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Trade openness and employment: Implications on urbanization in Sub-Saharan Africa

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Abstract

Why are African countries urbanizing so fast? How do cities promote growth and why is it important to solve urban issues in Africa? In the context of higher push for trade liberalization multilaterally, it is not trivial to ask these set of question. In this study the main objective is to check the influence of trade openness of African economies on their urbanization rate. We also assess, how evolution of non-agricultural employment has also impacted this rate. We used panel data specifications, both in static and dynamic design. The data used are collected between 1990 and 2019 on 38 African countries. Although generally urbanization has increased during recent years in Africa, regions have experienced different pathways in the process. The results show that both trade openness and non-agricultural employment have been motivation for people to urbanize over years, in Africa. When we consider countries with high amount of people living in slums, they are more driven by employment purpose. Other variables such as per capita GDP and the fertility rate have positive and significant influence, while FDI and national investment have mixed impact. It is important to collaborate in a continental level to take advantage of the rapid urbanization.

Keywords: *Urbanization, Trade openness, Employment, Panel data*

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1. Introduction

The United Nations (UN, 2017) forecasts that 68 % of the world population will live in the urban areas by 2050. This is informed by rapid urbanization rates in major countries around the world. The most urbanized regions today include the Northern and South America, Asia and Europe. Africa still has a lot of its population living in the rural area (43%, according to the UN (2017)) but with the fastest rate of urbanization. Urbanization is crucial for attaining the 2030 Agenda of Sustainable Development Goals (SDGs). Goal 11 of the SDGs focuses on inclusive, safe, resilient and sustainable cities. Over years, urbanization has had different effects in developed and less developing countries. One sector where urbanization has magnified clearly is on the international markets. The continuous vague of trade liberalization policies has helped some countries to reduce drawbacks provoked by urbanization.

The link between urbanization and trade openness have been assessed in the literature. Early researches projected a U-shaped relationship between these variables (Wheaton and Shishido, 1981; Williamson, 1965). The general conception points out that urban population boom leads to increased imports when the industrial sector is poorly developed. Another strand of research postulates that urbanization can increase exports as populated cities fuel manufacturing

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activities. As expressed in the New Economy Geographic theory, trade costs reduce as economic activities are located close to workers and therefore enhance their productivity (Krugman, 1991). Populated urban areas generate scale economies and positive externalities for firms around. Therefore, firms closer to urban areas are likely to embrace the international market and become more efficient.

An example is the pathway followed by countries like China. Each province specializes in a particular activity to supply the Chinese market then exports to the world. That further increases the positive trade balance of the country (Zhang and Wan, 2017). It is important to be cautious while bringing the Chinese case in the analysis but the fact is, exports growth and GDP per capita were highly correlated with urbanization growth; from 19.3% in 1980 to 58% in 2017 (World Bank, 2018). That pattern is also identical in the East Asia region in countries like the Philippines and Korea.

Africa seems to be in the same pathway than it was in Asia with a growing middle class, which drives the domestic demand for a consistent supply of high-quality goods. The poor industrial force let countries rely heavily on imports, from within and outside the region. It is worth nothing that urbanization also causes many problems such as: housing issues, pollutions, increasing price index, crime (as many African countries urbanization generates many slums), tax collection, infrastructure needs, food security, land tenure, and so on. African cities are crowded with more than 40% of its population on average, living in urban area. Elsewhere in the world urbanization is associated with economic growth but in Africa Urbanization fails to consistently eradicate poverty as the continent has the highest rate of slum in the world (Lall *et al*., 2017). Furthermore the continent has been engaged in many economic agreements. The effects of those agreements are unclear regarding poverty reduction but have enabled the continent to reach a certain level of trade openness and trade liberalization. Even though trade has significantly increased between Africa and its trading partner integration it has poorly caused structural change in sun-Saharan Africa (Seck, 2015).

This study assesses the link between urbanization and openness in Africa during the last decades. The main objective is to analyze trade openness effects on urbanization and how non-agricultural employment has evolved concomitantly in Africa. It appears crucial to assess these links while international organizations and governments efficiently design regional and continental policies to take advantage of the demographic dividend in Africa. One way to take advantage of that population, with many youths, is to drive them around manufacturing or service sector.

The paper is organized as follows. Section 2 presents a related literature in which we provide a briefly the literature around trade openness and urbanization. Section 3 presents the methodology as well as the data used. Section 4 shows the findings and section 5 conclude.

