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Luxury or necessity? The dynamics of urbanization in Sub-Saharan Africa

ABSTRACT

Relevance. Urbanization is a crucial transformative process that plays a key role in achieving sustainable economic development in the global economy. An urbanized economy can serve as a vital structural mechanism to foster inclusive economic growth by generating employment, reducing income inequalities, and alleviating poverty. However, Sub-Saharan Africa (SSA) is characterized by a unique and slow urbanization process that sets it apart from other regions, despite steady economic growth in recent decades.

Research Objective. This study aims to empirically assess the patterns and determinants of urbanization in SSA, focusing on the question of whether it is driven primarily by mere economic survival or by improvements in quality of life.

Data and Methods. Based on Lee's rural push-urban pull migration theory, the Common Correlated Effects Mean Group estimator was used to analyze data from 44 SSA countries between 1996 and 2022.

Results. Access to basic amenities has a positive and significant impact on urbanization in Africa, although the effect was more modest for improved amenities. Additionally, the agricultural sector was found to hinder urbanization, while the manufacturing and services sectors promote it through structural transformation.

Conclusion. The paper concludes that urbanization in SSA is driven by both the need for economic survival and the desire to improve quality of life. To enhance the region's global competitiveness, it is crucial to invest in and develop critical infrastructure that supports the urbanization process.

KEYWORDS

urbanization, Sub-Saharan Africa, structural transformation, economic growth, panel model

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Роскошь или необходимость? Динамика урбанизации в странах Африки к югу от Сахары

АННОТАЦИЯ

Актуальность. Урбанизация – это важнейший процесс преобразования, который играет ключевую роль в достижении устойчивого экономического развития в мировой экономике. Урбанизированная экономика может служить жизненно важным структурным механизмом для содействия инклюзивному экономическому росту за счет создания рабочих мест, сокращения неравенства доходов и сокращения бедности. Однако Африка к югу от Сахары (SSA) характеризуется уникальным и медленным процессом урбанизации, который отличает ее от других регионов, несмотря на устойчивый экономический рост в последние десятилетия.

Цель исследования. Целью этого исследования является эмпирическая оценка закономерностей и детерминант урбанизации в SSA, с упором на вопрос о том, обусловлена ли она в первую очередь простым экономическим выживанием или улучшением качества жизни.

КЛЮЧЕВЫЕ СЛОВА

урбанизация, Африка к югу от Сахары, структурная трансформация, экономический рост, панельная модель

БЛАГОДАРНОСТИ

Исследование выполнено при финансовой поддержке Министерства науки и высшего образования Российской Федерации в рамках Программы развития Уральского

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Данные и методы. На основе теории миграции «выталкивание из сельской местности в города» Ли была использована оценка средней группы общих коррелированных эффектов для анализа данных из 44 стран SSA в период с 1996 по 2022 год.

Результаты. Доступ к основным удобствам оказывает положительное и значительное влияние на урбанизацию в Африке, хотя эффект был более скромным для улучшенных удобств. Кроме того, было обнаружено, что сельскохозяйственный сектор препятствует урбанизации, в то время как секторы производства и услуг способствуют ей посредством структурной трансформации.

Заключение. В статье делается вывод о том, что урбанизация в странах к югу от Сахары обусловлена как потребностью в экономическом выживании, так и желанием улучшить качество жизни. Для повышения глобальной конкурентоспособности региона крайне важно развивать критически важную инфраструктуру, которая поддерживает процесс урбанизации.

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奢侈还是必需？撒哈拉以南非洲的城市化动态

摘要

现实意义：城市化是一个关键的转型过程，在实现全球经济可持续发展方面发挥着关键作用。城市化经济体可以通过创造就业机会、减少收入不平等和减轻贫困，成为促进包容性经济增长的重要结构性机制。然而，尽管近几十年来经济持续增长，撒哈拉以南非洲（SSA）的城市化进程却独特而缓慢，这使其有别于其他地区。

研究目标：本研究的目的是实证评估撒哈拉以南非洲地区城市化的模式和决定因素，重点关注城市化的主要驱动因素是经济生存还是生活质量提高。

数据与方法：基于Lee的从农村到城市的移民推动理论，采用群体平均值估算总体相关效应，分析 1996年至2022年44个撒哈拉以南非洲国家的数据。

研究结果：在非洲，获得基本生活设施对城市化有积极而显著的影响，尽管这对改善生活设施的影响较小。此外，农业部门阻碍了城市化，而制造业和服务业则通过结构转型促进了城市化。

