

Composite Index of Inclusive Growth in Sub-Saharan Africa: The Inclusion of the Informal Sector

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Authors' contributions

This work was carried out in collaboration between both authors. Author OOM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author NNMH III managed the analyses of the study and the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

This paper aims to provide a composite index of inclusive growth in 32 sub-Saharan African countries between 1995 and 2014 by taking into account the importance of the informal sector. Following the principal component analysis methods, we find specifically that except for countries such as Djibouti, Burkina Faso, Mauritius, Nigeria and Zimbabwe, inclusive growth has trended upward over the study period. This trend is non-linear and is characterized by two sub periods. From 1995 to 2005, the composite index of inclusive growth is essentially negative. On the other hand, positive growth in value is recorded over the second sub-period from 2005 to 2014. Overall and on average, these countries have experienced inclusive growth. Moreover, we also note that in countries such as Burkina Faso, Mauritius and Nigeria, on the side-lines of the informal sector inclusive growth has a negative trend. However, when we integrate the informal sector, the trend of inclusive growth changes sign and becomes positive.

Keywords: Composite index; inclusive growth; informal sector.

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1. INTRODUCTION

Since the 1960s, the pursuit of well-being during the development process is a major challenge that has seen endless attempts at solutions in developing countries. Initially, the paradox between high performance in terms of economic growth and high prevalence of inequality was a response in the event of the inverted "U" developed by Kuznets [1]¹. Although Barro [2] confirmed empirically this hypothesis for several countries, the experience of Asian countries² did not support it [3]. An alternative framework emphasizing the priority of the efficiency of economic growth on income distribution was considered after 1960. Unfortunately, it does not explain much the persistence of inequalities in the process of economic growth [4]³. Subsequently, the idea of improving the monetary conditions of the poor promote pro-poor growth theories in the 1980s. However, the ambiguity of the empirical results of this growth mechanism stimulates new research on inclusive growth policies⁴.

This new vision promoted by international institutions requires that we go beyond the policy of intensification of growth and pro-poor policies. The analysis should now overlook the only advantages related to high level of gross domestic product. Indeed, some economies have experienced strong performance in production without a significant impact on poverty, inequality and welfare. If inclusive growth appears as a panacea for development, it should be noted that

¹ According to Kuznets [1] the first periods of economic growth is usually accompanied by rising inequality. These should however decrease as and as growth becomes sustainable.

² African Development Bank [5].

³ According to them, given the fact that the proportion of the rich on the wealth creation process in an economy is larger than that of the poor, an acceleration of growth would benefit benefit the rich more than the poor.

⁴ Indeed, in Thailand the work Kakwani and Pernia [6] between 1990 and 1998 showed that the reduction of poverty in the country has been accompanied by rising inequality. In Europe, studies conducted between 1980 and 2000 show that growth was pro-poor in France, Spain and Italy, anti-poor Germany [7]. Ironically the same period, Germany recorded a better solvency in national accounts than other countries. In Tunisia, the same study has allowed to see a significant reduction in poverty despite the fact that growth was not pro-poor [8]. In Israel, we see that between 1995 and 2010, growth was pro-rich despite the reduction of poverty [9]. In South Africa and Mauritania over the same period, growth was anti-poor and accompanied by rising inequality. Even more, a study [6] in five East African countries serves to emphasize that the reduction of poverty and inequality in these countries do not always come from pro-poor growth policies.

this notion divides scientific opinion on both its definition and its measurement.

This paper attempts to address this issue by providing a composite index of inclusive growth in sub-Saharan Africa with the particularity of taking into account the informal sector which was not measurable. The indicator we propose measures the inclusive growth level of 32 sub-Saharan countries⁵ between 1995 and 2014. We rely on the principal component analysis. Based on this sample, we compute two composite index of inclusive growth. The first ignores the informal sector while the second includes the informal sector. However, for some data unavailability reasons the second index is calculated only on a set of 29 countries.

Our results show that with the exception of countries such as Djibouti, Burkina Faso, Mauritius, Nigeria and Zimbabwe inclusive growth has trended upward over the study period. This trend is non-linear and characterized by two sub-periods. From 1995 to 2005, the composite index of inclusive growth is essentially negative. During the second sub-period covering 2005 to 2014, inclusive recorded positive growth in value. As a general result and on average, these countries have experienced inclusive growth. Furthermore, in countries such as Burkina Faso, Mauritius and Nigeria, on the sidelines of the informal sector inclusive growth has a negative trend. When integrating the informal sector, the trend this inclusive growth becomes positive.

The reminder of the paper is structured as follows. The second section outlines our choice of indicators in the light of literature; the third presents the methodology for the construction of our index.

2. LITERATURE REVIEW

Today, despite the consensus on the usefulness of inclusive growth for a country, the definition and measurement of this concept divide economists. According to Kakwani and Pernia [5], inclusive growth must be pro-poor growth strategy bonus via the overall well-being. This

⁵ The 32 sub-Saharan countries are Angola, South Africa, Benin, Burkina Faso, Botswana, Cape Verde, Cameroon, Ivory Coast, Djibouti, Ethiopia, Gambia, Ghana, Equatorial Guinea, Guinea Bissau, Lesotho, Madagascar Malawi, Mali, Mauritius, Mozambique, Mauritania, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

bonus must pass through full employment [10]. It must include all social layers in the production process [11]. The aim is to sustainably reduce unemployment in an identifiable part by individuals with equal opportunity to have access to economic opportunities [12]. Ali and Son [3] also recommended that this strategy is the poor social strata to counteract income inequality. Growth would therefore be called inclusive when it addresses not only the explanatory factors of development, but also to the equitable distribution of the fruits of growth. It is not pro-poor growth if limited only to the increase in the purchasing power of the poor population and reducing inequalities. It shall promote the mastery of participation strategies in the production and distribution of the final product [13].