2. Literature review

Works could approach the theoretical underpinnings of this study based on the new economic geography and urban economics. The existing empirical literature on urbanization and cities typically finds that there is a mixed relationship between urbanization and its determinants (Holmes *et al*., 2010; Michaels *et al*., 2012). However, recent research on the relationship between urbanization and trade openness includes variables such as carbon dioxide emissions and energy consumption (Borck and Pflüger, 2019; Fallis *et al*., 2019; Lu *et al*., 2019). The theoretical backgrounds identifying urbanization process concludes in one hand a process uncorrelated to initial population growth and in another hand a process correlated either to past population growth or to natural advantages of a city.

Development economics states that urbanization is highly correlated with economies' structural change, even though empirical works do not find a conclusive statement on the question. Also, theories of new economic geography provide an explanation of the reallocation of economic activities from agriculture to non-agriculture (Fujita *et al*., 1999; Krugman, 1991). The Importance of transport costs and market access has direct impacts on urbanization rate. For example, in Davis and Vernon Henderson (2003), government policies such as price controls and industrial protection affects urbanization through the industrial structures' protection.

Though an empirical literature has examined several determinants of rapid urbanization across the world. These works include Linsky (1965), Berry (1961), Glaeser and Kahn (2008), and so on. Closest in spirit to our work is (Michaels *et al*., 2012), whose examine the evolution of urbanization rate in the United States using subcounty data to track the evolution of urban and rural population. They based the analysis on the Gibrat's Law and find that in intermediate densities, current population growth is correlated to past population growth. Also related is Engin Duran and Pelin Özkan (2015), which analyzes trade openness and city interaction based on the new economic geography conclusions and find that trade liberalization tends to reduce the size of the primate city and help increase the agglomeration economies in non-primate cities. Neither paper examines the importance of trade facilitation and infrastructures on urbanization – an analysis for which data on trade facilities are well suited.

Our research is also related to the importance of trade infrastructures such as ports and quality of exit points of a country. Following the literature, one channel through which trade openness affects the structural change is through trade facilitation. Improving logistic and infrastructure are empirically demonstrated to reduce trade costs and thereby increase country openness, which in turn enhance urbanization rate. This work focuses also on Sub Saharan Africa. Data availability pushes numerous works on the region and tools can easily be gathered to analyze urbanization rate on the continent. Although authors assert that urbanization rate in Africa is a sustainable way to link agricultural to industrial activities, many experts highlights the damageable impact of slums in the process (Glaeser and Kahn, 2008).

3. Methodoloy

3.1. Data and variables

The data used in this study are annual and cover up the period from 1990 to 2019 of countries within Sub-Saharan Africa. The majority of variables come from the World Development Indicator (World Bank, 2019). Countries selected are different in many ways therefore conducted a global analysis may hide specific characteristics. Dummy variables are added to control for specific unobservable factors that could impact our results. For clarification, a comprehensive list of variables is provided in Appendix.

Since the end of the 1990s and the beginning of the 2000s, many small cities in developing country have proved their capacity to grow significantly and handle the consequences they can bring. With that growth many experienced some improvements in term of infrastructures and basic services, which tends to attract more people main cities. As noted by Michaels *et al*. (2012), when a country grows it experiences relocation of labor from rural agricultural to urban manufacturing and services. However, the objective of this paper is to assess trends on urbanization and how trade openness has evolved in African context. We retain countries that have experienced sustainable economic growth over the studied years. We make a distinction between those that have high rate of urban population living in slums from countries that seem to have attained structural change. A list of these countries is reported in the appendix.

3.2. Econometrics specification

The importance of urbanization is perceptible in the development process. However, urbanization is capture by three main variables, namely the proportion of people living in urban area, the population living in the largest city and the population concentration (Zhang and Wan, 2017). For the study's purpose we follow a modified version of Catin *et al*. (2008):

$$Urb_{it} = \alpha_0 + \alpha_{1it} Open_{it} + \alpha_{2it} Nagri_{it} + \gamma X_{it} + u_{it} \quad ...(1)$$

where *Urb* captures the Urbanization variable, *Open* represents Openness degree, *Nagri* is the non-agricultural employment. Next, *X* is a set of control variables used in the analysis, *u* is the error term while *i* indicates the country and *t* the time. At this stage we classify countries depending on the average rate of people living in slums. That repartition follows a threshold coming from the literature as many African countries have experienced urbanization but also poverty (Collier and Venables, 2016).

