.

## RESEARCH DESIGN

**Model setting:** The regression model of the study can be expressed as follows.

$$\text{Emplpop}_{it} = \beta_0 + \beta_1 \text{Cbb}_{it} + \beta_2 \text{ATM}_{it} + \beta_3 \text{Odc}_{it} + \beta_4 \text{Olcb}_{it} + \beta_5 \text{FDI}_{it} + \beta_6 \text{Pse}_{it} + \beta_7 \text{Upg}_{it} + \beta_8 \text{Rpg}_{it} + \beta_9 \text{GDP}_{it} + \varepsilon_{it}$$

**Variables:** The study will adopt ten variables based on the sub-Saharan African context. The variables are described and summarised below in Table no 1.

**Data and sample:** The study will use panel data from 13 West African countries (Ghana, Nigeria, Côte d'Ivoire, Benin, Burkina Faso, Senegal, Gambia, Mali, Niger, Guinea-Bissau, Togo, Cape Verde and Guinea). The study's sampling period runs from 2009 to 2021.

**Descriptive statistics:** Summary statistics for the study variables are presented in Table no 2. The data show that some variables' mean and median values are closely related. The standard deviation of the variables indicating the degree of

**Table no. 1. Definitions of variables and data sources**

	Variable	Description	Source
Dependent variable	Emplpop	Employment/population ratio, 15+, total (%) (modelled ILO estimate)	WDI
	Cbb	Number of commercial bank branches per 1000 km <sup>2</sup>	FAS (IMF)
	ATM	Number of ATMs per 1,000 km <sup>2</sup>	FAS (IMF)
Independent variables	Odcb	Outstanding deposits with commercial banks (% of GDP)	FAS (IMF)
	Olc b	Outstanding loans from commercial banks (% of GDP)	FAS (IMF)
	FDI	Foreign direct investment, net outflows (BoP, current USD)	WDI
Control variables	Pse	Primary school enrolment (% gross)	WDI
	Upg	Urban population growth (annual %)	WDI
	Rpg	Rural population growth (annual %)	WDI
Mechanism variable	GDP	GDP per capita (current US\$)	WDI

**Table no. 2 Summary of descriptive statistics for study variables**

Variable	N	Mean	Median	S.D	Min	Max
Emplpop	169	59.403	57.527	8.196	42.415	79.266
Cbb	169	4.800	1.951	7.590	0.070	32.258
ATM	136	8.150	2.909	12.439	0.100	51.613
Odcb	169	30.073	25.429	17.758	6.560	104.039
Olc b	169	20.837	17.012	12.720	1.437	65.013
LFDI	161	19.481	19.641	1.677	12.157	22.902
Pse	147	95.222	91.509	17.698	59.012	132.467
Upg	169	3.833	3.743	0.821	1.576	5.546
Rpg	169	1.619	1.761	0.907	-1.053	3.823
LGDP	169	7.019	6.782	0.581	6.128	8.276

**Table no. 3. Panel unit root tests or stationarity analysis**

	LEmplpop	LCbb	LATM	LOdcb	LOlc b
Level					
LLC	1.069	1.499	2.498	0.065	4.234
ADF	21.028	27.529	23.923	13.776	7.836
PP	15.912	53.120***	56.378***	18.551	16.630
After the first difference					
LLC	-1.531*	-5.835***	-4.580***	-4.844***	-6.461***
ADF.F	53.518***	68.167***	61.552***	57.294***	88.547***
PP.F	116.818***	129.346***	101.044***	105.516***	112.179***
	LFDI	LPse	LUpg	LRpg	LGDP
Level					
LLC	1.550	-0.844	-0.001	1.726	3.772
ADF	13.184	17.731	11.610	10.528	4.453
PP	10.697	34.741*	12.051	11.029	2.890
After the first difference					
LLC	-7.236***	-5.690***	-4.669***	-1.862*	-9.160***
ADF.F	92.600***	82.348***	50.051***	35.118*	103.589***
PP.F	192.495***	101.194***	60.983***	39.947***	144.217***

Note: \*\*\* indicates significance at 1%, \*\* indicates significance at 5%, and \* indicates significance at 10%.