Depending on the institutions and some posteriori, the definition of inclusive growth also depends on the context and level of development of each economy. For UNDP [14], the inclusiveness of growth should be realized not only by the full participation of all people in the growth process, but also equality in sharing. The World Bank, meanwhile defined inclusive growth as equal access to resources and markets with a regulatory environment beneficial to all (OECD [15]). This definition further promotes micro and macroeconomic approach with a focus on the pace and pattern of economic growth [16]. Regarding the Asian Bank and the African Development Bank (AfDB)⁶, inclusive growth boils down to reducing inequalities through increased opportunities for low-purchasing power categories to have access to health, education, social integration and nutrition. This is an approach that emphasizes the mastery of the process and results of economic growth [15].

All these definitions show how to federate the design of inclusive growth can be complex. To try to overcome this difficulty, Klasen [17] considers inclusive growth as a process having a dual approach. The first approach revises a restricted nature of non-monetary dimension, and the second approach is to revise a non-monetary dimension of a global nature. Non-monetary dimension restricted nature is that which comes down to a bonus strategy for pro-poor growth⁷. It

boils down to full employment, reducing inequalities and equitable access of the poor to the functions of social opportunities. This approach is defended by Felipe [10]⁸; Ali and Son [3], Rauniyar and Kanbur [18]. Non-monetary dimension to wide character does require a consideration of spatial constraints, environmental, political, social and economic; especially since a company may know a reduction of inequalities with an increasing number of poor. This approach was developed by Klasen [19], Grosse et al. [20] and Hakimian [21].

In summary, inclusive growth is similar to a process of creation of wealth that one hand is characterized by promoting social equity in the population and secondly, promotion of balances on economic, political, social, spatial and environmental. Despite this clarification, it must be said that the empirical evidence on the extent of this so-called inclusive growth in Sub-Saharan Africa remains mixed with neglect of the importance of the informal sector which also occupies a large part of the population and captures most part of their savings.

On the first steps to Inchoyichina and Lundstrom [22] on Zambian economy analyse inclusive growth through proxies of well-being determined by a weighting factor prices showed that the country did not experience inclusive growth. Subsequently, the work of the African Development Bank (2012, 2013, 2015) on a sample of 46 countries in sub-Saharan Africa and the Maghreb have used composite indicators. These indicators were determined by weighting variables such as: Adjusted inequalities, gross domestic product per capita, diversification of economies, the level of infrastructure, governance indicators, health, education, women's employment and elasticity of growth [23]. The results of these studies have also shown that inclusive growth was a mixed reality in these countries. Also in the same vein, the United Nations Development Program [24,25] sponsored a number of works in some countries of the continent. But the most interesting study is that of Ramos et al. [26]. They combined the term pro-poor growth with the concept of inclusive growth by using the benefits associated with the participation in the growth process. Finally, Hakimian [21] provides a composite indicator of inclusive growth that combines 14 variables but the most interesting study is that of

⁶ Briefing Note 6 of the African Development Bank on April 10, 2012 inclusive growth.

⁷ According to Kakwani and Pernia [6] Inclusive growth should be a bonus strategy for pro-poor growth.

⁸ Inclusive growth must integrate all social strata in the production process Ranieri and Ramos [11].

Ramos et al. [26]. She combined the term pro-poor growth of the concept of inclusive growth by using the benefits associated with participation in the growth process. Finally, Hakimian [21] provides a composite indicator of inclusive growth that combines 14 variables. But the most interesting study is that of Ramos et al. [26]. She combined the term pro-poor growth of the concept of inclusive growth by using the benefits associated with participation in the growth process. Finally, Hakimian [21] provides a composite indicator of inclusive growth that combines 14 variables⁹. Applied to a sample of countries in North Africa and the Middle East, the level of inclusive growth in these countries compared to a number of developing countries is still unsatisfactory with the exception of Tunisia.

The course of this literature articulating a set of inclusive growth measures does not take into account the potential impact of the informal sector. Yet, its absence in the analysis can be an important issue for the promotion of inclusive growth in sub-Saharan Africa [27]. Dabla-Norris and Feltenstein [28]; Schneider [29]. Given the influence that this “pejorative” variable informal economy can have on an inclusive growth process, we integrate in the construction of our inclusive growth index.

3. MATERIALS AND METHODS

For the construction of our inclusive growth index, we use the principal component analysis method and technique of calculating the composite index proposed by Pearson [30] and Hotelling [31]. The objective of this statistical technique is to bring a small number of dimensions, a set of multivariate data. The new dimensions represent each a linear combination of the original variables and should be mutually uncorrelated.

Algebraically, for multivariate data mass, the principal component analysis implies that the real variables K_{1i}, \dots, K_{ni} by linear combination become new variables to Z_{1i} values,, ZPI [32]. This means that, taking into account the order of importance of the smallest to the largest,

the ZPI are obtained through the following combinations:

$$Z_{1i} = a_{11}K_{1i} + a_{12}k_{2i} + \dots + a_{1n}K_{ni}$$

$$Z_{2i} = a_{21}K_{1i} + a_{22}k_{2i} + \dots + a_{2n}K_{ni}$$

(...)

$$Z_{pi} = a_{p1}K_{1i} + a_{p2}k_{2i} + \dots + a_{pn}K_{ni}$$

Weights $a_{p1}; a_{p2}; \dots; a_{pn}$ maximize the respective variances of each component $Z_{1i}; Z_{2i}; \dots; Z_{pi}$ so as to minimize the loss of information for each sample. We use the XLSTAT software that has the advantage of focusing on *a priori* variables before performing the principal component analysis. In view of this literature, the choice of our variables to combine in the construction of our composite indicator is based on economic realities such as:

The informal sector. This variable captures the influence of institutions on the willingness of economic agents to accept constraints on the tax burden, bureaucracy, economic freedom, and the rules of protection of property rights [33]. This variable in Sub-Saharan African complex features recorded the highest scores comparable to those of Latin American countries. According to the International Labor Organization, 30 to 90% of jobs outside the agricultural sector in these countries come from the informal sector. The economic activities in the informal level beat the record. The results of Medina et al. [34] also point out that despite the heterogeneous nature of this variable in SSA countries in this sample the level of the largest informal sector of the world.