结论：文章的结论是，撒哈拉以南非洲的城市化是由经济生存的需要和提高生活质量的愿望共同推动的。为了提高该地区的全球竞争力，必须发展支持城市化进程的关键基础设施。

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ДЛЯ ЦИТИРОВАНИЯ

Mamman, S. O. (2024). Luxury or necessity? The dynamics of urbanization in Sub-Saharan Africa. *R-Economy*, 10(3), 259–271. doi: 10.15826/recon.2024.10.3.016

关键词

城市化、撒哈拉以南非洲、结构转型、经济增长、面板模型

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Introduction

Urbanization is driven by the concentration of human capital and knowledge-intensive activities in cities, leading to information spillovers that enhance innovation (Keivani, 2009). Urban growth, shaped by demographic shifts, investment patterns, and migration, causes some cities to expand while others decline, resulting in polarization (Angel, 2023). The rise of global cities, the transformation of national urban hierarchies, and the formation of transnational city networks have concentrated power and wealth in key centers, influencing global economic and policy decisions while restructuring cities internally (Curtis, 2011). In response, many

developing countries have implemented programs to accelerate urbanization and stimulate economic growth (Hope, 1998; Pugh, 1995). However, rapid urban development presents new challenges for researchers and planners, who must address the demographic, socioeconomic, and ecological changes it brings (Zeng et al., 2022).

The pace of global urbanization has accelerated in the last three decades, particularly in China, where urbanization levels have reached 50% (Chen et al., 2013; Normile, 2008)¹. Sub-Saharan

¹ Estimates are based on data from the World Bank, World Development Indicator.

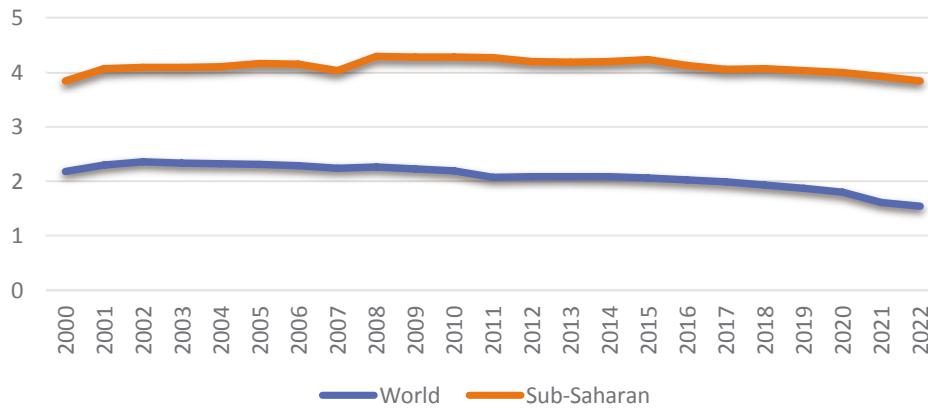


Figure 1. Global urban growth rate

Source: Estimates are based on data from the World Bank, World Development Indicator (25th February 2024, Retrieved from: <https://databank.worldbank.org/source/world-development-indicators>)

