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-RESEARCH ARTICLE-

THE IMPACT OF FINANCIAL INCLUSION ON EMPLOYMENT BASED ON EAST, WEST AND SOUTHERN AFRICA: THE ROLE OF ECONOMIC GROWTH

Owandjokuna Jovial Fundji

Department of Finance
School of Finance and Economics,
Jiangsu University, China
ORCID: https://orcid.org/0009-0007-1144-2225
Email: jovialfundji12@gmail.com

─Abstract─

The financial sector plays a pivotal role in driving economic advancement through enhanced access to bank credit for both households and businesses, thereby stimulating economic growth. This growth, in turn, significantly influences employment rates by fostering the success of businesses and increasing capital availability within a thriving economy. This empirical study investigates the relationship between financial inclusion and employment in East, West, and Southern Africa, with a specific focus on the role of economic growth. Panel data spanning from 2009 to 2021 across thirteen West African countries, seven East African countries, and five Southern African countries were analysed using the FMOLS econometric method. Financial inclusion significantly impacts economic growth across all countries and models studied. The study also finds a significant statistical link between economic growth and employment. Given these findings, leveraging financial inclusion initiatives to stimulate economic growth and employment in sub-Saharan Africa is increasingly advocated. The study recommends policy measures such as expanding ATM networks, promoting financial inclusion, and encouraging the use of mobile money in rural areas to enhance financial accessibility and benefits. Policymakers are encouraged to collaborate with financial inclusion institutions, facilitate private sector credit availability, and enhance transparency through the publication of data on financially included populations. Furthermore, integrating financial education into national educational curricula and implementing legislative reforms aimed at improving business climate, infrastructure, institutional frameworks, fiscal policies, and combating corruption are crucial steps forward.

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INTRODUCTION

Employment represents a multifaceted and intricate concept with varied interpretations and definitions. In macroeconomic terms, it refers to the utilization of the entire working-age population (Fundji, 2024; JDN, 2019). According to the International Labour Office, an individual in employment is defined as someone aged 15 or older who has participated in at least one hour of compensated work during a given week, or who is on leave from work due to reasons such as annual leave, illness, or maternity leave for a specified period (Fundji, 2024; Insee, 2021). The promotion of employment is widely acknowledged as a potential contributor to global peace and constitutes one of the Sustainable Development Goals (SDG 8). Policymakers and governments have underscored the imperative of implementing sustainable strategies to address the issue of employment.

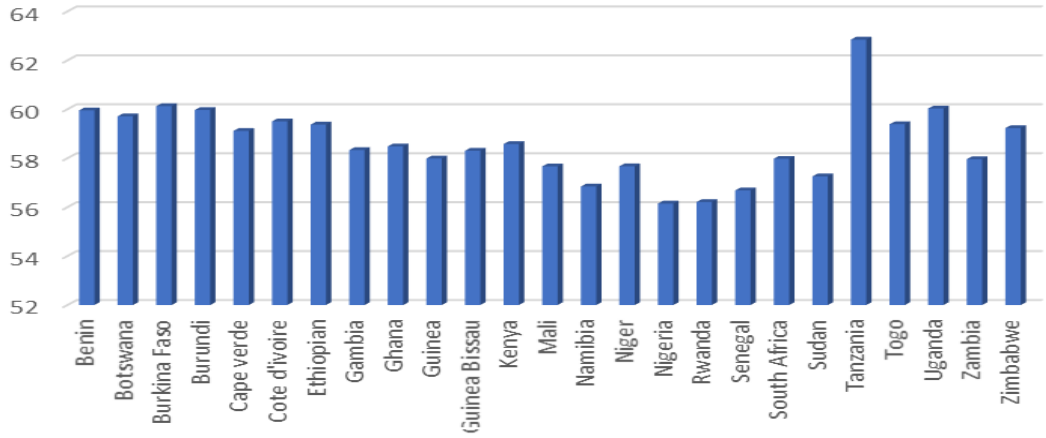

Figure 1: Average Employment-to-Population Ratio, Ages 15 and Above, Total (%) (Modelled ILO Estimate) from 2009 to 2021 (Source: WDI)

Figure 1 depicts a composite measure of employment, specifically the average employment-to-population ratio for individuals aged 15 and above, expressed as a percentage (modelled ILO estimate). The employment-to-population ratio signifies the proportion of a nation's working-age population engaged in employment, as defined by ILOSTAT (2023). Conversely, a lower ratio indicates that a significant segment of the population is either unemployed, not participating in the workforce, or not employed. From 2009 to 2021, the five countries with the highest employment-to-population ratios

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include Tanzania, Burkina Faso, Uganda, Burundi, and Benin, as evidenced in the table. This data underscores the efforts undertaken by these nations to mitigate unemployment rates. It is evident that West African countries still face considerable challenges in combating unemployment, with three out of the top five nations located in East Africa.