Gross domestic product per capita: it measures the level of development.

Like other variables used in our analysis, we have income inequality (Gini Index?) that come from Solt [35]. Then, the human development index which is measured by the proxy Human Assets Index built by CERDI and FERDI. The choice of that proxies based on the fact that it takes into account five dimensions of human development namely food, the mortality rate of (children?) less than 5 years, adult literacy rate and enrollment with secondary education. In addition, we integrate employment considered as a social opportunity function. This variable will

⁹ The composite indicator of these authors are comprised of gross domestic product per capita, employment, the mortality rate of less than 5 years, the Life expectancy, public spending on health and education inequalities income and gender, poverty level, the environmental performance index and the corruption perceptions index.

Table 1. Descriptive statistics

Variable	(1)	(2)	(3)	(4)	(5)
	Observations	Average	Standard deviation	min	max
Income inequality	380	0.416	0.077	0.302	0.609
GDP per capita	462	1.761	2.007	253.8	9.164
Human Development	407	46.20	18.79	14.87	93.57
Access to drinking water	462	68.80	15.78	37.20	99.90
Informal sector	433	41.22	12.13	16.49	81.35
sanitary facilities	462	33.10	20.56	6.300	93.20
Active population	462	63.85	13.11	33.70	87.70
Farming lands	462	51.88	17.13	17.62	80.92
CO2 Emissions	427	21.57	81.70	146.7	503.26
Access to Electricity	457	30.29	22.94	0.015	99.40
Health expenditure	462	5.93	2.07	2.43	13.63
Life expectancy	462	55.30	7.15	37.81	74.19
institutional quality	455	56.58	6.80	23.70	77
Export diversification	450	0.77	0.07	0.52	0.92

Source: Authors

measure the effect of the active population on the inclusive growth process. It is extracted from World Development Indicator [36]. Finally, we retain access to drinking water, sanitary facilities and the farmland. These allow to highlight the importance of productive land in a process of economic growth.

Other variables such as availability of arable lands, export diversification, access to electricity, emissions of carbon dioxide and life expectancy will be included as additional variables. These do not participate in the construction of the index. Descriptive statistics of all the variables that we have just presented is found in the Table 1.

4. RESULTS AND DISCUSSION

The composite index of inclusive growth is made of 29 sub-Saharan countries over the period from 1999 to 2013 (Appendix 3). Some countries are excluded due to the unavailability of data on the informal sector. The first 8 variables including the supplementary ones are the representative elements of each country. The sphericity tests of Kaiser-Meyer-Olkin (1974) is used to statistically validate our analysis. The first factorial axis for all countries accounted for more than half of the total variance of the sample. Unfortunately, we have some countries such as Botswana, Ivory Coast, Lesotho, Mauritania, Namibia, Nigeria and Swaziland for which the first factorial axis is found above 50% but does not reach the minimum of 70% of the total variance required by Hahn and Mace [37]. Other countries have however a minimum score on the first factorial axis of about 71%. Indeed, the relevance of a

factor axis is justified in the contribution of the final index if the contribution of this axis is greater than or equal to $100 / P$, where P is the number of variables [37].

The resulting index shows that with the exception of countries such as Djibouti, Burkina Faso, Mauritius, Nigeria and Zimbabwe, inclusive growth has trended upward over the study period. This trend is characterized by two sub periods. The first sub-period covers 1999 to 2005 and is essentially characterized by a negative inclusive growth. The second sub-period from 2005 to 2014 shows a positive inclusive growth in value. But overall and on average, these countries have not experienced inclusive growth.

5. SENSITIVITY AND ROBUSTNESS TESTS

Using the principal component analysis, a composite indicator can generate two bias. The first potential bias based on the fact that building the index taking into account only one factor axis may not be significant. A factorial axis can explain more than 70% of the total variance of the sample while some areas have higher scores than or equal to $100 / P$. Therefore, the construction of the index in this base may promote the non-consideration of the effect of a variable represented by another factor axis. This is the case for countries such as Benin, Botswana, Burkina Faso, Cape Verde, Ivory Coast, Lesotho. Second, neglect or integration of a variable in the construction of the index can lead us to another trend of the overall sample. To address the first limit, we used the method of

Table 2. Correlation matrix inclusive growth (Excluding the informal sector)

	XSIVE	GINI	PERCA	DHUM	EAUPO	SECTI	FACIS	EMPLO	TAGRI
XSIVE	1								
GINI	-0.0522	1							
PERCA	0.1280	0.5214	1						
DHUM	0.3201	0.3649	0.7788	1					
EAUPO	0.2711	0.2701	0.6102	0.7413	1				
SECTI	0.0783	-0.310	-0.5503	-0.371	-0.2608	1			
FACIS	0.1069	-0.323	-0.5429	-0.4093	-0.1718	0.3995	1		
EMPLO	0.0077	0.3163	0.7062	0.6687	0.6186	-0.4276	-0.3107	1	
TAGRI	0.0446	0.2160	0.0875	0.1279	0.0622	-0.0895	-0.0412	-0.0170	1

Source: Authors

In this table represents XSIVE inclusive growth; GINI represents income inequality; PERCA represents the percapita gross domestic product; EAUPO represents access to drinking water; DHUM represents human development; SECTI represents the informal sector; FACIS represents health facilities; EMPLO represents the workforce and TAGRI represents farmland

Mikhail et al. [38]. They propose to make weights of the remaining eigenvectors to maximize the explanatory power of the total variance of the sample by a number of factor axes. As for the second term, we built another composite index on the side-lines of the informal sector in order to verify the relevance of this variable in the sample.

