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Industrialisation, Finance, and Urbanisation inAfrica[1]

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Abstract

This study investigated two key questions: what is the impact of industrialisation on urbanisation in Africa? and to what extent does financial development affect this industrialisation- urbanisation nexus? To elicit answers to these questions, data from thirty-three (33) African countries over a period of twenty-eight (28) years were analysed using a dynamic panel estimator. The findings showed that industrialisation had positive and significant effects on urbanisation. Further, the study shows that financial development had a positive effect on urbanisation, although it lowers the positive effect of industrialisation on urbanisation. Hence, industrial policies, particularly those with marked job creation possibilities, should be accompanied by well-designed urban planning policies in order to sidestep the adverse socio-economicconsequences connected with the development of slums in urban areas.

Keywords: Urbanisation, Industrialisation, Financial Development, Africa
JEL Classifications: G2, L16, O18, N17

1 Introduction

Urbanisation in the literature has been argued to be an outcome of a number of factors, including industrialisation. Industrialisation is deemed particularly critical since it is arguedto propel economic transformation (Ajakaiye and Page, 2012; Mijiyawa, 2017). Since the early 2000s, there has been increased interest by policymakers and academics in understanding the extent to which a number of policies implemented post-1970s yielded the desired outcome in Africa, that is, economic transformation (Monga, 2012). Recent studies (including Ajakaiye and Page (2012); Jayne et al. (2018)) on Africa have basically argued that economic transformation occurred but also emphasised that it is different from what was recorded in Asian countries.One of the key features of economic transformation evident in African countries is the growing number of cities, which in turn is associated with an increase in the level of urbanisation (Duranton, 2015; Ebeke and Etoundi, 2017).

In the literature on economic transformation, urbanisation (the share of urban population to total population) is argued to be driven primarily by industrialisation (share of manufac- turing value added to total output). In Africa, the experience can be aptly described as de- industrialisation. For instance, in South Africa, the industry share of output stood at 21.6% in 1970, declined to 17.5% in 2000 and further to 11.8% in 2018. In Nigeria, the share of manufacturing value added in total output followed a similar pattern to that of South Africa,as it declined from 21.4% in 1981 to 8.4% in 2018. For Ethiopia, the statistics stood at 4.3%in 1981 and increased marginally to 5.8% in 2018.

While the level of industrialisation has not changed markedly over the last four decadesin most African countries, the level of urbanisation has dramatically increased over the same period. For instance, in Ethiopia, the level of urbanisation rose from less than 11% in 1981 to20.8% in 2018. Similarly, in South Africa, it rose from 48.6% in 1981 to 66.4% in 2018. Also,in Nigeria, it was less than 25% in 1981 and by 2018, it had increased to 50.3%. Economic transformation in Asian countries was seen to be driven, in large part, by the financial sector, which provided the needed finance used for infrastructural investment (Bonin and Wachtel, 2002). This, in turn, fostered industrialisation in most Asian countries in the mid-1980s. The positive role of finance in Asian countries, given the level of financial repression in developing countries, led to the implementation of financial reforms in most African countries in the 1980s, which subsequently contributed to the marginal development of the financial sector in Africa (Folarin, 2019; Fowowe, 2013).

Given the above narrative, this study seeks to understand whether the variation in the level of urbanisation observed in African countries is explained by their level of industrialisation. Thisinquiry is important given the conclusion in Gollin et al. (2016), which shows that urbanisation could occur in developing countries regardless of the level of industrialisation. The authors argued that urbanisation that takes place in the absence of industrialisation might be causedby an increase in natural resource export, which increases the country's average income, therebyleading to an upsurge in urbanisation. This effect

was regarded as the city consumption effect.

While the urbanisation literature evolved around studies on the causes and effects of rapid urbanisation (Gollin et al., 2016; Henderson et al., 2017; Njoh, 2003; Wang et al., 2020; Yang, 1990), it is observed that there is yet to be a study that specifically examined the impact of industrialisation on urbanisation on the one hand and the intervening role of the level of sophis-tication of domestic financial markets on the nexus between industrialisation and urbanization on the other hand. This study, therefore, attempted to fill these gaps. In this study, and to ex-plore the latter objective, we argued that since financial institutions are mostly clustered in the cities and provide funding for industrial development, financial development might indirectly contribute to the rising level of urbanisation in Africa. This study, therefore, also seeks to understand whether the level of financial sector development matters in understanding the effect of industrialisation on urbanisation in Africa. To achieve this objective, data from thirty-three (33) African countries over the period of 1991 and 2018 was analysed using a dynamic panel estimator. The persistence in urbanisation data informed the use of dynamic panel estimator over static panel estimator.

As a foretaste, the study findings showed that industrialisation had a positive and sig- nificant effect on urbanisation regardless of the measure of industrialisation and when the interaction of industrialisation and financial development is introduced in the model. Further- more, the study findings show that regardless of the measure of financial sector development, whether it is measured from a financial services perspective or a financial depth perspective, financial development has two effects: first, it leads to an increase in urbanisation; second, it had a reducing effect on the positive impact of industrialisation on urbanisation. This counter intuition is clear from the following simple thought experiment: the clustered nature of the fi- nancial sector in the urban centres should enhance the migration from rural areas to the urban areas in search of jobs either in the financial sector or other sectors that the financial sector has aided to grow through its lending functions. However, the findings suggest that the expansion of financial services to previously unbanked areas may lower the rate of urbanisation arising from industrialisation in African countries. This leaves the precise nature of the moderating influence of financial development unclear.

This study contributes to the policy dialogue on economic transformation in Africa by shedding light on the nexus between industrialisation and urbanisation in Africa. Overall, the study findings showed a positive relationship between industrialisation and urbanisation. In addition, the study established that financial sector development helps in curtailing the rate of urbanisation associated with industrialisation.

The remainder of this paper is structured as follows. Section two presents a review of the literature on the linkage between industrialisation and urbanisation. Section three ex- plains the research design adopted in this paper, it comprises the empirical framework and the methodology employed in the paper. Section four provides parameter estimates showing the direction of the relationship between

industrialisation and urbanisation as well as with financialdevelopment intervening. Section five contains the conclusion and the recommendations.