Table 1 presents the average values of four selected financial inclusion indicators studied over the period from 2009 to 2021. The study focused particularly on two dimensions of financial inclusion: access and utilization. Examples of these metrics include the density of ATMs relative to total land area, the proportion of population income deposited into bank accounts, and the total loans extended by commercial banks. Burundi, Cape Verde, Burkina Faso, Botswana, and Benin emerge as the top five countries in terms of the average number of commercial bank branches per 1000 square kilometres. Cape Verde exhibits the highest average number of ATMs per 1000 square kilometres compared to all other nations from 2009 to 2021, with figures of 6.870 in Burundi, 6.821 in Nigeria, 6.734 in Burkina Faso, and 6.449 in Botswana. Despite its smaller population size relative to other countries, Cape Verde leads in promoting financial inclusion by facilitating access to banking services directly to households. In contrast, Botswana demonstrates a higher average of Outstanding Deposits with Commercial Banks (% of GDP) compared to the surveyed nations on average, suggesting significant potential for enhancing financial inclusion through this metric. With an average of 29.197 compared to Burkina Faso's 29.043 and Burundi's 28.812—both notably high figures—Botswana's performance in this indicator is noteworthy. In terms of outstanding loans from commercial banks as a percentage of GDP, Kenya records the highest average among all nations surveyed. Kenya's average of 23.232 stands out positively compared to Mali (22.885), Namibia (22.860), Guinea Bissau (22.665), and Botswana (22.551). While all nations demonstrate commitment to financial inclusion, there remains a gap between aspirations for financial inclusion and the practical challenges many individuals face with identification requirements.

According to Zoaka and Güngör (2023), advancements in financial matters over time can enhance labour productivity and foster capital accumulation. In sub-Saharan Africa, access to finance plays a pivotal role in driving economic growth by facilitating job creation through entrepreneurship among marginalized segments of the workforce. Achieving financial inclusion is a crucial milestone in this endeavour, as it allows individuals and enterprises to access a variety of financial products and services tailored to their specific needs, often at reduced costs (Capo, 2019; Fundji, 2024; Laabid, 2019; Sarra, 2022; WB, 2019). Conversely, financial exclusion, as defined by Brouyaux (2008), occurs when individuals encounter barriers in accessing appropriate financial products or services from mainstream providers, hindering their ability to fully participate in social and economic activities within their communities. Molefhi (2021) emphasizes the importance of comprehending the determinants of job generation. Financial inclusion emerges as a strategy through which countries can enhance

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economic efficiency and foster employment, particularly by facilitating access to credit as a catalyst for job creation. Renaudin (2020) further underscores that access to credit and savings is crucial in assisting vulnerable individuals in initiating businesses, managing daily expenses, and progressively improving their livelihoods.

Table 1: Current State of Financial Inclusion 2009 to 2021 on Average (Source: IMF)

N°	Country	Number of commercial bank branches per 1,000 km^2	Number of ATMs per 1,000 km^2	Outstanding deposits with commercial banks (% of GDP)	Outstanding loans from commercial banks (% of GDP)
01	Benin	3.928	6.332	29.147	22.423
02	Botswana	4.020	6.449	29.197	22.551
03	Burkina Faso	4.194	6.734	29.043	22.143
04	Burundi	4.349	6.870	28.812	21.925
05	Cape Verde	4.307	7.026	29.113	22.097
06	Côte d'Ivoire	3.022	5.015	26.466	20.390
07	Ethiopia	3.079	5.071	26.646	20.531
08	Gambia	3.115	5.161	26.683	20.667
09	Ghana	2.781	5.014	26.327	21.304
10	Guinea	2.626	4.904	26.522	21.706
11	Guinea Bissau	2.756	5.215	27.310	22.665
12	Kenya	2.872	5.463	27.890	23.232
13	Mali	2.901	5.559	27.544	22.885
14	Namibia	3.099	5.977	27.392	22.860
15	Niger	3.342	6.437	23.835	19.784
16	Nigeria	3.637	6.821	24.823	20.500
17	Rwanda	3.418	5.743	25.380	21.186
18	Senegal	2.143	4.957	26.155	21.839
19	South Africa	2.126	5.006	24.949	20.590
20	Sudan	0.550	1.220	21.590	11.085
21	Tanzania	2.165	3.252	23.885	16.398
22	Togo	2.405	3.517	24.615	17.054
23	Uganda	2.081	3.330	21.375	14.773
24	Zambia	1.920	3.093	23.352	15.751
25	Zimbabwe	2.430	3.787	23.854	17.336

