

African Economic Structural Transformation: A Diagnostic Analysis

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Abstract

A diagnostic study of the African economic structure reveals that Africa's growth acceleration in recent years has not been associated with economic structural transformation. In general, the agriculture sector is still a major employer of the majority of the labour force albeit representing a small share of its value-added in total GDP. The service sector is the largest sector in GDP and in total employment for most African countries. This leaves only a few countries, in which the industry sector plays the role as the largest sector in output, but not in employment. Specifically, productivity in the agriculture sector is still relatively low. Among the four stages used to categorise the state of development in agriculture, i.e. the 'beginning', 'agricultural surplus', 'integration', and 'industrialisation', most African countries are at the beginning phase and only a few in the agricultural surplus phase. In the industry sector, along the inverted U-shape curve representing the two phases in the process of industrialization, the 'industrialisation' and 'deindustrialization' phases, the majority of African countries are in the stage of being 'not industrialised' with the exception of only two countries which are in the industrialised but not the deindustrialised stage. The service sector is dominated by traditional rather than modern services. Between the 'two waves' of the service sector, most countries are still in the first ('traditional') wave of the development of the service sector and have not started the second ('modern') wave. African countries have lacked industrialisation up until the most recent decade. The new ICT era, and globalization with foreign direct investment and global supply and value chains, have made the industrialisation process faster and easier than before and brought the opportunity for African countries to quickly catch up with the latest technology, and modern management knowledge and skills. Governments have more important roles to play in identifying proper and relevant industrial policies.

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Résumé

Un diagnostic sur la structure des économies africaines révèle que l'accélération de la croissance économique de l'Afrique ces dernières années n'a pas été associée à la transformation structurelle économique. Généralement, le secteur de l'agriculture mobilise toujours la majeure partie de la population active même s'il n'apporte qu'une petite part de valeur ajoutée PNB. Le secteur des services garde la plus grande part du PNB et emploie le plus dans les pays africains. Ce qui fait qu'il n'ya qu'un petit nombre de pays où le secteur industriel joue le plus grand rôle dans la production, et non pas dans l'emploi. En réalité, la productivité dans l'agriculture est toujours relativement basse. Parmi les quatre phases qui servent à catégoriser l'état de développement de l'agriculture, à savoir 'le début', 'le surplus agricole', 'l'intégration', et 'l'industrialisation', la plupart des pays africains sont à la phase initiale, et seul un petit nombre se trouve dans la phase de surplus agricole. Dans le secteur de l'industrie, sur la courbe inversée en forme d'U qui représente les deux phases du processus d'industrialisation, à savoir 'l'industrialisation' et 'la dé-industrialisation', la majorité des pays africains sont à la phase de 'non-industrialisés', à l'exception de deux pays seulement qui sont au stade d'industrialisés et non de dé-industrialisés. Le secteur des services est dominé par des services traditionnels et modernes. Entre les 'deux vagues' de ce secteur, la plupart des pays sont encore à la première ('traditionnelle') vague et n'ont pas encore entamé la seconde (moderne) vague. Jusqu'à la dernière décennie, les pays africains manquaient encore d'industrialisation. La nouvelle ère des TIC et la globalisation avec l'investissement extérieur direct, l'approvisionnement mondial et les chaînes de valeurs, ont rendu le processus d'industrialisation plus rapide et plus facile qu'avant et ont donné l'opportunité aux pays africains de vite se rattraper avec les nouvelles technologies, la connaissance et les capacités d'une gestion moderne. Les gouvernements ont un rôle plus important à jouer dans l'identification de politiques industrielles adéquates et pertinentes.

Introduction

Africa is rising. Among the top ten fastest growing economies in the world, six are in Africa. At the same time, Africa's growth is described as largely non-inclusive because of its limited contribution to job creation and overall improvement to people's living standards (ECA 2011). Growth so far has come from macro-economic reforms, better business environments, and higher commodity prices. To ensure that growth is sustainable and continues to improve the lives of the many, countries now need to vigorously promote economic structural transformation. Economic structural transformation is a dynamic process that is characterised by diversification, upgrading, and deepening of the production and export baskets, driven by the use of new production methods and processes and reallocation of the factors of

production across different productivity sectors. A declining share of the proportion of agriculture in GDP and employment will result in the rise of a modern industrial and service economy.

Therefore, through utilisation of improved technologies, investment in human capital and labour force productivity, lower transactions costs to connect and integrate economic activities, and more efficient allocation of resources, economic structural transformation provides an opportunity for African countries to strengthen productive capacities, enhance their competitiveness on international markets, provide more job opportunities, create higher incomes and wealth, improve living standards, reduce poverty, minimise inequalities, and achieve sustainable development.