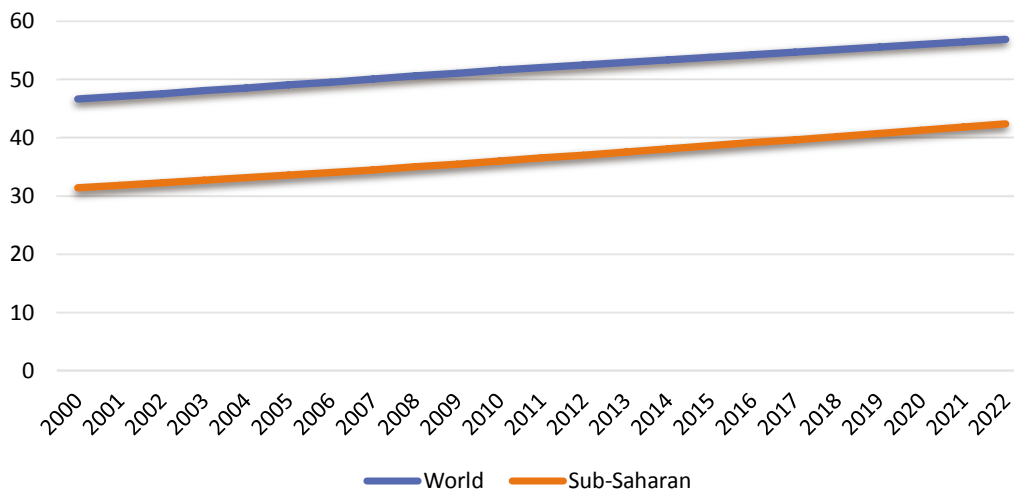


Figure 2. Urban share of population growth

Source: Estimates are based on data from the World Bank, World Development Indicator (25th February 2024, Retrieved from: <https://databank.worldbank.org/source/world-development-indicators>)

Africa (SSA) is undergoing a significant demographic transformation, as urbanization is reshaping its social, economic, and physical landscapes (Combes et al., 2023). This study explores the dynamics of urbanization in SSA, where, according to OECD and ECA (2022), the number of cities and their populations have dramatically increased since 1990, with urban centers emerging as hubs of innovation and economic development, poised to influence the continent’s future (Sakketa, 2023).

The global shift toward urbanization in the early 2020s included about 50% of the population. SSA is expected to double its urban population, raising Africa’s share of the global urban population from 11.3 % in 2010 to an estimated 20.2 % by 2050 (Saghir & Santoro, 2018). This trend is also

reflected in Figures 1 and 2, which show that the region mirrors the global movement.

Despite this growth, SSA faces challenges due to its inadequate infrastructure and services, which strain urban support systems (Pariente, 2017).

This study aims to empirically assess the patterns and determinants of urbanization in SSA, focusing on the question of whether urbanization in the region is driven primarily by mere economic survival or by improvements in quality of life. The findings could provide valuable insights for policymakers and stakeholders involved in promoting sustainable economic development by examining how urbanization contributes to inclusive growth in SSA.

The hypothesis suggests that access to basic amenities positively and significantly influences urbanization in SSA, which means that urbanization serves as a crucial structural mechanism for economic development. However, the impact of improved amenities is expected to be moderate, implying that while urbanization is essential for structural transformation, it also reflects an enhancement associated with better access to services.

The study's objectives are twofold: first, to analyze the critical role of structural transformation in the urbanization process of Sub-Saharan Africa; and second, to evaluate the distinct impacts of basic versus improved amenities on this urbanization process.

This study relies on panel data analysis for 44 Sub-Saharan African countries, covering the period from 1996 to 2022. It employs the Common Correlated Effects Mean Group (CCEMG) estimator, which accounts for cross-sectional dependence due to the interconnectedness of these countries. The study anticipates that access to basic and improved amenities will have a positive and significant impact on urbanization. Conversely, the agricultural sector is expected to negatively impact urbanization due to its predominantly rural nature, while the manufacturing and services sectors are anticipated to positively and significantly influence urbanization by driving structural transformation and enhancing the region's global competitiveness.

The remainder of the study is structured as follows: Section 2 provides the literature review; Section 3 outlines the analytical methods and data; Section 4 details the results and findings; and Section 5 concludes with policy implications.

Literature review

Urbanization is closely linked to economic growth and development, with evidence suggesting a significant interaction between these factors. Chen et al. (2013) summarize the transformation of human society since the Industrial Revolution using three key terms: industrialization, urbanization, and globalization. They argue that industrialization catalyzes economic growth, which, in turn, drives urbanization through labor specialization and the expansion of non-agricultural sectors (Chen et al., 2013). This relationship implies that while economic growth fosters urban population expansion and modern industry, urbaniza-

tion also contributes to economic development. Consequently, the shift in urbanization trends from developed to developing nations is quite evident.

Theoretically, urban growth is often driven by push-pull migration factors, as outlined in Lee's theory of migration (see Lee, 1966). According to this framework, migration is influenced by several key elements. Factors at the place of origin often include push factors such as limited employment opportunities, lower wages, and reduced access to services, which encourage individuals to migrate to urban areas in search of better prospects. Conversely, urban areas typically present pull factors, including higher wages, more job opportunities, and improved living conditions, thus attracting individuals from rural settings.