This study expands the current scholarly understanding of financial inclusion by investigating its influence on employment within Africa's most financially inclusive regions, as delineated by Saïdane (2015), specifically East, West, and Southern Africa. The research also assesses the interplay of economic growth in this context and proposes a rigorous methodology for its measurement. The findings are pertinent to researchers in inclusive finance, donors, policymakers, financial institutions, and marginalized groups excluded from formal financial systems, including rural populations, women, youth, small and medium enterprises, low-income earners, and

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individuals with limited financial literacy.

The structure of the study is as follows: Section 1 introduces the research, Section 2 reviews relevant literature, Section 3 provides a theoretical analysis, Section 4 outlines the methodology employed in this study and presents the results, and Section 5 presents the conclusions derived from the findings.

LITERATURE REVIEW

The Research on the Outcome of Financial Inclusion

To address poverty and foster inclusive prosperity, achieving financial inclusion is essential (WB, 2024). While financial inclusion demonstrates positive impacts on poverty reduction in West Africa, Asare and Hongli (2020) identified adverse effects associated with an increase in the number of commercial banks. Atchi (2022) observed a 3.5 percent decline in the multidimensional poverty index among urban residents and women for every one percent rise in financial inclusion. Park and Mercado (2015) highlighted significant factors that influence financial inclusion in developing Asia. Similarly, Álvarez-Gamboa et al. (2021) documented that financial inclusion contributes positively to poverty alleviation in Ecuador.

There is growing recognition among individuals that human activities contribute to climate change, and the detrimental effects of carbon emissions on both human health and the environment are increasingly acknowledged (Hussain et al., 2023). This awareness has prompted a heightened interest in understanding the relationship between financial inclusion and carbon emissions. In a study conducted in 2020, Le et al. investigated the impact of financial inclusion on carbon dioxide emissions using a dataset spanning 31 Asian countries from 2004 to 2014. Based on available data, there appears to be no discernible link between expanding access to financial services and reducing CO2 emissions. Zaidi et al. (2021) study revealed a positive association between financial inclusion, energy usage, and carbon emissions. Furthermore, they identified significant impacts of carbon emissions on economic growth, infrastructure development, and political corruption. Exploring the impact of financial inclusion on CO2 emissions specifically within the BRICS countries, Asif et al. (2022) conducted an investigation. Their findings indicate that increased financial resources lead to higher carbon dioxide emissions. Zhou et al. (2023) investigate the influence of digital financial inclusion on household carbon emissions using panel data encompassing 30 distinct regions in China from 2011 to 2020. The study reveals that households can achieve significant and consistent reductions in their carbon footprints through the adoption of digital financial services. The magnitude of this impact hinges on two primary factors: the degree of digitization and the breadth of coverage. Sabek and Saihi (2023) explore the dynamic relationships between developed and emerging economies, drawing on data from both categories of countries. They find that carbon dioxide (CO2)

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emissions exhibit correlations with financial investments (FI). In affluent nations, financial integration (FI) notably diminishes CO2 emissions, whereas in developing countries, it has the opposite effect.

According to Zheng et al. (2023), financial inclusion impacts banks' profitability. Ha and Nguyen (2023) researched the influence of financial inclusion on the stability of banks across eight ASEAN countries from 2010 to 2020, noting a significant effect that may be heightened in environments characterized by robust institutional frameworks. Kumar et al. (2022) argue that while financial inclusion remains crucial even in affluent economies, it does not directly affect banks' financial performance. Factors such as bank size, cost management practices, and credit risk management are critical determinants of profitability. Sedera et al. (2022) found that financial inclusion positively influences banks' profitability when considering aspects like accessibility, availability, and utilization. Erulgen et al. (2022) discovered a favourable association between financial inclusion and bank profitability in island banking sectors, noting correlations with bank size and deposit ratios. Conversely, Yakubu and Musah (2024) observed that financial inclusion has adversely impacted the profitability of Sub-Saharan African institutions in the aftermath of the global financial crisis. They also highlighted inflation as a significant factor positively influencing profitability, alongside the stabilizing effect of banking sector stability on bank performance. The relationship between economic growth and profitability exhibits temporal dependencies.