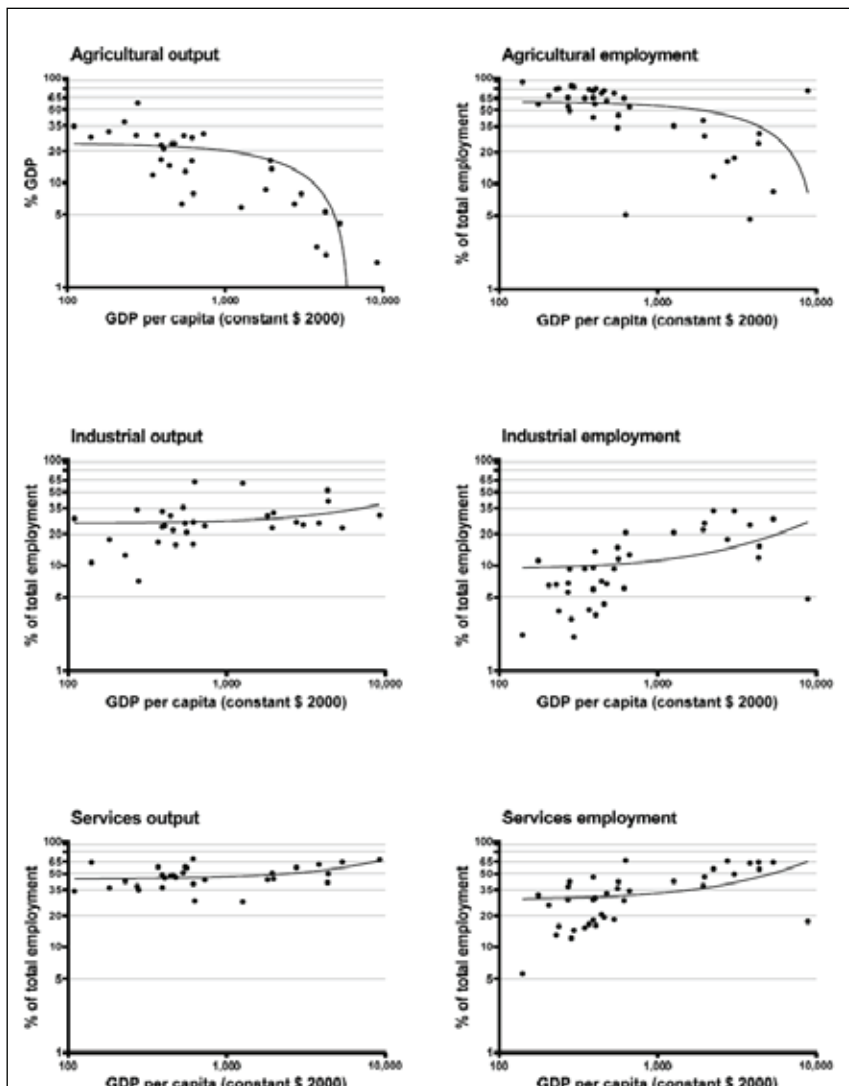
However, before designing and formulating economic strategies, policies, and plans to carry out economic structural transformation, we need to know where countries currently are in terms of the economic structures in Africa. By using the currently available statistical data, this paper tries to sketch such a picture, conduct a diagnostic study, and thus provide an indication of future prospects, and set out the implications for relevant policies and strategies. There are five sections. The next section gives an overview of the general structure of the African economy. It is followed by more detailed analyses of each of the three sectors of the economy, namely agriculture, industry and services. The last section summarises the major findings of this study and highlights implications and future prospects.

Overview of the General Economic Structure

In this section, an overview of the current economic structure in Africa is given.

The shares of output and employment in agriculture, industry, and services for all African countries for the latest year when data are available are given in Figure 1, which is based on one year and cross-country data. This shows that the structure of the three sectors in Africa is following the general pattern: when GDP per capita increases, the share of agricultural output measured by the value-added of agriculture decreases. The same occurs with agricultural employment. The decrease in agricultural output and employment both occur at the level of GDP per capita of about US \$1,000 measured at year 2000 constant prices. However the fall of agricultural output seems to be sharper and steeper than of agricultural employment. This reflects to some extent the slow increase in agricultural productivity: a greater employment share is needed for less output share. At the same time, both industrial output and employment are increasing and still on a rising trend. The same observation applies to both the output and employment of the service sector.