However, migration from rural to urban areas can be hindered by intervening obstacles such as legal restrictions, transportation costs, and a lack of information about the urban job market, which may constrain movement to urban areas. Personal factors, including individual attributes like age, education, and family ties, also play a crucial role in influencing one's ability to migrate.

Extensive studies by de Haas (2021), Garelli and Tazzioli (2021), and Kumpikaitė-Valiūnienė et al. (2021) have examined these determinants. This theory suggests that urbanization is shaped by a combination of economic, social, and personal factors, leading to selective migration patterns that contribute to urban growth.

Additionally, urbanization can occur as a result of a balance between the factors that attract people to cities and those that sustain the urban population. In line with this, Sjoberg (1965) identifies three essential prerequisites for the development and stability of a city, which include a good environment that provides fresh water and a favorable climate, advanced technology that enables food surpluses to support a non-farming population, and strong social organization that ensures social stability and a robust economy. These factors collectively contribute to the sustainability and growth of urban areas.

Empirical studies offer varied perspectives on the relationship between urbanization and economic development. Bloom et al. (2008) argue that urbanization should be viewed more as an indicator rather than a driver of economic development, which challenges policies that aim to manipulate urbanization rates to influence econom-

ic progress. In contrast, Liu et al. (2024) identify a positive correlation among urbanization, economic agglomeration, and growth, noting the presence of spatial spillover effects.

However, Nguyen and Nguyen (2018) highlight a non-linear relationship, suggesting that urbanization beyond a certain threshold may actually hinder economic growth. Kolomak (2012) reports that a 1% increase in urban population share boosts regional productivity by 8%, although the impact of urbanization is diminishing. The study further explains that the initial stages of urbanization have a more significant effect on productivity, while as urbanization progresses, the rate of productivity gains from additional urban population shares tends to decrease.

Njoh (2003) observes a positive relationship between urbanization levels and the Human Development Index (HDI), indicating that urban growth can contribute to overall regional development. Gugler (1996) emphasizes the importance of understanding the complex interaction between urban and rural areas, which significantly affects migration patterns, economic activities, and political processes.

Hope (1999) advocates for policies that address urban unemployment and promote agricultural and rural development to ensure that the urban labor force is absorbed at decent wages. Meanwhile, Oberai (1993) provides insights into the challenges faced by mega-cities in the developing world, including the need to balance economic efficiency with decentralization, and offers policy recommendations for managing urban population growth, employment, and poverty alleviation.

Polese (1997) examines the rapid urban growth in West Africa, questioning the equivalence of this growth to socio-economic development and calling for sustainable policy responses to the paradox of rapid urbanization occurring without corresponding development.

The impact of climate change on urbanization has also been recognized, with Barrios et al. (2006) identifying significant effects of rainfall patterns on rural-urban migration in sub-Saharan Africa, particularly following the removal of movement restrictions after decolonization. Similarly, Li and Ma (2014) showed an inverted-U-shaped relationship between urbanization and environmental quality, with a turning point around a 60% urbanization rate. Abro et al. (2024) observe that in

SSA, urbanization and other factors positively affect CO2 emissions, with the exception of energy intensity.

Davis and Golden (2017) highlighted the role of urbanization in the economic development of pre-industrial societies, noting that areas with higher agricultural employment tend to have lower urban populations. Henderson (2002) argues that investments in interregional transport and telecommunications promote balanced urban development and reduce industry concentration. Similarly, Moomaw and Shatter (1996) suggest that a balanced distribution of urban centers is more conducive to economic development than the heavy concentration of population and resources in a single, large city.

Bertinelli and Strobl (2007) explored the impact of urban primacy on economic growth, finding a positive correlation and suggesting that there is an optimal range of urban primacy levels beneficial for developing countries. Kolosov and Nefedova (2014) discussed the criteria for urbanization levels and the challenges in distinguishing urban from rural areas, contributing to the discourse on urban geography. Fan et al. (2018) investigated the dynamics of urbanization and sustainability in Asian Russia (Western Siberia, Eastern Siberia, and the Far East) by using satellite imagery and a sustainability index to assess urban growth, economic development, social progress, and environmental conditions, underscoring the complex interplay among these factors.