To reach the goal of this study we regress (1) using a panel data method. There is a high probability of endogeneity issues due to variable selection, determinants of urbanization that are not necessarily used in the literature but that could play a role for the African context.

Therefore, we add to the analysis dynamic panel estimation in the robustness check. The proportion of population living in largest city is used as an indicator of urbanization as suggested in the literature (Henderson, 2003). Throughout the analysis openness and GDP per capita are assumed to be endogenous, meaning that they are explained by others variables. For dealing with this bias we used their lagged values as instruments.

4. Results

4.1. Descriptive statistics

African economies account for the most opened countries in the world, in terms of trade openness. One reason is the huge vague of trade liberalization. Generally, each region has experienced a constant rate of openness related to the GDP but there exist some differences within the continent.

Trade openness has remained quite flat with lower average over the considered time. Natural mineral exporters have a relative low rate on average and we observe that in Nigeria, Guinea, Democratic Republic of Congo, Niger and Angola. Lesotho, Eswatini and Djibouti have higher values over time. For example, Lesotho trade openness is 34% higher than their GDP in 2018. It is important to also note that those latter countries are small by their size and population.

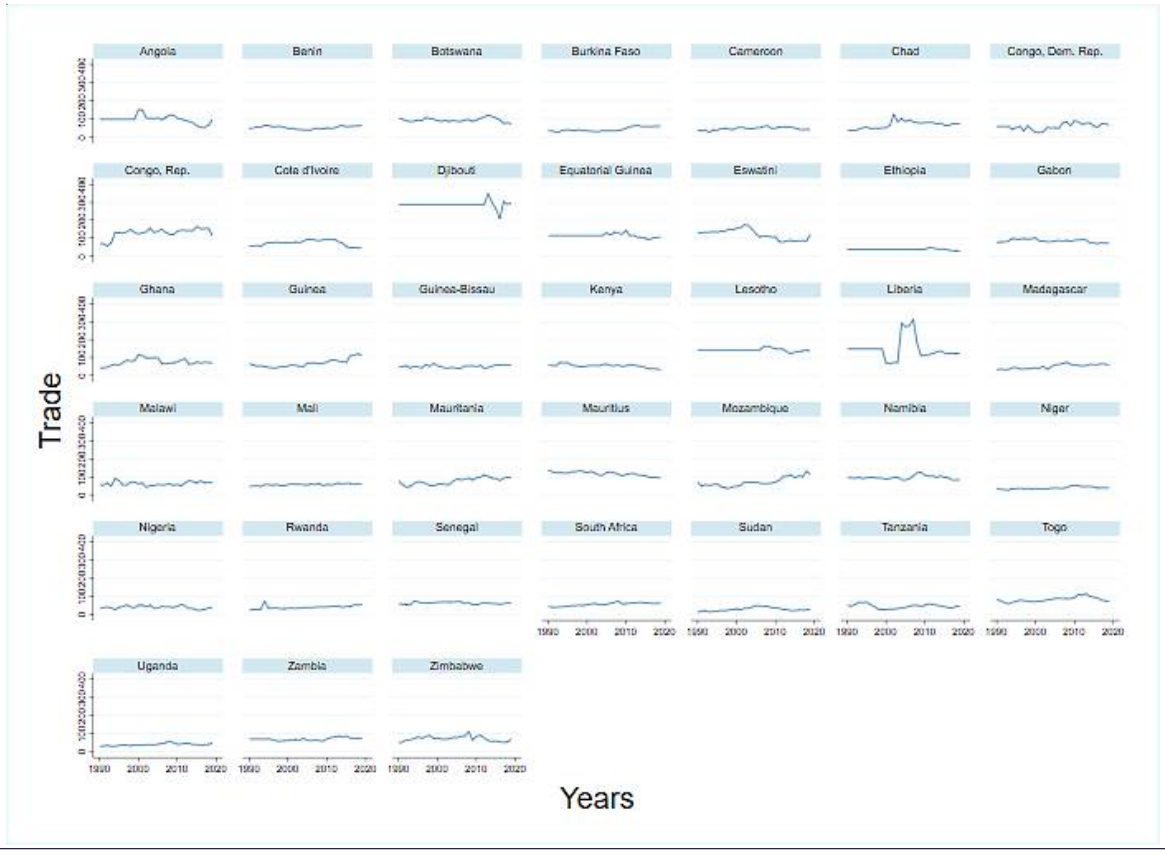

Figure 1: Evolution of trade openness by country

Otherwise, GDP per capita are also dispersed over countries and time. Sub-Saharan countries experienced rapid growth. Figure 2 presents urbanization ratio in sub-regions over the studied period and economic growth rate by subregions. According to the UN, the amount of population living in urban area increases consistently each year and projected to be more than half of the world population by 2050. However, that growth is not equal across regions. As pointed by Glaeser *et al*. (2004) coastal cities attract more people for diverse reason. In sub-Saharan countries those in the central part experience rapid urbanization and many of those countries in our sample are coastal.