The Research on the Influence Factors of Employment

Nazir et al. (2013) employed a panel model to analyse data spanning six emerging Asian nations from 1996 to 2011. Their findings indicate a direct relationship between regulatory quality and employment growth based on empirical observations during this period. Primandani and Purbadharmaja (2023) investigated the impacts of government expenditure, investment, and education levels on employment and population well-being. Using secondary data and path analyses, they demonstrated that public spending, investment, and education exert significant influences on employment within districts and cities. Li and Zhang (2020) explored the potential relationships among electricity demand, GDP, and employment in Shandong Province, China. Their analysis of cointegration equation coefficients revealed direct associations among electricity consumption, GDP, and employment, where each factor positively influences the others. The Granger causality test further indicated a unidirectional causal link between electricity demand, GDP, and employment. Moujahid et al. (2022) conducted a study using macroeconomic data from Morocco spanning 1990 to 2019, focusing on the long-term impact of foreign direct investment on job creation. They found that variables such as trade openness and public investment spending exhibit varying effects on job creation, all of which are significantly positive in the long run, whereas the money supply does not exert a meaningful impact.

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The Study on Financial Development and Employment

Alkhateeb et al. (2017) analysed data from Saudi Arabia spanning the years 1980 to 2015 to investigate the relationship between Financial Market Development and employment rates. Employing the ARDL approach, they found that employment is positively influenced by investment, Saudization initiatives, and the expansion of financial markets. Wen et al. (2022) examined the impact of financial development on key economic indicators across 120 countries using the system GMM estimation method from 1997 to 2017. Their findings indicated a positive correlation between financial development and both inflation and employment growth, while showing a negative association with overall economic growth. Chen and Chen (2016) focused on how China's economic growth affects labour force participation and employment rates in the country. The regional variability in the impact of financial deepening on labour force participation was notable in their findings. Specifically, they observed that the coefficient for financial efficiency exhibited statistical significance solely in the western region. Additionally, the coefficient for the degree of financial deepening showed statistical significance exclusively in the western area. Ernst (2019) explored the influence of financial market regulation on employment dynamics. He examined the effects of financial market expansion and regulatory reforms on labour market outcomes using data on unemployment flows from the International Labour Organization (ILO). His study highlighted that robust regulation of the banking sector, if implemented before the 2008 financial crisis, could have expedited the recovery of the labor market. Çiftçioğlu and Bein (2017) conducted a study to investigate the relationship between financial development and unemployment rates across ten EU countries. They employed Granger causality tests and panel regressions to analyse data spanning from 1991 to 2012. Their findings indicate an inverse relationship between financial development and the unemployment rate. Numerous economists and policymakers have scrutinized the concept of financial inclusion based on available data and information. Nonetheless, additional research is warranted on our specific area of interest. Our study aims to address this gap by investigating the impact of financial inclusion on employment across West, East, and Southern Africa. Additionally, we will explore the interplay between economic growth, financial inclusion, and employment.

THEORETICAL ANALYSIS

The relationship between financial inclusion and employment is intricate and can be elucidated through various theories that elucidate how financial inclusion can exert direct or indirect effects on employment outcomes (Mehry et al., 2021). One such theory posits that enhanced financial inclusion facilitates economic growth and enhances job creation opportunities (WB, 2024). Improved access to financial services for individuals and businesses enables increased investment, savings, and participation in economic activities (Grant, 2020). This heightened economic engagement can stimulate job creation across different sectors, leading to higher levels of employment (Demirgüç-

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Kunt et al., 2015). This study exclusively focuses on investigating the indirect influence of financial inclusion on employment, utilizing gross domestic product (GDP) as a mediating variable.

The Influence of Financial Inclusion on Economic Growth

The concept of financial inclusion comprises two fundamental components: access to financial services, encompassing metrics such as the availability of banks, bank branches, and ATMs, and the utilization of financial services, including metrics related to loans and deposits (Demirgüç-Kunt et al., 2015; Demirgüç-Kunt et al., 2018; Group, 2021). Enhanced access to financial services can facilitate higher levels of savings, investment, and entrepreneurial activity, thereby fostering economic growth and stability at both local and national levels (Grant, 2020). The utilization aspect of financial inclusion encourages the effective deployment of financial services, enhancing productivity, facilitating business expansion, and bolstering resilience against economic downturns, thereby promoting economic growth (Demirgüç-Kunt et al., 2018). According to the Financial Deepening theory (Demirgüç-Kunt et al., 2015; Group, 2021), broader access to and active utilization of financial services enhance the efficient allocation of economic resources. This enables capital to flow more freely toward productive ventures, stimulating economic growth.