2 Review of relevant literature

There are two competing schools of thought with regard to urbanisation, namely, modernisation theory and urban bias theory (Lipton, 1977; Njoh, 2003). Both theories are premised on models of structural transformation as presented in Lewis et al. (1954), where the author ar- gued that structural transformation brings about the movement of labour from the agricultural sector into a modern sector. It is generally assumed that agricultural activities are performedin rural areas, whereas modern activities are performed in urban areas (Black and Henderson, 1999). The divergence between modernisation theory and urban bias theory is rooted in the explanation for the causes of labour movement from rural areas to urban areas, which resultsin increases in urban population relative to the total population.

Modernisation theory, as the name connotes, argued that urbanisation is a natural out- come of economic development as established in Lewis et al. (1954). In other words, as an economy transitions from an agrarian economy to a modern economy, urbanisation takes place.Expansion of activities in the modern sector is the source of labour migration from rural areasto urban areas. Urban bias theory, however, contended with the modernisation theory by ar- guing that development in the urban areas is an outcome of government policies, which favour the urban areas over the rural areas in the provision of infrastructural facilities (Lipton, 1977). According to urban bias theory, urbanisation is rooted in bias in government policies, which accelerated the rate of development in urban areas and is not a natural outcome of economic development. This theory could explain, in part, why urban development in most African countries is concentrated in state capitals or locations where ports are sited (SMART et al., 2018).

The measure of industrialisation is rooted in two approaches – output and employment approach (Itaman and Awopegba, 2021). Under the output approach, industrialisation is mea- sured as the share of industrial output in total output, while under the employment approach,it is measured as the share of industrial sector employment in total employment. Urbanisation entails the migration of people from rural areas to urban areas. This indicates that if increased industrial output is not associated with increased employment, the effect of industrialisationon urbanisation might depend on how it is measured, and the employment-based approach is likely to have a more pronounced effect on industrialisation.

Njoh (2003) investigated whether urbanisation is associated with development in sub- Saharan African countries. Development was measured by the Human Development Index (HDI). United Nations used HDI to trace and compare the living standards of people in a country at a given period. HDI estimates are based on a country's per capita income, life expectancy and literacy rate. In the study, African countries were grouped into two categories, more urbanised and less urbanised, and the value of HDI was then compared across the two groups. The findings showed that urbanised African countries, on

average, have higher HDI when compared to countries that are less urbanised. This finding suggests that increasing urbanisation is associated with greater economic development.

A more recent study by Ebeke and Etoundi (2017) investigated the effect of natural re- sources on urbanisation and the quality of life in cities in African countries. Their findings showed that natural resources contribute to the rapid pace of urbanisation in Africa. This isconsistent with Gollin et al. (2016) that focused on developing countries. Gollin et al. (2016) argued that with or without industrialisation, urbanisation would take place in the presenceof natural resource exports. In their opinion, the traditional channel of industrialisation, if it holds, would only intensify the rate of urbanisation for countries with natural resources exports.Also, Ebeke and Etoundi (2017) established that the quality of life (which was measured by the proportion of the urban population living in slum households) deteriorated with an increasein urbanisation. Their findings suggest that there is a need to rethink the assumed linkage between growth in cities and industrialisation (Hoselitz, 1953; Scott, 1986), especially when the population of people residing in a city can no longer be supported by the existing facilities.

One of the deliberate policy tools used by most African governments to boost industriali- sation and economic growth in the mid-80s is the liberalisation of the financial sector (Fowowe,2013). The policy, to some extent, contributed to the development of the African financial sec- tor, although financial markets in Africa still lag behind other developing countries (Allen et al., 2014). Harrison et al. (2014) in a cross-sectional analysis that comprised of firm-level data fromseveral world regions showed that low access to finance, in addition to other factors such as lack of infrastructure and political competition, explained the low level of manufacturing sector productivity in African countries relative to other regions. This is consistent with the find- ings in Fowowe (2017), which exclusively focused on African countries and found evidence that showed that firm performance increased with access to finance. Since financial institutions are mostly clustered in the cities and have incentives to provide funding for industrial development compared to agricultural activities in the rural areas, this study, therefore, examines whether the level of financial sector development matters in understanding the effect of industrialisation on urbanisation in Africa.

3 Empirical Framework, data and methodology

3.1 Empirical framework

In order to understand the effect of industrialisation on urbanisation in African countriesas well as the intervening role of financial development on the main relationship of interest, thisstudy incorporates ideas in Adeniyi et al. (2015); King and Levine (1993); Rajan and Zingales (1998) although these studies focused on the only related issue of financial sector development and economic growth. While this study is on urbanisation, we premised this study on the assumption that financial development may suggest an unequal distribution of firms between rural areas and urban areas. The high cost of rendering financial

services in rural areas relative to urban areas arises because the purchasing power of rural dwellers is lower. As a result, financial institutions are more likely to expand their operations in urban areas and may be less willing to do the same in rural areas. For instance, in Sub-Saharan Africa, 23.2% of adults had an account with financial institutions in 2011, and this figure rose by 9.6% in 2017 to 32.8%.In rural areas, it was 19.4% in 2011 and 29.9% in 2017 (World Bank, 2020).

Also, in South Africa, in 2011, the proportion of the adult population in urban areas withan account stood at 53.6%, whereas it was 46.3% in rural areas. In 2017, the share of adultswith accounts in financial institutions stood at 67.4%, whereas the estimate for rural areas was 66.9%. While aggregate and rural area estimates recorded an improvement, it is shown thatthe level of financial inclusion is slightly lower in rural areas, although the gap appears to have reduced over time. In Ghana, in 2011, 29.7% of the urban adult population had an account with financial institutions, whereas the estimates are a bit lower in rural areas, as it stood at 25.5%. By 2017, the share of the adult population with an account with financial institutionshad increased to 42.3%, whereas the rural population rose to 37.4%, maintaining a gap of 5%. Again, in Benin Republic, it is reported that 10.5% of the adult population have an account infinancial institutions, whereas 8.5% have it in rural areas.

In 2017, the proportion of the adult population with an account with financial institutions rose to 31.9% in urban areas, whereas the estimate for rural areas rose to 29.3%. Similarly, the estimate for the rural areas remains lower than the national average by approximately 2%. Overall, the improvement in financial sector development is, therefore, expected to have a higherimpact in the urban areas than in the rural areas based on the coverage of the financial institutions. This contradicts the theory of urban bias, which argues that growth in urban population is caused by deliberate government policies that favour urban areas. It then suggests that the presence of more financial institutions in the urban areas would attract more people from the rural areas in search of financial services. Also, the presence of more financial institutions in theurban areas implies that firms in the urban areas are more likely to have access to affordable financial products, thereby supporting their expansion, and creating more jobs in the urban areas. The net effect of the excessive presence of financial institutions in urban areas is expectedto lead to an increase in the level of industrialisation, thereby increasing the urbanisation rate. However, if the impact of financial sector development in rural areas reduces the incentive for rural dwellers to migrate to urban areas when their financial demands are met, the implication is that financial development has the potential to slow down the rate of rural-urban migration. Hence, the moderating impact of financial development on the industrialisation-urbanisation interactions is ambiguous.