We carry out the method of Mikhail et al. [38] by retaining the first three factorial axes. These enable us to explain over 90% of the total variance of the sample. Only Lesotho records a total score of 87%. The results of our calculations are shown in graphs of *Appendix 1*. It clearly shows that both indices have the same trend and is moving in the same direction. In the first sub-period, the countries in our sample have a negative inclusive growth. While in the second sub-period, these countries have a positive inclusive growth.

As second limit, the construction of another index on the margin of the informal sector using the principal component analysis is substantially the same as that constructed by the method of Mikhail et al. [38]. These results are demonstrated by the different curves by countries in our sample (*Appendix 2*).

However, comparing the two approaches shows that inclusive growth indices have a interesting result. Indeed, the analysis of these graphs shows that in countries such as Burkina Faso, Mauritius and Nigeria, on the side-lines of the informal sector inclusive growth has a negative trend. But once you integrate the informal sector, the trend of this inclusive growth becomes positive. This result raises a question about the true determinants of the interrelationship

between the informal sector and inclusive growth.

Finally, we also test the sensitivity of our composite index with respect to the explanatory variables in our sample. Table 2 shows that inclusive growth is negatively correlated with income inequality and positively correlated with other variables. However, the positive correlation of the informal sector inclusive growth can be justified by the fact that people who work in the informal sector can achieve significant benefits allowing them for example to offer goods such as health, education and drinking water.

6. CONCLUSION

The aim of this article is to build and provide a composite index of inclusive growth in sub-Saharan Africa. Indeed, despite the existence of a multitude of composite index of inclusive growth, none of which to the best of our knowledge has integrated the informal sector. The technique we use is the principal component analysis developed by Pearson [30] and Hotelling [31] and taken up by Kaiser [39]. Our results show that with the exception of countries such as Djibouti, Burkina Faso, Mauritius, Nigeria and Zimbabwe inclusive growth are two trends in the study period. The period from 1995 to 2005 is essentially characterized by an negative inclusive growth. From 2005 to 2014, one positive inclusive growth was recorded in value. But overall and on average, these countries have experienced inclusive growth. Also, we show that in countries such as Burkina Faso, Mauritius and Nigeria, on the side-lines of the informal sector inclusive growth has a negative trend. But once one integrates the informal sector, the trend of this inclusive growth becomes positive. The

robustness of our results test is performed using the method of Mikhail et al. [38].

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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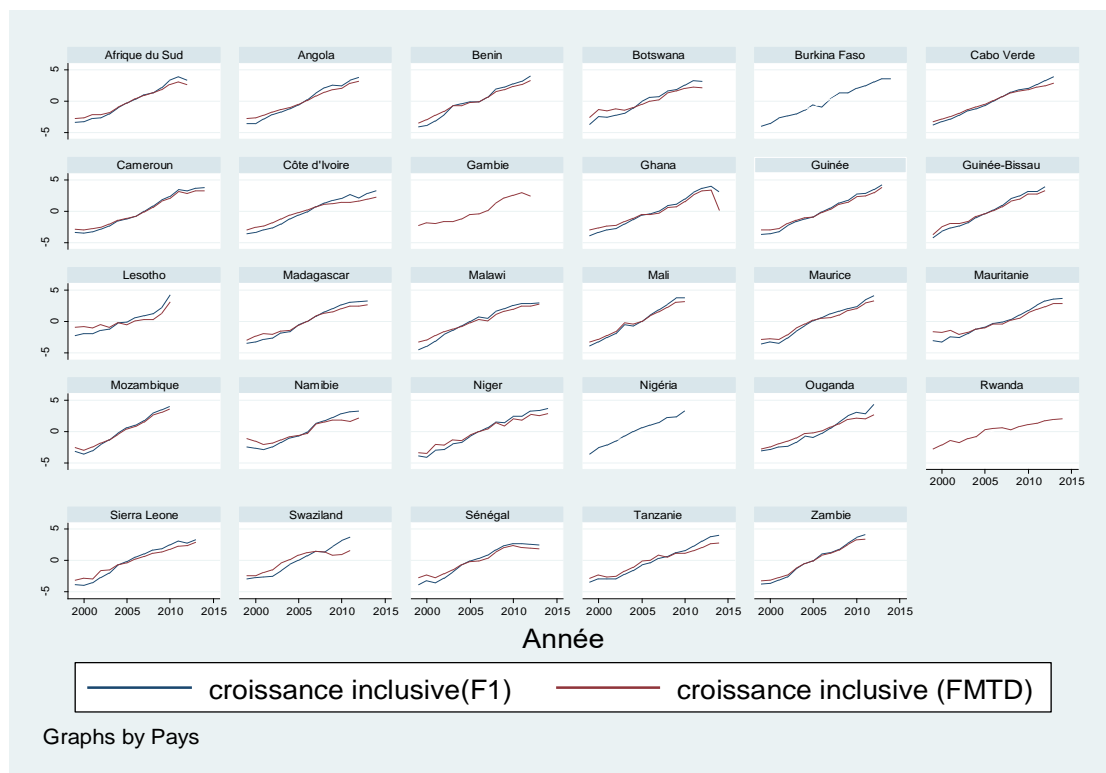
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Appendix 1