Overall, research literature reflects a consensus that urbanization is a dynamic process influenced by economic, social, and personal factors. It plays a significant role in shaping economic and environmental outcomes, with important implications for policy and governance. However, this review of the existing literature has also revealed several gaps related to contextual issues.

First, there is a lack of explicit evaluation of the role of structural transformation in the urbanization process of sub-Saharan Africa, despite its critical influence on urban development. This oversight underscores the need for an in-depth assessment of structural transformation as a key component of urbanization. Second, the distinct impact of basic versus improved amenities on urbanization has not been adequately explored. This research aims to fill this gap by separately analyzing these amenities to determine their respective contributions to the urbanization process. Final-

ly, I am going to address a methodological gap by employing an analytical technique that accounts for the interdependencies within the region, which are intensified by globalization and shared economic integration. This approach is crucial for understanding the complex dynamics driving urbanization in a globally connected context.

Method and data

This study is anchored on the Lee’s migration theory as its theoretical framework, explaining the push-pull dynamics of migration. In line with this, Gross and Ouyang (2021) have linked these dynamics with structural economic changes, notably the shift from agricultural to industrial and service economies. For example, the expansion of manufacturing and services leads to the spatial concentration of economic activities, catalysing urban growth as observed in London during the Industrial Revolution. Thus, this urban development, driven by concentrated industries, elevates expected urban wages. In the same instance, technological advancements in agriculture increase productivity while reducing labour demand, thus expanding urban areas at the expense of rural ones (Gross & Ouyang, 2021). Bertinelli and Black (2004) suggest that urbanization metrics may reflect this agricultural-industrial transition. In this regard, the function relationship is given as

$$Urban = f(Infrastructure, structure\ change, population, socioeconomic)... \tag{1}$$

here, urbanization is posited to stem from improved infrastructure, structural changes, population growth, and socioeconomic developments.

Estimation technique and data

We employed the Common Correlated Effects Mean Group (CCEMG) estimator, which accounts for cross-sectional dependence arising from the interconnectedness of Sub-Saharan African countries. The CCEMG estimator addresses unobservable common factors by incorporating cross-sectional averages, ensuring consistency in dynamic panels with varying parameters under the assumption of these unobserved common factors. The panel baseline model is given as

$$urb_{it} = \alpha_0 + \beta_1 access_{it} + \beta_2 basic_{it} + \beta_3 str_{it} + \beta_4 pop_{it} + \beta_5 unemp_{it} + \epsilon_{it}... \tag{2}$$

where urb_{it} represents the urban population, $access_{it}$ denotes an index of access to clean energy and electricity, $basic_{it}$ measures access to basic amenities, str_{it} is a vector which captures structural transformation, pop_{it} is the total population, and $unemp_{it}$ is the unemployment rate.

We analyzed data from 1996 to 2022 across 44 Sub-Saharan African countries (see Table 1 for a detailed description).

Results and Discussion

Table 2 presents the descriptive analysis of the data. Within the sample, access to clean fuel and electricity ranges from -2.63% to 59.17%

Table 1

Data description and sources

Variable	Description	Source
Urbanization (urb)	Total urban population	World Bank, WDI
Improved amenities (IMA)	PCA of factors such as access to clean fuels and technologies for cooking, urban (% of urban population) and access to electricity, urban (% of urban population)	World Bank, WDI
Basic Amenities (Basic)	PCA of people using at least basic drinking water services, urban (% of urban population) and people using at least basic sanitation services, urban (% of urban population).	World Bank, WDI
Internet	Internet users (% of population)	World Bank, WDI
Population (pop)	Total population	World Bank, WDI
Unemployment (unemp)	Unemployment, total (% of total labor force)	World Bank, WDI
Agric VA (AgricVA)	Agriculture, forestry, and fishing, value added (% of GDP)	World Bank, WDI
Manufacture VA (ManuVA)	Manufacturing, value added (% of GDP)	World Bank, WDI
Service VA (ServVA)	Services, value added (% of GDP)	World Bank, WDI

Source: the author’s calculations are based on data from the World Bank, WDI (25th February 2024, Retrieved from: <https://databank.worldbank.org/source/world-development-indicators>)