Financial inclusion's impact on economic growth has been extensively explored in empirical research. (Obstfeld, 1994) contends that financial inclusion can enhance economic growth by diversifying risk more evenly and improving the allocation of financial resources. Sene et al. (2023) examined the influence of financial services on Senegal's economic growth. They demonstrated a robust negative correlation between actual GDP growth rates and those lagged by one year, indicating short-term predictability. Moreover, real GDP growth rates exhibit a positive correlation with financial inclusion indices. Over both the short and long terms, the financial inclusion index has shown a favourable and statistically significant impact on Senegal's economic growth. Similarly, Kabikissa (2020) investigated the impact of financial inclusion on economic growth in the Congo. His study illustrates that the expansion of the Congo's economy, particularly its non-oil GDP, significantly benefits from the introduction of financial services. Segning et al. (2024) sought to address whether countries in sub-Saharan Africa (SSA) exhibit varying degrees of financial inclusion and economic growth, considering cultural factors.

The Influence of Economic Growth on Employment

Economic growth exerts a significant impact on employment through the creation of job opportunities and increased demand for labour (IMF, 2019; Statistics, 2018). Variables such as investment, education, and residential location play crucial roles in influencing both economic growth and employment outcomes (Adeem et al., 2019;

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Traore, 2022). Investment stimulates job creation by enhancing economic output (Statistics, 2018), while education improves employability and fosters innovation (Bui & Nguyen, 2019). Foreign direct investment (FDI) introduces new technologies and capital, thereby generating employment opportunities (Loukil, 2016). Higher levels of education are associated with increased worker productivity (Darity Jr & Underwood, 2021). Additionally, residential location, whether rural or urban, significantly impacts employment prospects (Traore, 2022). Comprehensive job options, networking opportunities, and higher wage prospects are typically more abundant in urban areas, whereas rural areas often face limitations in job opportunities (Ananian & Dellaferrera, 2024) It is essential to comprehend these dynamics for effective unemployment management.

Other studies have also investigated the relationship between economic growth and employment. Kamilli et al. (2021) explored the connection between Azerbaijan's annual GDP growth and its employment rate, finding a positive correlation between these variables. The service sector exhibited the highest levels of economic growth in both GDP and employment. The study of Choudhary et al. (2020) discovered a direct association between economic growth and employment opportunities in the Dewas region. Their research highlighted that during periods of economic expansion, the manufacturing sector experiences increased demand for labour, leading enterprises to offer higher wages and improved working conditions to attract workers. Seyfried (2011) analysed the relationship between employment and economic growth (measured by real GDP and the output gap) across the ten most populous states from 1990 to 2003. His computations revealed varying levels of employment intensity among states, averaging 0.47 nationwide, with certain states reaching as high as 0.61. According to his study, the effects of economic growth on employment are not only immediate but also sustained over multiple quarters across the majority of the states examined. Oloni (2013) examined the impact of economic expansion on the creation of new jobs in Nigeria. The findings indicated a general correlation between employment and economic growth, yet the statistical significance of this relationship was not confirmed.

This study examines a range of variables grounded in Financial Deepening Theory and socio-economic factors affecting employment. Its primary objective is to explore the relationship between financial inclusion and employment, emphasizing the role of economic growth. Financial Deepening theory underscores the importance of two facets of financial inclusion: access and utilization. As illustrated in Figure 2, our investigation focuses on key financial inclusion metrics such as access (number of commercial banks per 1000 km2, number of ATMs per 1000 km2) and utilization (outstanding deposits with commercial banks, outstanding loans from commercial banks). The socio-economic factors that significantly influence employment include foreign direct investment, education, and residential location (urban versus rural populations). In summary, our study's conceptual framework is structured around these components.