From the foregoing, we first argue that urbanisation is influenced by both the level of industrialisation and financial sector development. Thus, the urbanisation equation is expressedas follows:

$$URB_{it} = \beta_0 + \beta_1 IND_{it} + \beta_2 FD_{it} + \beta_3 IND_{it} * FD_{it} + \upsilon_i + \nu_t + \epsilon_{it} \quad (1)$$

Where URB is the level of urbanisation in country i and year t, urbanisation is computedas the ratio of urban population to total population, IND is the measure of industrialisation,FD is the measure of financial sector development, IND_{it} FD_{it} is the interaction term of industrialisation and financial development, υ_i denotes country effect and v_t denotes year fixed effect. Two measures of industrialisation are considered in this study. The ratio of manu- facturing sector output to total output (MANUGDP) and the ratio of manufacturing sector employment to total employment (EMPLIND). The ratio of manufacturing sector output to total output is the most commonly used measure of industrialisation in the literature. In this study, however, we complimented that measure with an alternative measure of industrialisation, which is the ratio of manufacturing sector employment to total employment. The two measures have a correlation coefficient of 0.43, and it is statistically significant at the 5% level. The low level of correlation between the employment ratio and output ratio indicates the low level of manufacturing capacity utilisation in most African countries and the rigidity firms face in aligning staff strength with output level whenever the firm is experiencing some constraints in doing business.

Similarly, financial sector development was measured as the ratio of credit to the private sector to gross domestic product (DCPS). An increase in the ratio implies an improvement inthe level of financial development, whereas a decrease denotes a deterioration in the level of financial development. For robustness, an alternative measure of financial sector development was used, the ratio of broad money to gross domestic product (BROAD MONEY). Broad money is the summation of narrow money, which is highly liquid, with less liquid forms of money, savings and time deposits. This measure of financial sector development captures the depth of the financial sector. Similar to the interpretation of the ratio of credit to the privatesector to GDP in relation to the financial sector development, an increase in the ratio of broad money to GDP indicates an improvement in the level of financial sector development, whereasa decrease denotes a deterioration.

We extended Equation (1) to include the lagged value of the dependent variable, given that it exhibits an upward trend. This enables us to test whether persistence holds. Persistence is deemed to have occurred when the lagged urbanisation level has a positive and significant effect on contemporaneous urbanisation level. We expect persistence to hold because the ratio of urban population to total population is on the increase for nearly all African countries over the period considered in this study. In addition to the lagged value of urbanisation, we also included a set of control variables. Equation (1) is re-expressed as follows:

$$URB_{it} = \alpha_0 + \alpha_1 URB_{it-1} + \alpha_2 IND_{it} + \alpha_3 FD_{it} + \alpha_4 IND_{it} * FD_{it} + \vartheta' sX_{it} + \upsilon_i + v_t + \epsilon_{it} \quad (2)$$

Where URB, IND and FD are as designated earlier, while X is the vector of the control variables, υ_i denotes country effect, and v_t denotes year fixed effect. The control variables used in the study are the level of economic development (log GDPPC), population growth rate (POPG), the development in information and communications technology (MOB100), trade openness (TRADE) and inflation rate

(INFDEF). The level of economic development (log GDPPC) is measured as the natural logarithm of the real value of gross domestic product per capita at constant 2010US$. The use of constant 2010US$ rather than local currency was informed by the need to ensure cross-sectional consistency in the measure of the income per capita as well as to eliminate the effect of exchange rate regime variations.

Population growth (POPG) measures the rate of changes in the population of a country.The development in information and communications technology (ICT) is measured as the number of the population per 100 with a mobile phone. It is assumed that an increase in this measure is an indication that more people are adopting the use of technology. Trade Openness (TRADE) is the ratio of the sum of imports and exports to GDP. The inflation rate (INFDEF)is the rate of change in GDP deflator. It captures the level of macroeconomic stability. A high inflation rate denotes macroeconomic instability, whereas a low inflation rate suggests macroeconomic stability.

In *Eqn.*(2), α_2 and α_4 are the two important parameters for this study. α_2 shows the direct impact of industrialisation on urbanisation. A positive coefficient indicates that in- dustrialisation drives urbanisation, whereas a negative indicates that industrialisation reduces urbanisation. α_4 shows the conditional impact of financial development on the effect of indus- trialisation on urbanisation. As a result, the net effect of industrialisation on urbanisation is obtained as follows: $\alpha_2 + \alpha_4 \overset{*}{FD}$. Where FD is the mean of financial development for the periods covered in the study, and ln is the natural logarithm.

3.2 Data and methodology

This study employed a panel data approach, which comprises of time dimension and cross-section dimension in examining the impact of industrialisation on urbanisation as well as the potential moderating effect of financial development on the primary nexus of interest. The studyemployed a sample of thirty-three (33) African countries[2] over the period of 1991 to 2018. Two basic conditions were used in selecting the countries. First, the country must have data on urbanisation over the period of 1991 to 2018[3]. Second, the country must have a considerable number of observations for the key variables: financial development and industrialisation. To avoid altering the data-generating process, all missing periods were not filled. This explains why the total number of observations across the eleven (11) variables in Table 1 are not the same. However, given our inclusion criteria, the variable with the lowest data points is the ratio of credit to the private sector as a ratio of GDP (DCPS) with 313 observations, out of a

[2] The sampled countries are Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Chad, Congo Rep., Cote d'Ivoire, Egypt, Eswatini, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Malawi, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, and Tunisia.

[3] Given the estimation approaches adopted in the study, we averaged the data over a period of three years to arrive at an average of ten data points over the period covered in the study. The approach was necessitated to reduce the number of instruments and prevent problems associated with instrument proliferation, as spotted by one of the reviewers.

maximum obtainable data point of 330, given a ratio of 94.8%.