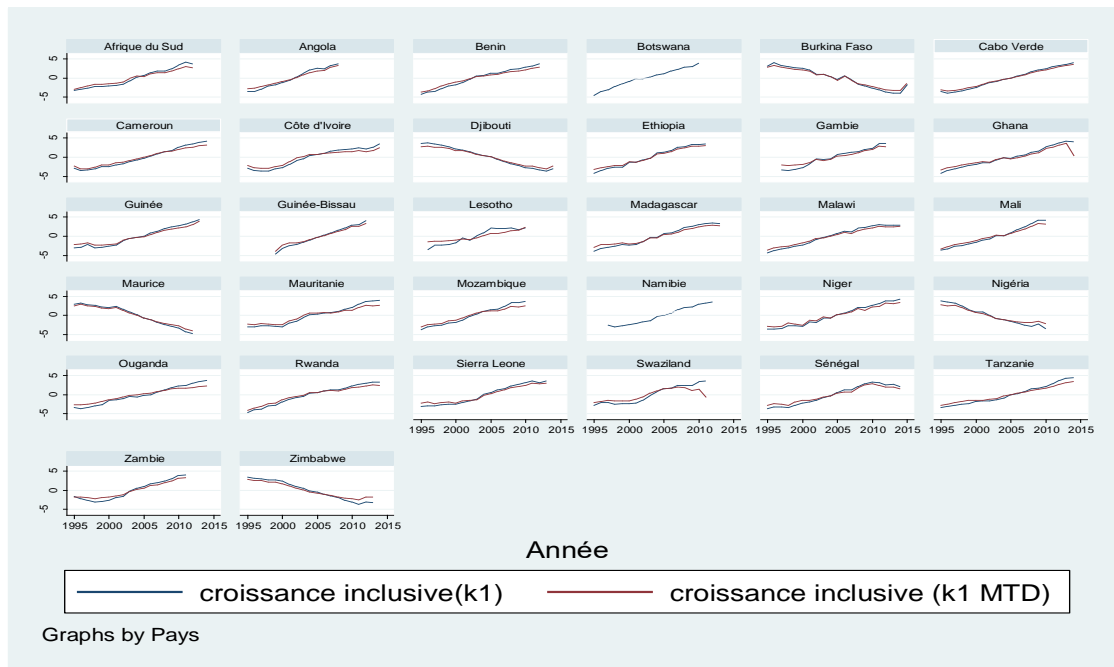
	Bartlett and Kaiser-Meyer-Olkin statistics with the informal sector		Bartlett and Kaiser-Meyer-Olkin statistics without the informal sector	
	Bartlett sphericity test	Kaiser-Meyer-Olkin test	Bartlett sphericity test	Kaiser-Meyer-Olkin test
Angola	P-value < 0,0001	0,712	P-value < 0,0001	0,712
Benin	P-value < 0,0001	0,822	P-value < 0,0001	0,780
Botswana	P-value < 0,0001	0,673	P-value < 0,0001	0,661
Burkina Faso	P-value < 0,0001	0,692	P-value < 0,0001	0,816
Cap Vert	P-value < 0,0001	0,782	P-value < 0,0001	0,768
Cameroon	P-value < 0,0001	0,851	P-value < 0,0001	0,758
Côte D'ivoire	P-value < 0,0001	0,658	P-value < 0,0001	0,753
Djibouti	NA	NA	P-value < 0,0001	0,734
Ethiopia	P-value < 0,0001	0,791	P-value < 0,0001	0,791
Gambia	P-value < 0,0001	0,737	P-value < 0,0001	0,624
Ghana	P-value < 0,0001	0,727	P-value < 0,0001	0,730
Guinea	P-value < 0,0001	0,688	P-value < 0,0001	0,775
Guinée-Bissau	P-value < 0,0001	0,796	P-value < 0,0001	0,804
Lesotho	P-value < 0,0001	0,533	P-value < 0,0001	0,560
Madagascar	P-value < 0,0001	0,666	P-value < 0,0001	0,705
Malawi	P-value < 0,0001	0,739	P-value < 0,0001	0,839
Mali	P-value < 0,0001	0,701	P-value < 0,0001	0,712
Mauritania	P-value < 0,0001	0,695	P-value < 0,0001	0,672
Mauritius	P-value < 0,0001	0,774	P-value < 0,0001	0,838
Mozambique	P-value < 0,0001	0,734	P-value < 0,0001	0,666
Namibia	P-value < 0,0001	0,597	P-value < 0,0001	0,675
Niger	P-value < 0,0001	0,762	P-value < 0,0001	0,782
Nigeria	P-value < 0,0001	0,637	P-value < 0,0001	0,707
Rwanda	P-value < 0,0001	0,700	P-value < 0,0001	0,742
Senegal	P-value < 0,0001	0,786	P-value < 0,0001	0,811
Sierra Leone	P-value < 0,0001	0,765	P-value < 0,0001	0,840
South Africa	P-value < 0,0001	0,605	P-value < 0,0001	0,781
Swaziland	P-value < 0,0001	0,754	P-value < 0,0001	0,724
Tanzania	P-value < 0,0001	0,718	P-value < 0,0001	0,733
Uganda	P-value < 0,0001	0,736	P-value < 0,0001	0,737
Zambia	P-value < 0,0001	0,873	P-value < 0,0001	0,728
Zimbabwe	NA	NA	P-value < 0,0001	0,739

Source: Authors

Appendix 2a. Evolution of the composite inclusive growth index including informal sector