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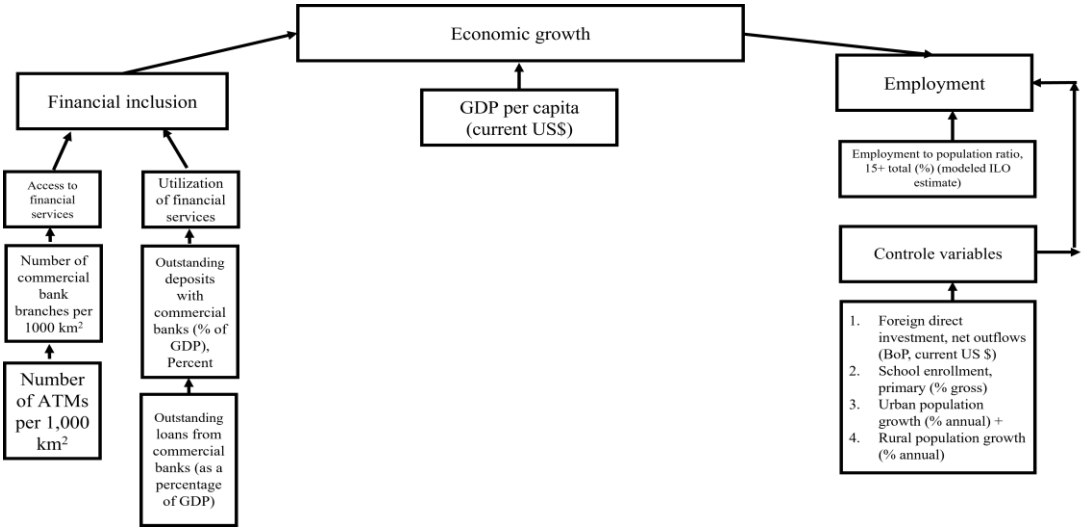

Figure 2: The Conceptual Framework

METHODOLOGY AND RESULTS

Methodology

The Model and the Variables

The definitions of the variables are detailed in Table 2.

Table 2: Definitions of Variables and Data Sources

	Variable	Description	Source
Dependent Variable	Emplpop	Employment/population ratio, 15+, total (%) (modelled ILO estimate)	WDI
Independent Variables	Cbb	Number of commercial bank branches per 1000 km^2	FAS (MFI)
	ATM	Number of ATMs per 1,000 km^2	FAS (MFI)
	Odcb	Outstanding deposits with commercial banks (% of GDP)	FAS (MFI)
	Olcb	Outstanding loans from commercial banks (% of GDP)	FAS (MFI)
Control Variables	FDI	Foreign direct investment, net outflows (BoP, current USD)	WDI
	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

The model is formulated as a multidimensional linear model, represented as follows:

$$Emplpop_{it} = \beta 0 + \beta 1 Cbb_{it} + \beta 2 ATM_{it} + \beta 3 Odcb_{it} + \beta 4 Olcb_{it} + \beta 5 FDI_{it} + \beta 6 Pse_{it} + \beta 7 Upg_{it} + \beta 8 Rpg_{it} + \beta 9 GDP_{it} + \varepsilon_{it}$$

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The study will utilize panel secondary data gathered from 25 African nations, categorized into three regions: West Africa, East Africa, and Southern Africa, spanning the period from 2009 to 2021. West African countries encompass Ghana, Nigeria, Côte d'Ivoire, Benin, Burkina Faso, Senegal, Gambia, Mali, Niger, Guinea-Bissau, Togo, Cape Verde, and Guinea. East African countries comprise Kenya, Tanzania, Ethiopia, Rwanda, Burundi, Uganda, and Sudan. Southern African countries consist of Zambia, Zimbabwe, Botswana, South Africa and Namibia. Table 3 provides statistics for the variables examined in this study. In our dataset, FDI and GDP values were transformed logarithmically due to their significance. The data indicates a notable correlation between the mean and median values of certain variables. However, it is important to recognize that the distribution of values around the mean is not uniform across the standard deviation of the variables. According to Minitab (2023), the minimum value denotes the lowest data point, while the maximum value corresponds to the highest observed in the dataset.