The descriptive statistics of the variables used in the study are presented in Table 1. It is seen that the ratio of urban population to total population stood at an average value of 39.1% with a standard deviation of 17.4%. The average value of the ratio of domestic credit to the private sector to GDP for the period covered and the countries sampled is 23.1% witha standard deviation of 27.7%. This suggests that the level of financial development exhibitssome degree of fluctuation since its standard deviation exceeds the mean. The mean value ofthe ratio of broad money to GDP stood at 35.6% with a standard deviation of 25.4%. The mean of manufacturing output to total output is 11.3%, whereas the average ratio of manufacturingemployment to total employment is 15.3%. This is an indication that the employment ratio in the manufacturing sector is, on average, higher than the output contribution.

Murphy et al. (1989) established that urbanisation through homogenous tastes and higher income creates demand effects that bring about industrialisation. Thus, resulting in endogeneity problem of reverse causality. Consequently, the data analysis was performed on Equation (2) and was estimated using a system Generalised Method of Moments estimator. In addition tothe problem of endogeneity, GMM estimator is the appropriate estimator for three reasons. First, the use of fixed effect estimators has been established to yield inefficient estimates in the presence of lagged dependent variables. Second, the time dimension is smaller than the numberof cross-sections. Third, the issues bordering on inaccuracy in the determination of firms that strictly fall under the manufacturing group make the measurement of industrialisation highly susceptible to measurement errors. Given the dynamic nature of the model, system GMM yields more accurate estimates in the presence of measurement errors.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
BROAD MONEY	328	35.564	25.353	6.16	119.317
DCPS	313	23.146	27.699	1.194	152.484
EMPLIND	320	15.349	9.78	1.505	42.985
GDPPC	330	2411.212	2810.39	210.804	14417.1
INFDEF	330	9.932	12.947	-10.422	98.795
MANUGDP	325	11.328	5.815	.713	34.768
MOB100	326	39.793	46.464	0	184.298
POPG	330	2.272	1.023	-5.052	7.371
TRADE	324	71.096	35.019	15.403	211.354
URB	330	39.054	17.35	6.364	89.37
NATURAL	297	10.049	9.716	.002	55.473

DCP is the ratio of credit to the private sector to total GDP, Broad money is the ratio of broad money to total GDP, GDPPC is Gross Domestic Product Per capita; EMPLIND is the ratio of employment in the industrial sector to total employment, INFDEF is inflation rate computed based on GDP deflator, MANUGDP is the ratio of manufacturing sector output to total GDP, mob100 is mobile phone subscription per 100 persons, POPG is the population growth rate, TRADE is trade openness and it is computed as the ratio of the summation of import and export to GDP, URB is urbanization and it is the ratio of urban population to total population, natural is natural rent and it is the ratio of natural rent to total GDP.

It is important to describe the identification and exclusion restrictions, which Asongu and Acha-Anyi (2019) noted is critical in validating the soundness of GMM estimation. Identi- fication entails the selection of the dependent, endogenous variables and exogenous variables (Asongu and Acha-Anyi, 2019). In this study, the dependent variable is urbanisation, and allexplanatory variables are considered suspected endogenous, given that all variables have the likelihood of being endogenously related to urbanisation. However, years are considered exclusively exogenous variables. The identification strategy employed was established in Roodman (2009) and adopted in Asongu and Acha-Anyi (2019) and Tchamyou and Asongu (2017).

As earlier reported, we included the lag of the dependent variable to address simultaneity. Further, we evaluated the validity of the exclusion restriction using the Difference-in-Hansen Test (DHT) for instrument exogeneity. The exogenous instrument is only valid when we re- ject the null hypothesis, suggesting that the instruments explain the rate of urbanisation in African countries only through the identified suspected endogenous variables considered inEqn (2). Furthermore, for accurate estimation, the number of instruments is expected to be lower than the number of countries. Consequently, we averaged the data over three years to arrive at ten data points from 1991 to 2018. As reported in Tables (2) – 6, the estimation procedure is satisfied as the null hypothesis was not rejected in the estimated models. The DHT null hypothesis is similar to the standard Instrumental Variable (IV) procedure, where we test the Sargan overidentifying restrictions (OIRs). The Sargan OIRs test investigates the strictly exogenous variables that affect the urbanisation rate exclusively through the suspected endogenous variable channels (Tchamyou and Asongu, 2017).

4 Empirical findings

The result of the estimated parameters of Equation (2) is presented in Table (2) with thelevel of financial sector development measured as the ratio of domestic credit to the private sector as a ratio of GDP (DCPS), that is, the level of financial services rendered by the financial institutions. Industrialisation is measured as the ratio of manufacturing output to total GDP. The results in Table (2) column (1) indicate that urbanisation exhibits persistence. This is because the lagged value of urbanisation had a significant effect on the contemporaneous value of urbanisation. Given that the coefficient is positive and slightly higher than one (1), this result suggests that a change in the lagged value of the level of urbanisation leads to more than a proportionate change in the contemporaneous value of the level of urbanisation. In other words,the urban population grows at a geometric rate. The coefficient of per capita income is negative and significant at the 5% level. The sign obtained appears to contradict a priori expectationof a positive relationship. The inverse relationship experienced could be interpreted to mean that improvement in average income level in African countries makes an average person remainin the rural area, however, when the economy deteriorates, the incentives for rural dwellersto migrate to the urban

areas in the search for higher remuneration increases. Although, thejob might be unavailable, or the few available jobs become oversubscribed. Nevertheless, and somewhat consistent with the findings in this study, is the idea that higher overall income per capita implies that rural dwellers are also better off and may, therefore, have little or noincentives to move to urban centres, suggesting that improving incomes and lower urbanisationpressures are in tandem.

The coefficient of population growth is positive and significant when financial developmentand other determinants of urbanisation are controlled for (see Columns 3 and 5). These results suggest that as the population grows, for instance, at a positive rate of 10%, the urban pop- ulation as a ratio of the total population increases by about 0.3%. In other words, for every increase in population growth, the share of the population in the urban area increases. Our main variable of interest in Table (2) column (1) is manufacturing output as a share of totaloutput (MANUGDP), and the result shows that an increase in manufacturing output as a share of total GDP leads to a decrease in urbanisation. Ideally, we expect a positive relationship inline with the idea that industrialisation spurs urbanisation. Given that over the periods cov- ered in the study, manufacturing output as a share of GDP was on the decline for most African countries, it suggests there would be an increase in the urbanisation rate in African countries.