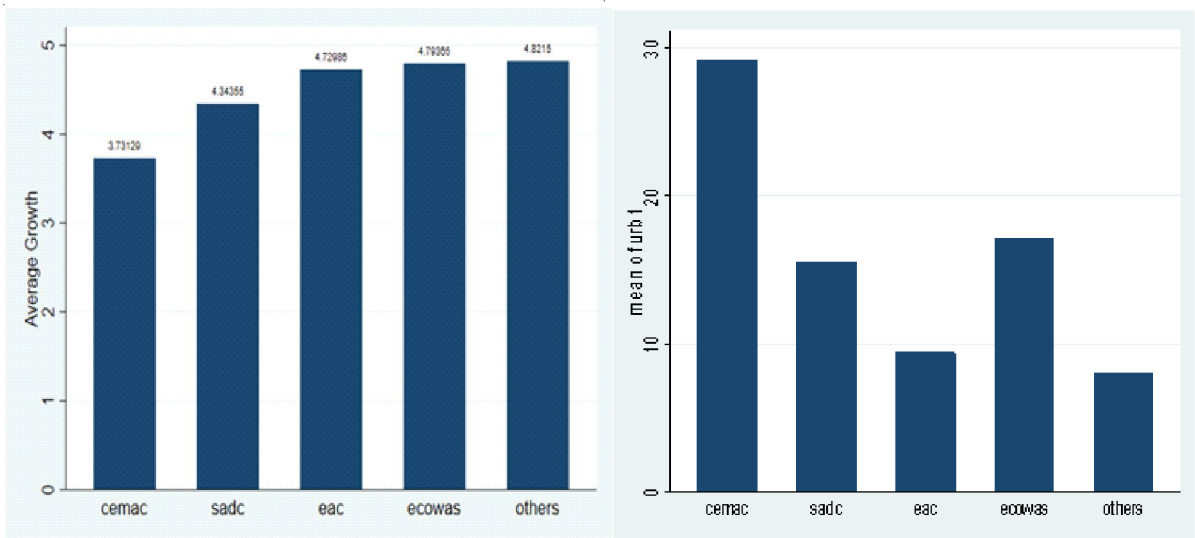

Figure 2: Average GDP growth and urban population rate by regions

Figure 2a reports average growth rate in Sub-Saharan Africa and Central region has the lowest growth rate over the studied period even though that region is well endowed in natural resources. As far as EAC and ECOWAS concern, it is noted higher growth rates and their average rate is above 4.5%. Many countries in those regions have been ranked among the ten most performing countries in the world in terms of growth rate in during the last decade. Other countries dominated the group of regions. The few numbers of countries inside that group can explain that. Average growth can hide stylized facts within each country but it is a good indicator for over viewing trends.

Economic growth is created by many factors both real and nominal. Human capital is a key factor in the development process of a country and trends show that populated and quality people are boosting factors as well. In Figure 2b, we present average urbanization growth rate in Sub-Saharan Africa. The central African countries has high rate of people living in urban area depending on the first big city or second or third town most populated. Another key fact pops up from results show that eastern countries, which perform quite well in term of growth rate, still have a lowest rate of population living in urban area on average. Over the period more that 15% of people in the South was living in urban area. That is due to the development stage of those countries. These countries are characterised by the high number of inhabitants living in rural areas for agricultural purpose.

4.2. Econometric results and interpretation

In a first step we regress conventional panel data model, namely fixed effect and random effect regression. Tables 1 and 2 in this section present results from different specification. In column 1 the OLS method is applied while in column 2 to 4 panel fixed effect results are presented by using the two different measures of urbanization retained in this study. That method is preferred to others because conclusions from the Hausman test provided in the appendix advocates so.

Although in Table 2, almost all variables have significant effects on dependent variable, their amplitude varies considering the specification. In all cases trade openness have positive values, despite the last estimate is not significant.