Table 2

Descriptive statistics

Variable	Sample	Mean	Std. Dev.	Min	Max	Observations
urban	overall	7589031	13300000	76778	1.17E+08	N = 1012
	between		12800000	123010.3	7.58E+07	n = 44
	within		4162153.	-2.54E+07	4.88E+07	T = 23
cleanf	overall	31.53982	33.025	0.100	99.300	N = 968
	between		32.743	0.523	98.705	n = 44
	within		6.465	-2.628	59.174	T = 22
electric	overall	65.00721	22.392	3.500	100.000	N = 961
	between		20.130	22.970	99.661	n = 44
	within		10.719	29.321	103.570	T = 21.8409
bwater	overall	82.84176	9.517	48.064	100.000	N = 1003
	between		8.833	64.614	99.889	n = 44
	within		3.769	66.292	101.424	T = 22.7955
bsanit	overall	43.48785	18.516	8.996	95.898	N = 1001
	between		17.671	15.272	94.784	n = 44
	within		6.124	23.546	66.612	T = 22.75
iinternet	overall	11.78379	15.508	0.006	73.500	N = 948
	between		8.129	1.470	33.761	n = 44
	within		13.226	-16.070	62.466	T = 21.5455
pop	overall	15.93104	1.490	11.876	19.202	N = 1012
	between		1.496	12.119	18.920	n = 44
	within		0.176	15.443	16.343	T = 23
unemp	overall	8.156913	6.767	0.320	28.840	N = 1012
	between		6.712	0.933	25.187	n = 44
	within		1.312	2.621	14.764	T = 23
agricVA	overall	21.46612	13.414	0.893	79.042	N = 994
	between		12.933	1.794	53.810	n = 44
	within		4.246	-2.297	48.689	T-bar = 22.5909
manuVA	overall	10.67017	5.984	0.233	35.215	N = 890
	between		5.484	2.297	31.778	n = 42
	within		2.525	-0.995	20.050	T-bar = 21.1905
servVA	overall	46.12599	11.024	6.448	83.814	N = 988
	between		9.887	30.894	73.531	n = 44
	within		5.151	21.680	66.600	T-bar = 22.4545

and 29.32 % to 103.6%, respectively. On the other hand, access to basic water and sanitation services varies from 66.29 % to 101.42% and 23.55 % to 66.61 %, respectively, indicating greater access to basic than enhanced amenities. The structural transformation process, measured by the value addition in agriculture, manufacturing, and services sectors, shows the service sector as a predominant GDP contributor, with values ranging from 21.60 % to 66.6%, compared to agriculture and manufacturing.

Pre-estimation tests for cross-sectional dependence and slope homogeneity were conducted, based on the assumption of unobservable common factors' effect.

Table 3

Cross-sectional dependence test

Variable	CD-test	abs(corr)
Urban	134.95***	0.971
Access	94.63***	0.799
Basic	71.63***	0.983

Variable	CD-test	abs(corr)
internet	130.92***	0.94
Pop	145.86***	0.989
Unemp	16.71***	0.472

Null hypothesis: Cross-sectional independence

Table 3 confirms cross-sectional dependence, rejecting the null hypothesis of independence. Slope homogeneity tests, detailed in Table 4, indicate heterogeneous slopes across countries.

Table 4

Slope homogeneity test

Statistics	Delta	p-value
	14.665	0
adj.	20.852	0

Null hypothesis: Homogenous slopes.

These test results support our choice of estimation technique. Table 5 details the urbanization dynamics in Sub-Saharan Africa, with separate models accounting for agriculture (Model 1), manufacturing (Model 2), services (Model 3), and a comprehensive model (Model 4) including all factors, to examine the impact of structural transformation on urbanization. For access to improved or

enhanced amenities, we observed a generally positive but statistically insignificant impact on urbanization, except in models one and three. This suggests that while amenities such as electricity and cleaner energy are important, they may not be strong drivers of urbanization or urban migration. This could be due to the relatively lower quality or reliability of electricity in the region, which may not be sufficient to attract people to urban areas. Additionally, the high cost of these amenities in urban centers may deter their use, thereby reducing their influence on urban growth. These findings align with Pariente (2017), who notes that the potential economic benefits of urbanization in Sub-Saharan Africa are offset by infrastructural strain, creating a dilemma for urban growth in the region.