In Table (2) Column (2), when financial sector development and the interactive term of industrialisation and financial development were introduced, the initial results on the impactof the lagged level of urbanisation and income per capita, were unaffected, but the coefficient of industrialisation turns positive. It is seen that financial sector development has a positiveand significant effect on urbanisation, and the effect is significant at the 5% level. However, the coefficient of the interactive term is negative and significant, indicating that with a given level offinancial development, an increase in industrialisation leads to a decrease in urbanisation. The net effect of industrialisation on urbanisation is negative, suggesting that financial development helps dampen the effect of industrialisation on urbanisation.

In Table (2) Column (3), the role of technology is controlled for, and the result shows that the impact of financial sector development doubles. Like an increase in income, technology has a negative and significant effect on urbanisation. These results indicate that the availability of technological facilities in both rural and urban areas, especially in rural areas, plausibly reducesthe marginal benefit of moving to urban areas, given the comparatively peaceful life associated with rural areas. The interactive term of industrialisation and financial development is negative, and the net effect is negative, indicating that controlling for technological advancement, suggests that financial development makes industrialisation have a dampened effect on urbanisation. Table 2: Industrialisation (output approach), financial service development and urbanization.

Table 2: Industrialisation (output approach), financial service development and urbanisation

	(1)	(2)	(3)	(4)	(5)
URB(-1)	1.106***	1.06***	1.08***	1.068***	1.066***
	(0.009)	(0.02)	(0.013)	(0.02)	(0.015)
Log(GDPPC)	-1.402***	-0.988**	-0.543**	-1.208**	-0.515
	(0.123)	(0.414)	(0.235)	(0.486)	(0.318)
Log(MANUG P)	-0.033**	0.162***	0.135***	0.11*	0.163**
	(0.014)	(0.058)	(0.047)	(0.058)	(0.06)
POPG	-0.085***	0.043	0.306***	-0.022	0.41***
	(0.018)	(0.065)	(0.06)	(0.079)	(0.086)
Log(DCPS)		0.195***	0.234***	0.168***	0.188***
		(0.05)	(0.045)	(0.047)	(0.048)
Log(MANUG P)*Log(DCPS)		-0.08***	-0.088***	-0.061**	-0.076***
		(0.021)	(0.019)	(0.023)	(0.021)
MOB100			-0.009***		
			(0.001)		
Log(TRADE)				-0.342	
				(0.36)	
INFDEF					0.026***
					(0.005)
Constant	8.184***	2.01	-2.161	5.645	-2.8
	(0.802)	(2.707)	(1.953)	(4.064)	(1.847)
Net effects	na	-0.089	-0.142	-0.082	-0.076
AR (1)	0.002	0.013	0.033	0.008	0.610
AR (2)	0.644	0.455	0.458	0.498	0.815
Sargan OIR	0.000	0.000	0.000	0.000	0.000
Hansen OIR	0.275	0.221	0.115	0.269	0.192
DHT for instruments					
(a) Instruments in levels H excluding group	0.209	0.299	0.146	0.307	0.253
Dif (nill, H=exogenous)	0.553	0.226	0.211	0.295	0.227
(b) IV (years, ed(diff)) H excluding group	0.243	0.039	0.043	0.072	0.021
Dif (nill, H=exogenous)	0.419	0.782	0.436	0.742	0.830
Fisher	133948.93***	44440.03***	33582.09***	44150.55***	59607.92***
No of Instruments	29	22	22	24	22
No of countries	33	33	33	33	33
No of observations	292	279	275	275	279

Notes: Standard errors are in parentheses, ***, ** and * are significant at 1%, 5% and 10%, respectively; URB is urbanization and it is ratio of urban population to total population; GDPPC is Gross Domestic Product Per capita; MANUGDP is the ratio of manufacturing sector output to total GDP; POPG is population growth rate; DCP is the ratio of credit to the private sector to total GDP; mob100 is mobile phone subscription per 100 persons; TRADE is trade openness, and it is computed as the ratio of the summation of import and export to GDP; INFDEF is inflation rate computed based on GDP deflator; log is natural logarithm; DHT is Difference in Hansen Test for exogeneity of instruments; Dif is Difference; OIR is over-identifying restrictions test. The reported values for Sargan OIR, Hansen OIR, AR (1), AR (2) and DHT for instruments are prob. value. Under the net effect, na means that the marginal effect and/or unconditional effect are insignificant.

In Table (2) column (4), trade openness is controlled for, and the results presented show that the effect of industrialisation on urbanisation is statistically different from zero. Also, the interactive term is negative and significant, and the net effect of industrialisation on urbanisa- tion is negative, which is consistent with earlier reported findings. Trade openness is also seen to have had a reducing effect on urbanisation, although the effect is not significant at 5% level. Inflation, a measure of macroeconomic condition, is also controlled for. The results obtained,as shown in Table (2) Column (5), indicate that macroeconomic instability, that is, an increase in the inflation rate, leads to an increase in urbanisation.

Turning to Table (3), where industrialisation is measured as the ratio of employment in the manufacturing sector to total employment, the results reported in Table (3) are qualitativelysimilar to what was reported in Table (2) for all variables except for the effect of industrialisationand population growth on urbanisation in terms of sign. For instance, the lagged urbanisation rate had a positive and significant effect on the contemporaneous urbanisation rate, and incomeper capita had a negative and significant effect on the urbanisation rate. Technological adoptionand trade openness both had negative effects on urbanisation. The net effect of industrialisationon urbanisation is negative and technology had the highest value in absolute. The results suggest that technology helps amplify the role of financial development in ameliorating the rural-urban migration associated with industrialisation.

The coefficient of the ratio of employment in the manufacturing sector to total employmentis positive and significant at the 5% significant level. Also, the interaction term of industrial-isation and financial development is negative and significant. The results are similar to whatwe observed in Table (2) when manufacturing output was used to measure industrialisation. However, without the inclusion of the interactive term, we observed the divergence effect of industrialisation on urbanisation. The differences may be explained in terms of the role of technology in credit-making and deposit-taking. Technological adoption enhances the effi- ciency of banks in granting loans more in urban areas when compared to rural areas, whereas technological adoption helps people in rural areas to deposit more, thereby increasing financial depth, which, in turn, might reduce the incentive for rural dwellers to migrate to urban centres.

The positive coefficient of the effect of industrialisation, when measured from an employ- ment perspective, suggests that industrialisation contributes to urbanisation. The results can be explained along the idea that when industries conglomerate in a given location and such industries experience expansion, employment is created. This leads to a situation whereby people migrate to the new location, as more people are employed due to industrial expansion, the location experiences population expansion.