**Table no. 4. Pedroni and Kao cointegration tests**

Residual Cointegration of Pedroni test				
Alternative hypothesis: Common AR coefficients (within the same dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-0.907	0.818	-1.423	0.923
Rho-Statistic panel	2.094	0.982	1.807	0.965
Panel PP-Statistic	-0.451	0.326	-3.379	0.000***
Panel ADF-Statistic	-0.644	0.260	-2.910	0.002***
Alternative hypothesis: Individual AR coefficients (between dimensions)				
	Statistic	Prob.		
Group rho-Statistic	3.547	0.998		
Group PP-Statistic	-4.560	0.000***		
Group ADF-Statistic	-2.600	0.005***		
KAO residual cointegration test				
	T-Statistic	Prob.		
ADF	1.917	0.028**		

Note: \*\*\* indicates significance at 1%, \*\* indicates significance at 5%.

Table no. 5. Impact of financial inclusion on employment

Variable	Model 1	Model 2	Model 3	Model 4
LCbb	0.517*** (15.786)			
LATM		0.206 (1.371)		
LOdcb			0.028*** (3.145)	
LOlcb				0.417*** (47.277)
LFDI	0.100 (1.278)	0.435** (2.238)	-0.017*** (-3.346)	-0.084*** (-84.884)
LPse	0.153*** (5.455)	-2.530*** (13.123)	0.032* (1.835)	-0.510*** (-15.901)
LUpg	0.743*** (28.454)	0.309*** (3.302)	0.795*** (8.035)	0.087 (0.519)
LRpg	-0.196*** (-6.772)	0.023 (0.420)	-0.296*** (-8.214)	-0.713*** (-10.830)
A-R squared	0.285	-13.866	0.989	0.617

Note: \*\*\* indicates significance at 1%, \*\* indicates significance at 5%, and \* indicates significance at 10%.

Table no. 6. Impact of financial inclusion on economic growth

Variable	Model 1	Model 2	Model 3	Model 4
LCbb	0.165*** (16.883)			
LATM		0.063*** (3.625)		
LOdcb			0.109*** (5.908)	
LOlcb				0.040** (2.016)
LFDI	0.043*** (32.491)	-0.006*** (-3.029)	0.010*** (5.783)	0.062*** (19.866)
LPse	0.386*** (14.147)	-0.0090 (-0.117)	0.417*** (7.861)	0.347*** (6.182)
LUpg	0.683*** (24.148)	0.603*** (2.825)	0.788*** (8.149)	0.844*** (8.124)
LRpg	-0.403*** (-22.360)	-0.608*** (-9.134)	-0.455*** (-12.050)	-0.520*** (-13.396)
A-R squared	0.973	0.970	0.969	0.971

Note: \*\*\* indicates significance at 1%, \*\* indicates significance at 5%, and \* indicates significance at 10%.

concentration of the variables around the mean values is not uniform. The minimum indicates the smallest data value, while the maximum indicates the largest (Minitab, 2023).

## RESULTS

This study aims to investigate whether financial inclusion impacts employment in West Africa and determine the role of economic growth in it. To achieve this objective, we will use econometric methodology with analysing the existence of unit roots in our variables, then exploring the cointegration relationship between these variables, and, finally, estimating the model parameters using the fully modified ordinary least squares (FMOLS) method developed by Phillips and Hansen (1990).

**Unit root tests:** The Levin, Lin & Chu, ADF - Fisher Chi-square, and PP - Fisher Chi-square tests are used in Table no 3 to determine if unit roots exist in the various variables. According to the test results, all of our variables are nonstationary at the level. As a result, following the first difference, they all become stationary, enabling us to firmly reject the null hypothesis that the variables have a unit root.

**Cointegration tests :** Table no 4 presents the results of the cointegration analyses carried out using the techniques of Kao and Chiang (2000) and Pedroni (2004).

The null hypothesis, suggesting an absence of cointegration between the variables, is contradicted and therefore ignored according to the results in the table. Four of the seven tests using Pedroni's procedure show that our variables are cointegrated at the 1% significance level. Moreover, applying Kao's method in our study recognises the cointegration of our variables at a significance level of less than 5%, which allows us to reject the null hypothesis.