Access to basic amenities was found to have a positive and significant effect on urbanization, indicating that factors like drinking water and sanitation services are crucial in attracting people to urban areas. These essential services strongly influence migration decisions, as they are vital for daily life. In contrast, internet accessibility showed a positive but statistically insignificant effect on urbanization.

This suggests that while the internet is an essential service, its impact on urbanization in

Table 5

CCEMG estimate of urbanization

VARIABLES	Model 1	Model 2	Model 3	Model 4
Access	-0.00307 (0.0147)	0.00225 (0.00238)	0.0130* (0.00735)	0.000716 (0.00300)
Basic	0.0487 (0.136)	0.243** (0.104)	0.129 (0.130)	0.303** (0.128)
internet	0.000517 (0.000639)	0.000308 (0.000356)	0.000223 (0.000697)	0.000370 (0.000294)
pop	1.230*** (0.239)	1.133*** (0.171)	1.139*** (0.229)	0.951*** (0.221)
unemp	-0.00285 (0.00201)	-0.00159 (0.00181)	0.000801 (0.00272)	0.0110 (0.00819)
agricVA	-0.000165 (0.000836)			-0.000578 (0.00175)
manuVA		0.000538* (0.000305)		0.000313 (0.000384)
servVA			0.000271** (0.000108)	0.000440 (0.000356)
Constant	-5.206 (4.031)	-3.460 (2.719)	-3.700 (3.835)	-0.342 (3.592)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6

Robustness analysis using static models

VARIABLES	fixed	random	DK-fe	DK-re
Access	0.00243 (0.00979)	0.023** (0.0106)	0.00243 (0.00703)	0.023 (0.0137)
Basic	0.000900 (0.00890)	0.0200** (0.00947)	0.000900 (0.0155)	0.0200* (0.00964)
internet	0.000702** (0.000282)	0.0011*** (0.000309)	0.000702*** (0.000201)	0.0011*** (0.000193)
Pop	1.416*** (0.0272)	1.268*** (0.0246)	1.416*** (0.0367)	1.268*** (0.0497)
Unemp	0.00392** (0.00178)	0.00559*** (0.00193)	0.00392** (0.00144)	0.00559*** (0.00193)
agricVA	-0.00151* (0.000810)	-0.00281*** (0.000877)	-0.00151 (0.00131)	-0.00281** (0.00107)
manuVA	0.00123 (0.00101)	0.00126 (0.00112)	0.00123 (0.00160)	0.00126 (0.00139)
servVA	-0.000995* (0.000581)	-0.000520 (0.000639)	-0.000995* (0.000523)	-0.000520 (0.000890)
Constant	-7.799*** (0.441)	-5.344*** (0.406)	-7.799*** (0.622)	-5.344*** (0.863)

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sub-Saharan Africa is not as evident. This could be due to limited internet infrastructure and the high cost of access in the region. On the other hand, population growth was found to have a positive and significant impact on urbanization. As the natural population increases, rural-to-urban migration is expected to follow, contributing directly to urban growth. This finding reflects the demographic dynamics of Sub-Saharan Africa, where urban areas are still in the early stages of development and are expanding rapidly. Combes et al. (2023) also argue that urbanization in Sub-Saharan Africa is largely driven by rapid population growth but is constrained by limited infrastructure.

Regarding unemployment, the results show a mixed but insignificant impact. While this outcome may seem counterintuitive, it suggests that the unemployment rate does not have a straightforward effect on urbanization. This could be because, although urban areas offer more job opportunities, they also have higher competition for jobs, leading to mixed incentives for migration.

Regarding the role of structural transformation in urbanization, we observe a negative and insignificant impact from the agricultural sector. This suggests that improvements in agricul-

ture may encourage populations to remain in rural areas by providing better livelihoods, thereby slowing urban migration. Given that the region is predominantly agrarian and relies heavily on unskilled and semi-skilled labor in agriculture, the shift from rural to urban areas is not immediate. On the other hand, the manufacturing sector has a positive and significant impact on urbanization. Despite the slow pace of industrialization in Sub-Saharan Africa, this finding highlights the potential of the manufacturing sector in the urbanization process, supporting the idea that industrial development in cities creates jobs and attracts migrants seeking employment. Similarly, the services sector shows a positive and significant effect on urbanization, suggesting that the growth of the service sector in urban areas is a major pull factor for migration, offering diverse socioeconomic opportunities.