Table 3: Industrialisation (employment approach), financial service development and urbani-sation

	(1)	(2)	(3)	(4)	(5)
URB(-1)	1.112***	1.078***	1.09***	1.076***	1.072***
	(0.013)	(0.006)	(0.008)	(0.006)	(0.006)
Log(GDPPC)	-1.714***	-0.941***	-0.711**	-0.873***	-0.653***
	(0.289)	(0.254)	(0.277)	(0.215)	(0.232)
Log(EMPLIN)	0.633**	0.882***	0.286*	0.955***	0.902***
	(0.264)	(0.189)	(0.168)	(0.226)	(0.115)
POPG	-0.111***	-0.071**	-0.05**	-0.142***	0.027
	(0.026)	(0.033)	(0.022)	(0.032)	(0.019)
Log(DCPS)		0.102***	0.119***	0.101***	0.118***
		(0.015)	(0.016)	(0.015)	(0.01)
Log(EMPLIN)x Log(DCPS)		-0.434***	-0.369***	-0.442***	-0.446***
		(0.056)	(0.059)	(0.06)	(0.045)
MOB100			-0.006***		
			(0.001)		
Log(TRADE)				-0.022	
				(0.171)	
INFDEF					0.017***
					(0.002)
Constant	7.832***	3.25**	1.843	2.911***	0.575
	(1.45)	(1.313)	(1.257)	(0.969)	(1.355)
Net effects	na	-0.482	-0.873	-0.434	-0.499
AR (1)	0.001	0.011	0.017	0.011	0.175
AR (2)	0.791	0.566	0.413	0.365	0.992
Sargen OIR	0.000	0.000	0.000	0.000	0.000
Hansen OIR	0.088	0.146	0.230	0.220	0.234
DHT for instruments					
Instruments in levels H excluding group	0.024	0.095	0.279	0.076	0.063
Dif (nill, H=exogenous)	0.908	0.500	0.265	0.849	0.942
IV (years, ed(diff)) H excluding group	0.145	0.027	0.110	0.073	0.177
Dif (nill, H=exogenous)	0.157	0.897	0.667	0.810	0.461
Fisher	78758.37***	105039.03***	289746.25***	91968.30***	346058.97***
No of Instruments	24	27	30	30	30
No of countries	32	32	32	32	32
No of observations	288	273	269	269	273

Notes: Standard errors are in parentheses; ***, ** and * are significant at 1%, 5% and 10%, respectively; URB is urbanization and it is the ratio of urban population to total population; GDPPC is Gross Domestic Product Per capita; EMPLIND is the ratio of employment in the industrial sector to total employment; POPG is population growth rate; DCP is the ratio of credit to the private sector to total GDP; mob100 is mobile phone subscription per 100 persons; TRADE is trade openness and it is computed as the ratio of the summation of import and export to GDP; INFDEF is inflation rate computed based on GDP deflator; log is natural logarithm; DHT is Difference in Hansen Test for exogeneity of instruments; Dif is Difference; OIR is over-identifying restrictions test. The reported values for Sargan OIR, Hansen OIR, AR (1), AR (2) and DHT for instruments are prob. value. Under the net effect, na means that the marginal effect and/or unconditional effect are insignificant.

4.1 Robustness checks

As explained in the empirical framework and methodology section, financial development can be measured from more than one perspective. The approach used in the main analysis is rooted in the financial services function of the financial institutions. Another perspective is through the depth of the financial sector. Here, the measurement of the financial sector devel- opment captures the quantum of transactions through the financial sector, and it is computedas the ratio of broad money to total GDP. An increase in the ratio of broad money to total GDP indicates an increase in financial depth, and a decrease in the ratio indicates that the financial sector is shallower. The coefficients in Tables (2) and (3) are re-estimated using the new measure of financial development, and the results obtained are reported in Tables (4) and (5) respectively.

The results in Table (4) show that the effects of lagged urbanisation, income per capita, and population growth on urbanisation are less affected by the use of an alternative measureof financial development. The signs and the direction of relationships reported in Table (2) are the same as when financial development was measured as financial depth, the ratio of broad money to total GDP. The effect of industrialisation is, however, significant in three of the four cases when we introduced financial development, and the interactions of industrialisation and financial development are controlled for. In situations where the coefficient of industrialisation is significant, it nonetheless had a positive sign, although the net effect is negative, which is consistent with what was reported in Table (2).

In Table (5), financial development is measured as financial depth, the ratio of broad moneyto GDP. Similar to the results reported in Table (3) when financial development is measuredas the ratio of domestic credit to the private sector to GDP, the results reported in Table (5)indicated that the use of an alternative measure of financial development does not significantly change the conclusion arrived at earlier. In other words, an increase in employment in the manufacturing sector still had a positive and significant effect on the level of urbanisation. The net effect of industrialisation on urbanisation is consistent with what was reported in Table (3), and negative in two of the four cases. The net effect is negative when we control for technology, indicating that expansion in technology, reduces the tendency for rural dwellers to migrate permanently to urban areas. Further, the net effect is positive when we controlled for trade and inflation, which is slightly different from what we observed in the main regression. Suggesting that the reducing effect is lower in an inflationary environment, and trade intensity countries/periods.

In Table (6), we re-estimated Equation (2) to account for the role of natural resource rent. The purpose of this investigation is to re-assess the conclusion in Ebeke and Etoundi (2017) andGollin et al. (2016) that urbanisation increases with natural resources. As shown in Table (6), we observed that industrialisation had a positive and significant effect on urbanisation, althoughthe effect is lower when the financial sector development is measured as financial services. The interaction term of industrialisation and financial

development is negative regardless of how itis measured. Furthermore, the net effect of industrialisation on urbanisation is consistent with the earlier reported results.

Furthermore, we found that an increase in natural resources exports contributed partly to an increase in urbanisation in African countries, as shown in Table (6). Our finding is consistentwith Ebeke and Etoundi (2017) and Gollin et al. (2016). Natural resource exports had a weak effect on urbanisation when industrialisation was measured from the output perspective, whereas the effect was stronger when industrialisation was measured from the employment perspective. Urbanisation entails migration from rural areas to urban areas, and employment plays a crucial role in migration. Hence, we argue that the measure of industrialisation based on employment gives a more convincing picture of the effect of industrialisation on urbanisation.