Table 1: Estimation results with urbanization rate

VAR	(1)	(2)	(3)	(4)
TRADE	0.146***	0.0166***	0.0182***	0.0570***
	(0.00830)	(0.00513)	(0.00489)	(0.00878)
GDP	13.55***	5.138***	6.655***	–6.365***
	(0.641)	(0.366)	(0.358)	(0.581)
EMP	–0.216***	0.102***	0.0855***	0.483***
	(0.0313)	(0.0180)	(0.0171)	(0.0413)
FDI	0.0573	–0.0193*	–0.00770	0.00497
	(0.0403)	(0.0102)	(0.00958)	(0.0190)
POP	6.80e–08***	1.43e–07***	1.47e–07***	1.27e–07***
	(9.33e–09)	(1.34e–08)	(1.41e–08)	(1.76e–08)
FIN_DEV	0.0332*	0.00366	0.0511***	0.00568
	(0.0184)	(0.0119)	(0.0132)	(0.0264)
INV	–0.102**	–0.0298*	–0.0171	–0.0653***
	(0.0415)	(0.0153)	(0.0194)	(0.0144)
FER	0.585	–2.979***	–2.829***	–1.813***
	(0.430)	(0.204)	(0.204)	(0.260)
Constant	–61.57***	8.669***	–3.002	61.74***
	(5.159)	(2.985)	(2.978)	(4.082)
Obs.	991	991	691	240
R-squared	0.592	0.664	0.773	0.819

Note: Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table 2: Estimation results with largest agglomeration

VAR	(1)	(2)	(3)	(4)
TRADE	0.0217***	0.0263***	0.0189***	–0.00109***
	(0.00306)	(0.00317)	(0.00633)	(0.000252)
L.TRADE	-	-	-	0.00120***
				(0.000240)
GDP	2.652***	3.850***	–4.764***	–0.414***
	(0.214)	(0.223)	(0.419)	(0.0547)
L.GDP	-	-	-	0.187***
				(0.0530)
EMP	0.0498***	0.0311***	0.209***	0.00173***
	(0.0105)	(0.0106)	(0.0298)	(0.000395)
FDI	–0.0171***	–0.00699	–0.0296**	0.00415***
	(0.00581)	(0.00592)	(0.0137)	(0.000448)
POP	–9.13e–09	–1.46e–08*	–1.51e–09	1.14e–09***
	(7.77e–09)	(8.84e–09)	(1.27e–08)	(2.18e–10)
FIN-DEV	–0.0151*	–0.00207	–0.0101	0.00382***
	(0.00821)	(0.00827)	(0.0191)	(0.000287)
INV	–0.0515***	–0.0359***	–0.0255**	–0.000369
	(0.00886)	(0.0121)	(0.0104)	(0.000404)
FER	–0.735***	–0.483***	–1.676***	0.0471***
	(0.121)	(0.132)	(0.188)	(0.00574)
CORRUP	-	-	-	–0.00299
				(0.00350)
DEMOC	-	-	-	0.0153***
				(0.00251)
Constant	–1.104	–10.73***	45.58***	1.083***
	(1.707)	(1.858)	(2.944)	(0.0850)
Regional FE	No	No	No	Yes
Obs.	871	631	240	594
R-squared	0.432	0.549	0.624	-

Note: Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

As far as the primacy (the population in the largest city) or the rate of urban population concern, the Krugman conclusion is respected for SSA countries. That is, as long as a country continues to open, urban areas become attractive because, despite the cost of living, they served as one mean of finding better jobs and eradicating poverty.

Furthermore, cities are still attracting workers and firms on average. There are positive and significant effects of non-agricultural employment on urbanization. That is, all else constant increasing the non-agricultural jobs improve the urbanization rate by 10% on average. When the country group with higher rate of people living in slums (column 4) is considered, the employment drives more people in cities. It means that rural people do not anticipate the hardship of settle in the urban space properly before leaving their area. Policymakers should design better employment policies for cities' productivity is captured by their capacity to provide jobs and increase wage of its habitants (Glaeser and Gottlieb, 2008).

Cities remain the epicenters of job providing both in terms of sharing a large pool of worker as well as in term of good matching between employers and workers.

In Sub-Saharan Africa investments do not serve as a good reason to migrate to cities. Foreign direct investment is negative when it has significant estimates. The reason could be that external investments are oriented on natural resources. National wide the investment level discourages people to live in urban area on average. In this paper we also check how the fertility rate improves the urbanization rate in Africa. On average when population increased, the demographic boom is well felt in rural than urban areas. Considerable amount of birth is realized in rural areas or migrants in African countries preferred to stay in remote area.