Table 3: Summary of Descriptive Statistics for Study Variables

Variable	N	Mean	Median	S.D	Min	Max
Emplpop	325	59.951	57.527	11.473	38.860	84.673
Cbb	308	3.928	1.764	6.368	0.070	32.258
ATM	275	6.320	2.420	9.921	0.046	51.613
Odcb	308	29.147	24.240	19.132	6.560	191.767
Olcb	308	22.427	16.320	16.121	1.437	134.241
LFDI	314	19.694	19.829	1.861	10.922	24.444
Pse	275	101.075	100.865	19.075	59.012	149.271
Upg	325	3.879	3.850	1.130	0.482	7.596
Rpg	325	1.604	1.604	1.092	-1.937	4.791
LGDP	325	7.136	7.136	0.821	5.320	9.075

Panel Unit Root Tests and Cointegration Tests

This study seeks to explore the impacts of financial inclusion on employment and economic growth in West, East, and Southern Africa. To achieve this research objective, we will employ various testing methods such as panel unit root analysis, panel cointegration analysis, and a specialized data methodology called FMOLS. FMOLS is a critical technique for estimating and testing single equation cointegrating relationships (IGI Global, 2024), pioneered by Phillips and Hansen (1990). The stationarity analysis entails verifying whether all variables are integrated of order 1 and whether they exhibit stationarity after undergoing first differencing. Subsequently, this analysis will guide us in conducting cointegration tests.

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Panel Unit Root Tests

Table 4 presents the results of panel unit root tests conducted in this study. According to the Philippe-Perron (PP) test statistic, the variables LCbb and LATM were found to exhibit stationarity at the level, while the Levin, Lin & Chu t* (LLC) test statistic indicated that the variable Pse was also stationary at the level. Although LRpg showed non-stationarity in the first difference based on the PPF (Philippe-Perron Fisher Chi-square) statistic, all variables demonstrated stationarity after first differencing. Consequently, the study confidently rejects the null hypothesis of a unit root in the variables.

Table 4: Panel Unit Root Tests or Stationarity Analysis

	LEmplpop	**LCbb**	**LATM**	**LOdcb**	**LOlcb**
Level					
LLC	1.2370	0.557	1.862	0.183	1.541
ADF	42.274	56.784	42.714	30.414	20.688
PP	41.085	93.507***	93.164***	46.310	42.884
First Difference					
LLC	-3.947 ***	-9.534 ***	-7.253 ***	-6.396 ***	-9.32433 ***
ADF.F	121.405 ***	135.228 ***	116.555 ***	95.759 ***	162.576 ***
PP.F	256.121 ***	208.348 ***	198.976 ***	201.909 ***	233.306 ***
	LFDI	LPse	LUpg	LRpg	LGDP
Level					
LLC	0.300	-.87350***	-0.904	0.823	4.780
ADF	33.028	44.5009	38.422	32.852	12.148
PP	29.939	48.0146	61.564	30.843	7.255
First Difference					
LLC	-12.217 ***	-8.26002 ***	-6.454 ***	-4.914 ***	-12.283 ***
ADF.F	195.624 ***	102.777 ***	92.764 ***	65.980 **	207.222 ***
PP.F	369.994 ***	144.019 ***	103.226 ***	53.356	275.404 ***

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

Cointegration Tests

The cointegration tests assess the existence of long-term relationships among various variables in the study. The critical probabilities necessitate interpretation. According to the Kao test, the presence of cointegration indicates a long-term relationship between the variables. The Pedroni test comprises multiple subtests, where we analyse the

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critical probability. A probability below 5% indicates the presence of cointegration. Table 5 presents the outcomes from cointegration analyses employing Kao and Chiang (2001) and Pedroni (2004) methodologies. The results in the table reject the null hypothesis suggesting no cointegration among the variables. Therefore, our variables exhibit cointegration, indicating a significant long-term relationship between them. Pedroni's approach comprised seven tests, with five tests showing cointegration at a 1% significance level and one test at a 5% significance level. Similarly, Kao's method confirmed cointegration among our variables at a significance level below 5%, leading to the rejection of the null hypothesis. The confirmation of cointegration among our variables from the tests directs us towards selecting an appropriate estimation technique for our study: FMOLS.

Table 5: Pedroni and Kao Cointegration Tests

	Residual Co-Integration of Pedronie			
Alternative Hypothesis: Common AR coefficients (within the same dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-3.962	1.000	-3.560	0.999
Rho-Statistic panel	4.327	1.000	3.183	0.999
Panel PP-Statistic	-4.874	0.000***	-14.592	0.000***
Panel ADF-Statistic	-11.484	0.000***	-2.156	0.016**
Alternative Hypothesis: Individual AR coefficients (between dimensions)				
	Statistic	Prob.		
Group rho-Statistic	4.558	1.000		
Group PP-Statistic	-19.777	0.000***		
Group ADF-Statistic	3.130	0.000***		
	KAO Residual Co-Integration Test			
	T-Statistic	Prob.		
ADF	-1.746	0.040**		