Table 4: Industrialisation (employment approach), financial service development and urbani-sation

	(1)	(2)	(3)	(4)	(5)
URB(-1)	1.106***	1.075***	1.055***	1.077***	1.049***
	(0.009)	(0.018)	(0.015)	(0.014)	(0.015)
Log(GDPPC)	-1.402***	-0.175	-0.124	-0.245	0.348*
	(0.123)	(0.33)	(0.233)	(0.31)	(0.181)
Log(MANUGDP)	-0.033**	0.198*	0.445***	0.152	0.372***
	(0.014)	(0.111)	(0.155)	(0.113)	(0.124)
POPG	-0.085***	0.152*	0.311***	0.184***	0.436***
	(0.018)	(0.081)	(0.081)	(0.04)	(0.123)
Log(BM)		0.089	0.406***	0.049	0.261**
		(0.087)	(0.113)	(0.088)	(0.098)
Log(MANUGDP)* Log(BM)		-0.067*	-0.163***	-0.05	-0.132***
		(0.037)	(0.048)	(0.038)	(0.042)
MOB100			-0.009***		
			(0.001)		
Log(TRADE)				0.126	
				(0.151)	
INFDEF					0.02***
					(0.004)
Constant	8.184***	-3.146	-11.518**	-2.248	-11.355***
	(0.802)	(3.259)	(4.461)	(3.205)	(2.966)
Net effects	na	-0.041	-0.137	na	-0.099
AR (1)	0.002	0.003	0.002	0.004	0.338
AR (2)	0.644	0.844	0.340	0.782	0.861
Sargen OIR	0.000	0.000	0.000	0.000	0.000
Hansen OIR	0.275	0.025	0.042	0.078	0.093
DHT for instruments					
Instruments in levels H excluding group	0.209	0.085	0.541	0.178	0.174
Dif (nill, H=exogenous)	0.553	0.055	0.008	0.101	0.132
IV (years, ed(diff)) H excluding group	0.243	0.028	0.059	0.103	0.090
Dif (nill, H=exogenous)	0.419	0.146	0.143	0.125	0.283
Fisher	133948.93***	50240.36***	63952.25***	32159.52****	61849.09***
No of Instruments	29	20	22	22	22
No of countries	33	33	33	33	33
No of observations	292	291	287	287	291

Notes: Standard errors are in parentheses; ***, ** and * are significant at 1%, 5% and 10%, respectively; URB is urbanization and it is the ratio of urban population to total population; GDPPC is Gross Domestic Product Per capita; EMPLIND is the ratio of employment in the industrial sector to total employment; POPG is population growth rate; DCP is the ratio of credit to the private sector to total GDP; mob100 is mobile phone subscription per 100 persons; TRADE is trade openness and it is computed as the ratio of the summation of import and export to GDP; INFDEF is inflation rate computed based on GDP deflator; log is natural logarithm; DHT is Difference in Hansen Test for exogeneity of instruments; Dif is Difference; OIR is over-identifying restrictions test. The reported values for Sargan OIR, Hansen OIR, AR (1), AR (2) and DHT for instruments are prob. value. Under the net effect, na means that the marginal effect and/or unconditional effect are insignificant.

Table 5: Industrialisation (employment approach), financial depth and urbanisation

	(1)	(2)	(3)	(4)	(5)
URB(-1)	1.106***	1.075***	1.055***	1.077***	1.049***
	(0.009)	(0.018)	(0.015)	(0.014)	(0.015)
Log(GDPPC)	-1.402***	-0.175	-0.124	-0.245	0.348*
	(0.123)	(0.33)	(0.233)	(0.31)	(0.181)
Log(MANUG)P)	-0.033**	0.198*	0.445***	0.152	0.372***
	(0.014)	(0.111)	(0.155)	(0.113)	(0.124)
POPG	-0.085***	0.152*	0.311***	0.184***	0.436***
	(0.018)	(0.081)	(0.081)	(0.04)	(0.123)
Log(BM)		0.089	0.406***	0.049	0.261**
		(0.087)	(0.113)	(0.088)	(0.098)
Log(MANUG)P)* Log(BM)		-0.067*	-0.163***	-0.05	-0.132***
		(0.037)	(0.048)	(0.038)	(0.042)
MOB100			-0.009***		
			(0.001)		
Log(TRADE)				0.126	
				(0.151)	
INFDEF					0.02***
					(0.004)
Constant	8.184***	-3.146	-11.518**	-2.248	-11.355***
	(0.802)	(3.259)	(4.461)	(3.205)	(2.966)
Net effects	na	-0.041	-0.137	na	-0.099
AR (1)	0.002	0.003	0.002	0.004	0.338
AR (2)	0.644	0.844	0.340	0.782	0.861
Sargen OIR	0.000	0.000	0.000	0.000	0.000
Hansen OIR	0.275	0.025	0.042	0.078	0.093
DHT for instruments					
Instruments in levels H excluding group	0.209	0.085	0.541	0.178	0.174
Dif (nill, H=exogenous)	0.553	0.055	0.008	0.101	0.132
IV (years, ed(diff)) H excluding group	0.243	0.028	0.059	0.103	0.090
Dif (nill, H=exogenous)	0.419	0.146	0.143	0.125	0.283
Fisher	133948.93***	50240.36***	63952.25***	32159.52****	61849.09***
No of Instruments	29	20	22	22	22
No of countries	33	33	33	33	33
No of observations	292	291	287	287	291

Notes: Standard errors are in parentheses; *** ** and * are significant at 1%, 5% and 10%, respectively; URB is urbanization and it is ratio of urban population to total population; GDPPC is Gross Domestic Product Per capita; EMPLIND is the ratio of employment in the industrial sector to total employment; POPG is populationgrowth rate; DCP is the ratio of credit to the private sector to total GDP; mob100 is mobile phone subscriptionper 100 persons; TRADE is trade openness and it is computed as the ratio of the summation of import and export to GDP; INFDEF is inflation rate computed based on GDP deflator; log is natural logarithm; DHT is Difference in Hansen Test for exogeneity of instruments; Dif is Difference; OIR is over-identifying restrictions test. The reported values for Sargan OIR, Hansen OIR, AR (1), AR (2) and DHT for instruments are prob. value. Under the net effect, na means that the marginal effect and/or unconditional effect are insignificant.