The results presented above show that many things have to be done to allow African countries to benefit from the massive population exodus into their urban areas. A clear recommendation coming from this analysis is to foster trade liberalization that would in turn improve trade openness with more focus on how youth and women could gain benefits. To push the analysis a bit further we present in the robustness check a variant of regressions.

4.3. Robustness check

In this analysis we consider as dependent variable the percentage of people living in the largest city (primacy). As the previous section, Table 2 shows results when dynamic panel data is applied (column 5) and OLS specification is removed. Population in the largest agglomeration is used in the literature as a proxy of urbanization.

In the dynamic specification financial development has a positive influence on primacy, even though its magnitude is low. Democracy in Africa contributes to improve the amount of people in the main agglomeration. Reducing by 1% the score of democracy's level in a country has a negative impact on the willingness of people to move to the largest city. In term of corruption, the coefficient is negative but it is non-significant. Institution matters in the development of cities and how they can be productive, hence attractive, in Africa.

Cities are development hubs and countries focus on designing policies around them. Therefore it is common to witness developing countries investing in urban areas and foster exports (Duranton, 2015). On average, when trade openness increases, the largest city does not immediately get crowded with people but becomes so in the next period. That pattern is also noticed with the gross domestic product per capita. Wealth improvement for a country is a signal for rural population to relocate in the largest agglomeration. Fertility rate is positively associated with the probability to move in the main urban area, and independent from the regions. Several studies find that the link between openness and primacy tends to consider variables such as energy consumption and carbon emissions. Here results show that omitting them does not significantly affect different estimates at play. Besides, policymakers could pay keen attention to demographic growth because it comes with more benefits and advantages than needs.

5. Conclusion

Urbanization is one of the most important transformations that African countries will undergo these decades. This study sought to evaluate the influence of trade openness and non-agricultural employment on urbanization rate in sub-Saharan Africa. To this end, the study explored different panel data specification using data from selected sub-Saharan countries between 1990 and 2019.

Africa urbanization has been constant over time and in most countries the same pattern is observed. In a regional point of view on average the urban population in CEMAC zone has increased considerably up to 30% while the Eastern Africa has the lowest rate (10%). Furthermore, countries have been divided in two different groups according to a threshold of the amount of people living in urban areas but into slums. Results are not different in terms of sign and significance but differ a lot in terms of magnitude. Non-agricultural employment and trade openness influence positively urbanization rate in both groups of countries.

However, in countries with many people in slums, trade openness has greater impact. That is, individuals are willing to move to urban area in some extend due to the opportunity caused by the international market. Then they fail most of the time to accommodate to new systems and culture far from their reality, in a time where jobs are really correlated with the social capital. Therefore, the urban rate is likely to increase in all countries because policies are toward improving urban areas living conditions. Notwithstanding, cooperation in the continental level could help improving job creation and take advantage of urbanization. One limitation of our study is to consider only one way of influence. Other research outcomes could focus on the bidirectional link and improve with more physical infrastructure data to check different channel through which these variables are interlinked.

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Apendix A

Table of country list

Angola	Liberia
Benin	Madagascar
Botswana	Malawi
Burkina Faso	Mali
Cameroon	Mauritania
Chad	Mauritius
Congo, Dem. Rep.	Mozambique
Congo, Rep.	Namibia
Cote d'Ivoire	Niger
Djibouti	Nigeria
Equatorial Guinea	Rwanda
Eswatini	Senegal
Ethiopia	South Africa
Gabon	Sudan
Ghana	Tanzania
Guinea	Togo
Guinea-Bissau	Uganda
Kenya	Zambia
Lesotho	Zimbabwe

Apendix B

Description of variables

Variables	Description
URB	Proportion of population living in urban area at time t
LARG	Proportion of people living in the largest city defining as the primacy
GDP	Gross Domestic Product per capita
OPEN	Openness measures by the amount of trade reported to the GDP
EMP	Non-agricultural employment in percentage of total labor force
FDI	Foreign Direct Investment inflow at time t
DEV_FIN	Domestic credit to private sector as a percentage of the GDP
CORRU	Corruption index from the *International Country Risk Guide* (*ICRG*)
DEMOC	Democracy indicator from the International Country Risk Guide (ICRG)

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