Source: Authors



Source: Authors

Appendix 3. Composite inclusive growth index including informal sector

Countries	Angola	Benin	Botswana	Burkina	Cap vert	Cameroun	Cote d'Ivoire
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1999	-2,7437213	-3,515710623	-2,504104962	-3,10653462	-3,10653462	-2,862468926	-2,955860684
2000	-2,649497839	-2,98475894	-1,316289511	-2,810880606	-2,810880606	-2,972229288	-2,525926846
2001	-2,239888381	-2,288538634	-1,580298006	-1,848066374	-1,848066374	-2,804593781	-2,320925284
2002	-1,71894805	-1,6061671	-1,181003358	-1,977362863	-1,977362863	-2,526757565	-1,822978988
2003	-1,381828819	-0,69704685	-1,43761888	-1,462867762	-1,462867762	-2,08304671	-1,220354972
2004	-0,973881481	-0,68802686	-1,013387211	-1,227363965	-1,227363965	-1,432300971	-0,602353272
2005	-0,531980537	-0,235936963	-0,527621526	-0,933632219	-0,933632219	-1,163388066	-0,193647281
2006	0,053550112	-0,123115213	-0,012862721	-0,411170905	-0,411170905	-0,845126004	0,140335995
2007	0,824769633	0,569331315	0,18734629	0,276689577	0,276689577	-0,107727503	0,731461363
2008	1,41556819	1,556194537	1,345816637	0,975915328	0,975915328	0,582315683	1,074234876
2009	1,877593473	1,856730246	1,623103118	1,031715879	1,031715879	1,602469041	1,174170144
2010	2,021803507	2,308229753	2,000872068	1,542451541	1,542451541	2,049945809	1,377819594
2011	2,844226202	2,603784367	2,249892413	1,902954591	1,902954591	3,142322954	1,435138639
2012	3,20223529	3,245030964	2,166155648	2,456799776	2,456799776	2,887503884	1,571634832
2013				2,809631514	2,809631514	3,239315466	1,89800209
Mean	0	0	0	0	0	0	0
Countries	Gambie	Ghana	Guinée	Guinée-Bissau	Lesotho	Madagascar	Malawi
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1999	-2,227979598	-3,02520175	-2,989847639	-3,692430442	-0,961607647	-3,000067443	-3,281866527
2000	-1,88296949	-2,714471277	-2,991173643	-2,431492035	-0,808897475	-2,411579146	-2,953576847
2001	-1,904426156	-2,36529615	-2,749622865	-1,004323882	-1,078986026	-2,010641232	-2,287195716
2002	-1,618999044	-2,287254141	-1,915814518	-1,982764439	-0,573056931	-2,06994659	-1,666804522
2003	-1,626670565	-1,646823756	-1,419660139	-1,651251946	-0,968617842	-1,529220862	-1,23367617
2004	-1,189721527	-1,120353129	-1,067776926	-0,874252963	-0,190491016	-1,470361063	-0,875285805
2005	-0,533504569	-0,487626878	-0,906064649	-0,419218106	-0,517798854	-0,592841486	-0,243730925
2006	-0,475126661	-0,537462472	-0,23771409	0,097840951	0,060051777	-0,03349177	0,256657891
2007	0,078087587	-0,297560111	0,317324849	0,696541084	0,242563621	0,934867648	0,103814567
2008	1,338138824	0,558952605	1,09737057	1,577379365	0,318317751	1,328436028	1,147589675
2009	2,125873874	0,696553944	1,42824076	1,937756241	1,313486978	1,47879691	1,627805651
2010	2,555626943	1,472230689	2,338970169	2,733733413	3,165035664	1,999289046	1,897440851
2011	2,932862988	2,609466544	2,393376234	2,707109012		2,396013853	2,433538714
2012	2,428807393	3,206085251	2,91293519	3,305373747		2,397261744	2,385574273
2013		3,369769022	3,789456697			2,583484366	2,68971489
Mean	0	0	0	0	0	0	0

Countries	Maurice	Mali	Mauritanie	Uganda	Mozambique	Namibie	Niger
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1999	-2,836247038	-3,319289991	-1,628665034	-2,843398786	-2,633269127	-1,14087054	-3,384325431
2000	-2,763347675	-2,911332503	-1,771636182	-2,507955471	-2,961962691	-1,571709376	-3,494936424
2001	-2,845004874	-2,302959879	-1,489591	-1,973665915	-2,531298699	-2,090346937	-2,12781555
2002	-2,199516036	-1,630553613	-2,05224057	-1,533531717	-1,845830088	-1,8763926	-2,188845246
2003	-1,031776995	-0,216773286	-1,75820621	-1,038797555	-1,368994191	-1,3949271	-1,392725023
2004	-0,426011386	-0,394596495	-1,291319401	-0,388687869	-0,396117569	-0,900490978	-1,488427726
2005	0,175308168	0,006900478	-1,041507046	-0,279918689	0,349340375	-0,687904491	-0,514236756
2006	0,435496402	0,938216439	-0,395038422	0,113688084	0,735525238	-0,301220481	-0,001107573
2007	0,610742528	1,502135113	-0,402040382	0,646981985	1,508775404	1,187286367	0,410360059
2008	1,028840039	2,176182739	0,130560349	1,205097529	2,570968608	1,538167217	1,369429553
2009	1,663882485	3,059494075	0,478149024	1,91929459	3,064737949	1,753921156	0,929905915
2010	1,967466728	3,092576924	1,352881271	2,074412113	3,508124791	1,753799424	1,951936051
2011	2,931272482		1,963963175	2,000245598		1,611462439	1,7770438
2012	3,288895172		2,27493879	2,606236103		2,119225899	2,747642188
2013			2,798799537				2,551100749
Mean	0	0	0	0	0	0	0
Countries	Nigeria	Rwanda	Sénégal	Sierra Leone	Swaziland	Tanzanie	Zambie
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1999	-1,499786658	-2,798081311	-2,67557581	-3,079792665	-2,4286359	-2,845661659	-3,257905142
2000	-1,219098061	-2,144855829	-2,255392323	-2,854666662	-2,439388979	-2,286444046	-3,145405782
2001	-1,248602057	-1,481377512	-2,707111067	-1,916832489	-1,898301928	-2,587281914	-2,739085824
2002	-1,24432115	-1,774325755	-2,142883966	-1,556427834	-1,44856887	-2,492188583	-2,283978625
2003	-1,187266601	-1,189401356	-1,500901854	-1,488444172	-0,407268657	-1,680267222	-1,220760905
2004	-0,485499774	-0,852641112	-0,625343277	-0,62485296	0,155822591	-1,067757055	-0,461876487
2005	0,028296563	0,219852365	-0,191287101	-0,322132109	0,889555306	-0,008086174	-0,048209701
2006	0,269586265	0,450114023	-0,051668989	0,2851944	1,288436762	0,079478093	0,905339439
2007	0,756720282	0,619435258	0,311294165	0,678607266	1,508981223	0,868619609	1,179707017
2008	1,533162892	0,241299339	1,393970259	1,145821445	1,388678627	0,601048763	1,69089165
2009	1,744931025	0,793228245	2,084874977	1,405379677	0,82933594	1,128214921	2,587570952
2010	2,551877274	1,05812987	2,371256289	1,825683393	1,002048185	1,12359957	3,340803663
2011		1,255536732	2,098064123	2,255735423	1,559305699	1,544205136	3,452909744
2012		1,699930823	2,009960413	2,365201467		2,100762322	
2013		1,885260431	1,880744159	2,881525819		2,696989254	
Mean	0	0	0	0	0	0	0