Table 6: Industrialisation, financial development, natural resource, and urbanisation

	(1)	(2)	(3)	(4)
URB(-1)	1.076***	1.064***	1.089***	1.093***
	(0.01)	(0.015)	(0.015)	(0.009)
Log(GDPPC)	-0.889***	-0.337	-0.6**	-0.522
	(0.281)	(0.298)	(0.226)	(0.332)
Log(MANUGD P)	0.107***	0.179***		
	(0.025)	(0.064)		
Log(EMPLIND)			0.14	0.494**
			(0.622)	(0.194)
POPG	-0.008	-0.074***	-0.08***	-0.007
	(0.023)	(0.016)	(0.025)	(0.024)
Log(DCPS)	0.206***			0.152***
	(0.024)			(0.022)
Log(BM)		0.209***	0.029	
		(0.053)	(0.054)	
Log(MANUGDP)x Log(DCPS)	-0.078***			
	(0.011)			
Log(MANUGDP)* Log(BM)		-0.078***		
		(0.023)		
Log(EMPLIND)x Log(DCPS)				-0.448***
				(0.077)
Log(EMPLIND)x Log(BM)			-0.04	
			(0.188)	
Log(natural)	-0.017	0.131**	0.12***	0.065
	(0.057)	(0.051)	(0.038)	(0.051)
Constant	2.212	-3.32	1.742	-0.145
	(1.856)	(2.796)	(2.288)	(1.863)
Net effects	-0.138	-0.100	na	-0.914
AR (1)	0.070	0.020	0.015	0.044
AR (2)	0.331	0.390	0.418	0.475
Sargen OIR	0.001	0.000	0.000	0.000
Hansen OIR	0.277	0.455	0.414	0.520
DHT for instruments				
Instruments in levels H excluding group	0.981	0.848	0.563	0.952
Dif (nill, H=exogenous)	0.010	0.097	0.242	0.068
IV (years, ed(diff)) H excluding group	0.256	0.416	0.500	0.413
Dif (nill, H=exogenous)	0.391	0.470	0.300	0.590
Fisher	100878.74***	101794.69***	54191.35***	236809***
No of Instruments	29	29	29	29
No of countries	33	33	32	32
No of observations	251	263	256	244

Notes: Standard errors are in parentheses; ***, ** and * are significant at 1%, 5% and 10%, respectively; URB is urbanization and it is ratio of urban population to total population; GDPPC is Gross Domestic Product Per capita; MANUGDP is the ratio of manufacturing sector output to total GDP; EMPLIND is the ratio of employment in the industrial sector to total employment; POPG is population growth rate; DCP is the ratio of credit to the private sector to total GDP; BM is the ratio broad money to total GDP; natural is natural rent and it is the ratio of natural rent to total GDP; DHT is Difference in Hansen Test for exogeneity of instruments; Dif is Difference; OIR is over-identifying restrictions test. The reported values for Sargan OIR, Hansen OIR, AR (1), AR (2) and DHT for instruments are prob. value. Under the net effect, na means that the marginal effect and/or unconditional effect are insignificant.

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5 Conclusion and policy recommendations

Economic transformation is believed to be accompanied by urbanisation as it causes move-ment from rural areas to urban areas in the quest to engage in sectors with higher levelsof productivity, which in turn pay higher rewards for labour time. A positive net effect of industrialisation on urbanisation suggests that highly industrialised African countries have a higher level of urbanisation. On the contrary, a negative net effect suggests that an increase in urbanisation is associated with de-industrialisation, which might partly explain why impres- sive economic growth may sometimes be associated with little job creation. The literature on urbanisation mainly centred on the causes and effects of an increase in urbanisation (Njoh, 2003). This study focused on an under-researched area of the dynamics of structural economic transformation, namely the impact of industrialisation on urbanisation, with a specific focus on Africa. Additionally, it investigated the intervening role of financial sector development in the industrialisation-urbanisation relationship. In this study, we argued that since financial institu- tions are mostly clustered in the cities and provide funding for industrial development, financialdevelopment should contribute to rising urbanisation in Africa. However, if the developmentof the financial sector helps rural dwellers to achieve their financial needs where they are, such improvement in the level of financial sector development may encourage rural dwellers to re- main in their location, thus reducing the pace of urbanisation. Hence, the precise moderating effect of financial sector development on the primary nexus of interest remains unclear.

This study, therefore, sought to understand whether the level of financial sector develop- ment matters in understanding the effect of industrialisation on urbanisation in Africa. To achieve this objective, data from thirty-three (33) African countries over the period of 1991 to 2018 was analysed using the System GMM estimator. Two measures of industrialisation were used in this study: the ratio of manufacturing output to total GDP and the ratio of manufac-turing employment to total employment. The main measure of financial development used in the study is the ratio of domestic credit to the private sector to GDP, which measures the levelof financial services rendered by the financial sector. As a robustness check, we

used another measure of financial sector development, financial depth, which is computed as the ratio of broad money to GDP.

The study findings showed that industrialisation had a positive and significant effect on ur-banisation. The interaction of industrialisation and financial development is negative, suggest- ing that financial development dampens the positive effect of industrialisation on urbanisation. The net effect of industrialisation on urbanisation. When it is measured as the share of manu- facturing output in total output or as the share of employment in the manufacturing sector asa share of total employment, the net effect is negative, suggesting that industrialisation had a reducing effect on urbanisation. In the presence of weak financial sector development, industri- alisation contributes to urbanisation in African countries. Furthermore, the study findings showthat the lagged value of urbanisation had a positive and significant effect on the current level of urbanisation. Also, the coefficient is greater than one, suggesting that in 2023, on average, the urbanisation rate in most African countries would be higher than what was recorded in 2022.In other words, the study findings indicate that the proportion of the population residing in urban areas increases over time. However, because the coefficients of the lagged urbanisation are greater than 1, the estimated models are unstable[4].

Since rapid industrialisation, especially the job-generating type was found to precipitate fast-paced urbanisation in the sample of African countries analysed, governments may put complementary policies such as various forms of agricultural policies in place. Notwithstanding active industrial policies, such policies are likely to make rural settings increasingly attractivefor those residing there and, therefore, stem the tide of unbridled rural-urban population drifts.Hence, industrial policies should be accomplished with urban planning policies to avoid the development of slums in urban areas. Also, it, thus, seems to stand to reason on the basis ofthe findings that in considering complementary intervention channels that may be helpful in population management in rapidly industrialising economies in Africa, financial sector reforms aimed at achieving higher financial depth may be ineffectual.

[4] The urbanisation rate in most African countries follows an upward trend, partly explaining why the coef- ficient we obtained is greater than 1. The study finding is consistent with the evidence in Ebeke and Etoundi (2017) that focused on urbanisation in Africa.

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