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

RESULTS

The Impact of Financial Inclusion on Economic Growth

Table 6 outlines the influence of financial inclusion on economic growth in West, East, and Southern African nations. Our estimates show that variables such as LATM (number of ATMs per 1,000 km2), LCbb (commercial bank branches per 1,000 km2), LOdcb (outstanding deposits with commercial banks), and LOlcb (outstanding loans from commercial banks) have positive and statistically significant effects on economic growth across all models. Specifically, a 1% increase in LCbb corresponds to a 0.064% increase in economic growth, while a 1% increase in LATM leads to a 0.030% increase in economic growth. Increases of 1% in LOdcb and LOlcb result in 0.391% and 0.246% increases in economic growth, respectively. Foreign direct investment (LFDI) also

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shows a positive and statistically significant impact on economic growth in all models, highlighting its pivotal role in fostering employment and enhancing economic growth. Moreover, primary school enrolment rate (LPse) demonstrates positive and statistically significant effects on economic growth in three out of four estimated models. Conversely, urban population growth (LUpg) significantly influences economic growth positively and with statistical significance across all models. Lastly, rural population growth (LRpg) exhibits negative and statistically significant effects on economic growth in all models except model 3.

Table 6: Impact of Financial Inclusion on Economic Growth Based on West, East and Southern African Countries

Variable	Model 1	Model 2	Model 3	Model 4
LCbb	0.064***			
	(11.007)			
LATM		0.030***		
		(2.732)		
LOdcb			0.391***	
			(53.144)	
LOlcb				0.246***
				(30.412)
LFDI	0.010***	0.003**	0.001**	0.004***
	(15.938)	(2.305)	(1.757)	(4.335)
LPse	-0.087***	0.397***	-0.324***	-0.203***
	(-4.602)	(10.718)	(-12.164)	(-8.096)
LUpg	1.381***	1.815***	0.247***	1.085***
	(32.580)	(20.407)	(3.917)	(18.963)
LRpg	-0.422***	-0.280***	0.118***	-0.254***
	(-18.231)	(-5.631)	(3.535)	(-8.287)
A-R squared	0.937	0.926	0.943	0.939

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

The Impact of Economic Growth on Employment

Table 7 presents the findings from our analysis of the relationship between economic growth and employment across West, East, and Southern African nations. Our study reveals a significant positive association between employment and GDP. Furthermore, we find a positive and statistically significant impact of financial inclusion, specifically the number of automatic teller machines (ATMs), on employment. Specifically, a 1% increase in ATMs correlates with a 0.040% increase in employment, all other factors held constant. Additionally, FDI exhibits a positive and statistically significant influence on employment. However, we observe a negative impact on employment associated with the primary school enrolment rate (LPse); a decrease in LPse correlates with reduced employment. Urban population growth (LUpg) emerges as a significant driver of economic growth, with its positive and statistically significant impact

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extending to employment as well. Conversely, rural population growth (LRpg) is found to have a negative and statistically significant effect on employment.

Table 7: Impact of Economic Growth on Employment Based on West, East and Southern African Countries

Variable	Impact of Economic Growth on Employment: General Analysis
LGDP	0,006 ***
	(5,344)
LATM	0,040 ***
	(24,769)
LFDI	0.001***
	(6,355)
LPse	-0.0150***
	(-2,763)
LUpg	0,090***
	(6,525)
LRpg	-0,066***
	(-9,107)
A-R Squared	0,989

Note: *** indicates the significance at 1%

CONCLUSION

The financial sector boosts economic growth by improving access to credit for households and businesses, thus enhancing employment rates. This study explores the relationship between financial inclusion and employment in East, West, and Southern Africa, with a specific focus on the role of economic growth. Findings highlight that metrics like ATMs, bank branches, deposits, and loans positively affect economic growth. Additionally, GDP growth correlates positively with employment, with ATMs playing a significant role in boosting job opportunities. The research recommends that governments enhance ATM availability, promote financial inclusion, and leverage mobile money platforms in rural areas to expand access to financial services and benefits. Policymakers are advised to collaborate closely with financial inclusion entities to monitor progress, facilitate private sector lending, and disseminate data on the inclusivity of financial services. Political leaders should integrate financial education into national curricula, educating students on basic financial literacy principles and emphasizing the advantages of maintaining bank or mobile money accounts. Legislative efforts should concentrate on improving the business environment, upgrading infrastructure, strengthening institutions, implementing sound fiscal policies, upholding the rule of law, and combating corruption to attract foreign direct investment.

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