The findings of this study imply that urbanization in the region is not primarily driven by agricultural development but rather by other sectors. Specifically, the positive and significant effects of population growth, access to basic amenities, and the expansion of manufacturing and services indicate that urbanization is likely driven by the pull of opportunities and improved living conditions

in urban areas. In this context, urbanization can be considered a necessity for several reasons: first, it reflects the economic transition from a primarily agrarian society to one that is more industrial and service-oriented. Second, it indicates that people are moving to urban areas in search of basic social amenities, as opposed to improved amenities, which are often associated with high costs and limited accessibility.

Robustness analysis

Further analysis using static models such as fixed effects, random effects, and Driscoll-Kraay estimators, corroborates earlier findings (see Table 6). Notably, internet access and unemployment emerge as significant urbanization factors in this model.

Contrary to prior results, the service sector's impact is negative, suggesting potential estimation biases, including unobserved common errors, which were addressed in the earlier model.

Conclusion

The Sub-Saharan Africa region is experiencing rapid urban population growth without corresponding development in infrastructure and services, leading to deficits in housing, water, sanitation, and transportation. This study seeks to identify the primary drivers of urbanization in Africa, examining whether they arise from necessity or luxury, as observed in other regions. The findings indicate that while improved amenities, such as electricity and cleaner energy, have a positive impact, they are not strong drivers of urbanization, likely due to their lower quality and high

costs. In contrast, basic amenities like drinking water and sanitation have a significant positive effect on urbanization, highlighting their critical role in attracting people to cities.

Internet access and unemployment show mixed and generally insignificant effects on urbanization, suggesting that their roles are not clear, with internet infrastructure limitations and job competition in urban areas influencing urbanization patterns. Agricultural improvements seem to deter urban migration by providing rural livelihoods, while the manufacturing and services sectors have a significant positive impact, indicating that industrial and service-oriented job opportunities are key factors in urban growth.

Overall, the study suggests that urbanization in the region is driven more by the pursuit of basic amenities and socioeconomic opportunities than by agricultural development, reflecting a shift towards an industrial and service-based economy. This trend aligns with the ongoing demographic expansion in urban areas, despite the constraints posed by limited infrastructure.

Therefore, the study recommends that government policies should promote urbanization by focusing on enhancing basic and improved amenities in urban areas rather than solely accommodating population growth. Additionally, investment in critical infrastructure and the subsidization of high-cost services are essential to ensure broader access to these amenities. Furthermore, skill development in the agricultural sector and its gradual mechanization are important to facilitate a smooth transition to the manufacturing and services sectors, which are vital for sustainable urbanization.

Appendix

Appendix A.1 Cross-sectional averages

VARIABLES	Model 1	Model 2	Model 3	Model 4
<i>CA(lurban)</i>	-0.0190 (0.0296)	-0.00182 (0.0227)	0.0261 (0.0256)	-0.0136 (0.0203)
<i>CA(access)</i>	-0.00688 (0.00860)	0.00964 (0.00689)	-0.00294 (0.00820)	0.0101 (0.00742)
<i>CA(basic)</i>	0.0639*** (0.0168)	0.00246 (0.0133)	0.0477*** (0.0184)	0.0294 (0.0283)
<i>CA(internet)</i>	-0.000677 (0.000665)	-0.000791** (0.000374)	-0.000197 (0.000533)	-0.000463 (0.000540)
<i>CA(pop)</i>	0.0236 (0.0295)	0.0143 (0.0160)	-0.0172 (0.0251)	0.0180 (0.0165)
<i>CA(unemp)</i>	0.00822***	0.00258**	0.00216	-0.00361

VARIABLES	Model 1	Model 2	Model 3	Model 4
	(0.00305)	(0.00121)	(0.00288)	(0.00647)
CA(agricVA)	-4.67e-05			0.000208
	(0.000552)			(0.000525)
CA(manuVA)		-0.00144*		-0.000218
		(0.000820)		(0.00139)
CA(servVA)			-0.000786*	0.000294
			(0.000463)	(0.000948)

Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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