Appendix 4. Inclusive growth composite index excluding informal sector

Countries	Angola	Benin	Botswana	Burkina	Cap vert	Cameroun	Côte d'Ivoire
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1995	-2,7437105	-3,59677166	-3,34504627	2,76337876	-3,05328837	-2,36403851	-2,2206724
1996	-2,64948741	-3,30440544	-2,57784282	3,21672363	-3,43981856	-3,09304351	-2,78650163
1997	-2,23987956	-2,75597304	-2,25192546	2,82780228	-3,24225355	-3,10375024	-2,94965156
1998	-1,71894128	-2,01932717	-1,7715763	2,5041784	-2,97627407	-2,59053323	-2,88669196
1999	-1,38182338	-1,4839371	-1,14029776	2,29731678	-2,55768564	-1,97833355	-2,41919998
2000	-0,97387765	-1,11247511	-0,32246466	2,10430104	-2,23020198	-2,02119964	-2,15991891
2001	-0,53197844	-0,69731082	-0,16022676	1,84890095	-1,59072643	-1,5132006	-1,12950593
2002	0,0535499	-0,18844987	-0,04773105	0,77448694	-1,12189849	-1,25517597	-0,16099863
2003	0,82476639	0,38423848	-0,0338531	0,97261334	-0,82869368	-0,84528099	0,09333204
2004	1,41556262	0,47404396	0,40031389	0,32991648	-0,35840136	-0,4265453	0,68606334
2005	1,87758608	0,81545982	0,63910022	-0,5586922	-0,09150722	-0,05859578	0,7563287
2006	2,02179555	0,9321835	1,21238419	0,5331313	0,44427135	0,43104722	0,97650384
2007	2,844215	1,36175126	1,48492213	-0,5696245	0,77728374	1,02609889	1,19885002
2008	3,20222268	1,73553265	2,41870869	-1,45608317	1,44734587	1,36671732	1,27697691
2009		1,88242787	2,53659365	-1,77488201	1,85564493	1,50469687	1,42688368
2010		2,16924182	2,88067836	-2,23581606	2,09128528	2,05708592	1,43760352
2011		2,50081025		-2,61549955	2,60136625	2,40385645	1,68043099
2012		2,90296058		-3,02199018	2,93787251	2,62998807	1,36300758
2013				-3,25127206	3,2498456	2,97932128	1,66045775
2014				-3,28493369	3,60287066	3,19908865	2,44447042
Mean	0,000	0,000	-0,005	0,000	0,000	0,000	0,000
Countries	Djibouti	Ethiopie	Gambie	Ghana	Guinée	Guinée-Bissau	Lesotho
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1995	2,68576299	-3,2288825	-2,01172985	-3,38407795	-2,18052768	-3,85897795	-1,4716118
1996	2,93705051	-2,76155321	-2,17680333	-2,71295313	-2,04741865	-2,30077844	-1,21674085
1997	2,64336272	-2,41899235	-2,10322686	-2,46231297	-1,64667863	-1,77690253	-1,22614153
1998	2,51912331	-2,21516444	-1,89106086	-2,06185791	-2,30461101	-1,77868586	-1,13875394
1999	2,2936995	-2,25559423	-1,42684735	-1,72403018	-2,2591268	-1,43359355	-0,9960159
2000	1,68823632	-1,18768241	-0,65040106	-1,46349714	-2,18325124	-0,8369277	-0,71796408
2001	1,69719316	-1,24755039	-0,89164711	-1,16238065	-1,97448757	-0,31984246	-0,86192821
2002	1,34024755	-0,81673591	-0,64149442	-1,25437809	-1,04248089	0,16434559	-0,37146154

2003	0,73630166	-0,29194446	0,33175034	-0,64583758	-0,57253187	0,68662809	0,14086478
2004	0,45506792	0,85141844	0,43491569	-0,14530185	-0,28138006	1,28104927	0,6758766
2005	0,14093902	0,97676869	0,64392728	-0,37962596	-0,16186735	1,71027015	0,71617384
2006	-0,45065312	1,38541941	1,14403656	-0,0866316	0,4886864	2,54288299	1,02735066
2007	-0,96340831	2,10094596	1,65127594	0,24107921	1,05204224	2,58169461	1,39548553
2008	-1,51964301	2,38077062	2,01748058	0,91474069	1,57444218	3,33883779	1,64615855
2009	-1,88650477	2,84540533	2,88172806	1,13628894	1,95243316		2,3987079
2010	-2,34870069	2,81735498	2,68809641	2,27715319	2,16360161		
2011	-2,38035077	3,06601648		2,60303773	2,5141179		
2012	-2,78365024			3,16747686	3,03589531		
2013	-2,97921957			3,52255634	3,87314296		
2014	-2,27235874			0,3425907			
Mean	0,000	0,000	0,000	-0,164	0,000	0,000	0,000
Countries	Madagascar	Malawi	Mali	Mauritanie	Maurice	Mozambique	Namibie
Variable	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1995	-2,82782503	-3,56570022	-3,28512814	-2,21222599	2,43795227	-2,95707077	-2,15054538
1996	-2,21147939	-2,94843582	-2,70877577	-2,40088014	2,87562167	-2,44121632	-2,32784456
1997	-2,07975889	-2,77855291	-2,10134593	-2,16861805	2,48100073	-2,30786702	-1,95437069
1998	-1,9980159	-2,56447254	-1,91127682	-2,20480163	2,37165276	-2,15781805	-1,6270571
1999	-1,68696809	-2,19830095	-1,56430338	-2,41109406	1,97338856	-1,46478558	-1,60582113
2000	-1,9775485	-1,67960807	-1,07033333	-2,43625547	1,7743153	-1,18826818	-0,95680433
2001	-1,84867897	-1,33240544	-0,60744405	-1,43997746	2,00256766	-0,61795095	-0,6849686
2002	-1,37948892	-0,52566253	-0,27240348	-0,96057707	1,35571914	0,12379617	0,06801429
2003	-0,45663503	-0,41529044	0,25709032	0,01056092	0,69833864	0,69299292	0,25880155
2004	-0,37604788	0,0006928	0,12860155	0,69051494	0,00752328	1,08666996	0,7222649
2005	0,51520671	0,43852869	0,79323902	0,68854573	-0,70549024	1,27254182	1,25918745
2006	0,59533978	1,03291756	1,25062528	0,7248652	-1,06133029	1,22163868	1,03691491
2007	0,96218482	0,76837881	1,91844922	0,69256899	-1,65453705	1,6742559	1,41239906
2008	1,7448922	1,51716136	2,6427235	0,85944201	-2,04137775	2,35348973	2,0797451
2009	2,06331634	1,85799606	3,3123075	1,33129764	-2,3940346	2,27637915	2,17484975
2010	2,53744764	2,24736212	3,2179745	1,38941733	-2,64579014	2,43321251	2,29523477
2011	2,75494333	2,59383745		2,13768458	-3,52175		
2012	2,86217029	2,51281003		2,58180029	-3,95376995		
2013	2,69984988	2,49455846		2,51239012			
2014		2,54418558		2,61534213			
Mean	-0,006	0,000	0,000	0,000	0,000	0,000	0,000