## IMPACT OF FINANCIAL INCLUSION ON EMPLOYMENT

Table no 5 below presents the results of the impact of financial inclusion on employment in West Africa. About the financial inclusion variables, the results of our estimations show, in all the estimated models, that the number of commercial bank branches per 1000 km<sup>2</sup> (LCbb), the number of ATMs per 1000 km<sup>2</sup> (LATM), the outstanding deposits with commercial banks (% of GDP) (LOdcb) and the outstanding loans from commercial banks (LOlcb) have positive and (except model 2) statistically significant impacts on employment. As for foreign direct investment (LFDI) (BoP, current USD), two models (models 1 and 2) show that it has a positive and statistically significant impact (model 2) on employment. In comparison, the impact of foreign direct investment (LFDI) (BoP, current USD) is negative and statistically significant for the other two models. The primary school enrolment rate (LPse) (% gross)

also has mixed impacts (positive for two models and negative for two other models) on employment. On the other side, urban population growth (LUp<sub>g</sub>) (annual %) plays a crucial role in employment. An increase in the urban population automatically causes an increase in the level of employment. Thus, all of the four models estimated show that urban population growth (LUp<sub>g</sub>) (annual %) has a positive and statistically significant impact on employment. As for the rural population growth (LRp<sub>g</sub>) (annual %), except for model 2, all the other models validate this variable's adverse and statistically significant impacts on employment.

### MECHANISM ANALYSIS: IMPACT OF FINANCIAL INCLUSION ON ECONOMIC GROWTH

Assessing the impact of financial inclusion on economic growth in West Africa in Table no 6, our results are almost in line with those in Table no 5 relating to the impact of financial inclusion on employment. Indeed, the number of commercial bank branches per 1000 km<sup>2</sup> (LCbb), the number of ATMs per 1000 km<sup>2</sup> (LATM), the outstanding deposits with commercial banks (% of GDP) (LOdcb), and the outstanding loans from commercial banks (% of GDP) (LOlcb) are positive and statistically significant for economic growth. In only one model, foreign direct investment (LFDI) (BoP, current USD) has a negative and statistically significant impact on economic growth. In contrast, it has a positive and statistically significant impact on economic growth in three other models. The primary school enrolment rate (LPse) (% gross) has a negative and statistically significant impact on economic growth in just one model. In contrast, its impact was positive and statistically significant in three others. Urban population growth (LUp<sub>g</sub>) (annual %) plays a crucial role in economic growth. An increase in the urban population automatically causes an increase in economic growth. Thus, all of our estimated models show that urban population growth (LUp<sub>g</sub>) (annual %) has a positive and statistically significant impact on economic growth. As for the rural population (LRp<sub>g</sub>) (annual %), all the models validate this variable's adverse and statistically significant impact on economic growth.

### CONCLUSION AND RECOMMENDATION

Financial inclusion is a strategy for promoting employment and economic growth in sub-Saharan Africa. Through the provision of financial services that are customized to each individual's requirements, financial inclusion helps to lower unemployment while boosting capital accumulation and labour productivity. Our empirical research focused on the impact of financial inclusion on employment in West Africa and the role of economic growth in it, using panel data for the 13 West African countries between 2009 and 2021. It used econometric methodology to analyze the interactions between our variables. This methodology starts by examining the existence of unit roots in our variables, then exploring the cointegration relationship between these different variables, and finally, estimating the model parameters using the FMOLS method. Regarding the impact of financial inclusion on employment in West Africa, the number of commercial bank branches per 1000 km<sup>2</sup> (LCbb), the number of ATMs per 1000 km<sup>2</sup> (LATM), outstanding deposits with commercial banks (LOdcb)(% of GDP) and outstanding loans from commercial bank branches (LOlcb)(% of GDP) have positive and statistically significant impacts on employment. Assessing the impact of financial inclusion on economic growth in West

Africa, the number of commercial bank branches per 1000 km<sup>2</sup> (LCbb), the number of ATMs per 1000 km<sup>2</sup> (LATM), the outstanding deposits with commercial banks (% of GDP) (LOdcb) and the outstanding loans from commercial banks (% of GDP) (LOlcb) are all positive and statistically significant for economic growth. The study suggests that commercial banks increase the number of ATMs per 1000 km<sup>2</sup> and increase financial benefits when these are used for withdrawing or depositing money. The establishment of financial education in the national education policy to raise awareness of financial inclusion. Public actors should clean up the business climate and establish the rule of law and tax policy to encourage foreign direct investment (BoP, current USD). Policymakers should increase Mobile Money and insurance in rural areas to promote broader participation of populations in financial inclusion.

### Abbreviations list

- **INSEE:** Institut National de la Statistique et des études économiques
- **WB:** World Bank
- **OECD:** Organisation for Economic Cooperation and Development
- **ARDL:** Autoregressive Distributed Lag
- **ATMs:** Automated teller machines
- **FE:** Fixed effects
- **GMM:** Generalised method of moments
- **GDP:** Gross Domestic Product

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