Countries	Niger	Nigeria	Rwanda	Sénégal	Sierra Leone	Afrique du sud	Swaziland
Variable	XSIVE	XSIVE	IXSIVE	XSIVE	XSIVE	XSIVE	XSIVE
1995	-2,90780049	2,75494975	-4,13502521	-2,73430024	-2,22679197	-3,00633586	-2,0639929
1996	-2,92336664	2,46635874	-3,52342628	-2,3933056	-1,92619537	-2,4720971	-1,798178
1997	-2,76778959	2,58827329	-3,14594515	-2,531489	-2,3724996	-2,08055267	-1,57509127
1998	-1,95259993	2,01457182	-2,40882902	-2,85574945	-2,04479497	-1,60571327	-1,71004935
1999	-2,31988582	1,38423121	-2,2717806	-1,97128023	-1,97815467	-1,65718218	-1,5889915
2000	-2,52837511	0,70836333	-1,39492733	-1,55778387	-2,21099041	-1,49338562	-1,70988532
2001	-1,24964581	0,48659142	-0,7795872	-1,48711171	-1,68108136	-1,29115181	-1,14779314
2002	-1,42859379	-0,06846548	-0,44280595	-1,24058935	-1,45330982	-1,0439663	-0,59589839
2003	-0,45435857	-0,86135917	-0,23877394	-0,66141908	-1,30355907	0,00084915	0,34070775
2004	-0,62420231	-1,10686435	0,53857452	-0,31674602	-0,19192011	0,59414235	0,87729806
2005	0,21493491	-1,3989062	0,59417899	0,33991392	0,23756832	0,45155021	1,52417679
2006	0,54623575	-1,72852962	0,91751463	0,70551299	0,77716336	1,03121514	1,61816692
2007	0,93381678	-1,76745608	1,13923326	0,71167049	1,2041834	1,37301779	1,94003364
2008	1,80413198	-1,86505584	1,01737847	1,82111869	1,86729394	1,33465005	1,84702069
2009	1,42232951	-1,47472165	1,40016893	2,47267463	2,0941846	1,85924644	1,06760831
2010	2,2586028	-2,13198117	1,75560476	2,77152869	2,45555897	2,46554556	1,44760883
2011	2,36258773		2,03576163	2,39097171	2,97435613	2,91572147	-0,71686202
2012	3,2044399		2,31178934	1,91418852	2,76327071	2,62444665	
2013	3,01443297		2,4714439	1,99694506	3,01571793		
2014	3,39510573		2,4580638	1,55938422			
Mean	0,000	0,000	0,000	0,000	0,000	0,000	-0,132
Countries	Tanzanie	Ouganda	Zambie	Zimbabwe			
Variable	XSIVE	XSIVE	XSIVE	XSIVE			
1995	-2,76662342	-2,66264841	-1,690232	2,80940495			
1996	-2,52016514	-2,63713476	-1,82941728	2,62750983			
1997	-2,07151647	-2,46998356	-1,91782532	2,54246125			
1998	-1,77413552	-2,19229102	-2,12075536	2,10222279			
1999	-1,56084082	-1,85625658	-1,94399903	2,12385149			
2000	-1,5764023	-1,37779728	-1,79487693	1,77093149			
2001	-1,57199226	-1,01400693	-1,44960009	1,14720219			
2002	-1,20252901	-0,59476939	-1,14449289	0,58755188			
2003	-1,04850645	-0,24531899	-0,31082044	0,13875574			
2004	-0,36090957	-0,02431603	0,26123513	-0,49501804			

2005	-0,12412685	0,21248586	0,54753276	-0,71183181
2006	0,4069288	0,445771	1,20596885	-1,05682298
2007	0,67363401	0,83073624	1,45998368	-1,38089649
2008	1,10553175	1,09812784	1,92973715	-1,8015039
2009	1,43585545	1,53808246	2,45920929	-2,02806911
2010	1,73240545	1,61078062	3,1013387	-2,23202192
2011	2,0691046	1,67159273	3,2370138	-2,52724819
2012	2,61264218	1,82982506		-1,78958675
2013	3,16639732	2,10392801		-1,82689242
2014	3,37524826	2,31884127		
Mean	0,000	0,000	0,000	0,000

Source: Authors

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