Figure 1: Output and Employment Shares in Agriculture, Industry and Services

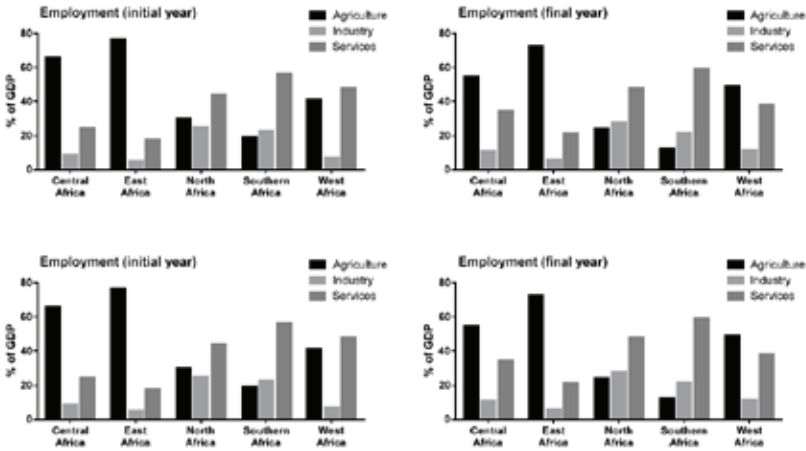


Source: World Bank, ADI (accessed September 2014).

The pattern shown in Figure 1 is further supported by two periods of time and disaggregated data as shown in Figure 2. Based on the output and employment data of agriculture, industry and services taken from the World Bank African Development Indicators (ADI), the total value-added of the sub-regions is calculated by using a weighted average derived from

the purchasing power parity (PPP) of the country data. Throughout this paper, for any country, the ‘initial year’ is defined as the earliest data point available during the period of study; in the case of Figure 1, the years are from 1960 to 2012; and the ‘final year’ is defined as the latest data point available between the same years. A caution is that not all data for every country are available.

Figure 2: Output and Employment Shares in Africa (% of GDP and total employment, latest year)



Source: World Bank, ADI (accessed September 2014).

Figure 2 thus gives a picture from the sub-regional perspective: a decrease of agricultural output occurs in all the five sub-regions. Depending on the initial levels, the speed of decrease varies. An increase of industrial output occurs in all the five sub-regions except in Southern Africa where industrial output has slightly decreased. Also, except in Central Africa, where the share of industrial output is higher than the share of agriculture and services outputs, in all the other sub-regions, service output has a higher share than that of agriculture and industry. The shares of output of the service sector are increasing in all the sub-regions except in Central Africa where the share of the output of service declined between the two selected points of time. The changes in the share of employment of the three sectors for the five sub-regions give a mixed picture. Employment in the service sector is falling in West Africa while rising in all other sub-regions.

Table 1 below provides further more detailed information on individual countries to show the largest sectors as part of GDP and the largest sector in their total employment.

Table 1: Largest Sector in African Economies (initial year and latest year)

Largest Sector in Economies (initial year)			
	Agriculture	Industry	Services
Largest sector in GDP	Botswana, Chad, DRC, Guinea, Malawi, Mozambique, Rwanda, Sierra Leone, Tunisia, Uganda	Equatorial Guinea, Eritrea, Ethiopia, Gabon, Swaziland	Algeria, Angola, Benin, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Comoros, Congo, Côte d'Ivoire, Djibouti, Egypt, Gambia, Ghana, Kenya, Liberia, Libya, Mali, Mauritius, Namibia, Niger, Nigeria, São Tomé and Príncipe, Senegal, Seychelles, Somalia, South Sudan, Sudan, Tanzania, Togo, Zambia, Zimbabwe
Largest sector in total employment	Algeria, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, DRC, Egypt, Equatorial Guinea, Eritrea, Ghana, Guinea, Kenya, Mali, Namibia, Rwanda, São Tomé and Príncipe, Senegal, Sierra Leone, Sudan, Togo, Tunisia, Uganda, Zambia, Zimbabwe	Benin	Angola, Congo, Côte d'Ivoire, Djibouti, Ethiopia, Gabon, Lesotho, Liberia, Mauritius, Swaziland

Largest Sector in Economies (final year)			
	Agriculture	Industry	Services
Largest sector in GDP	Central African Republic, Comoros, Guinea, Seychelles, Sierra Leone, Somalia	Angola, Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Swaziland	Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Chad, Côte d'Ivoire, DRC, Egypt, Gambia, Ghana, Kenya, Liberia, Libya, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, South Sudan, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe
Largest sector in total employment	Algeria, Burkina Faso, Burundi, Cameroon, Chad, DRC, Egypt, Equatorial Guinea, Eritrea, Ghana, Guinea, Mali, Mauritius, Rwanda, Senegal, Sierra Leone, Sudan, Togo, Tunisia, Uganda, Zimbabwe		Angola, Benin, Botswana, Cape Verde, Congo, Côte d'Ivoire, Djibouti, Ethiopia, Gabon, Kenya, Lesotho, Liberia, Namibia, São Tomé and Príncipe, Swaziland, Zambia

Source: Author based on World Bank, ADI (accessed September 2014).

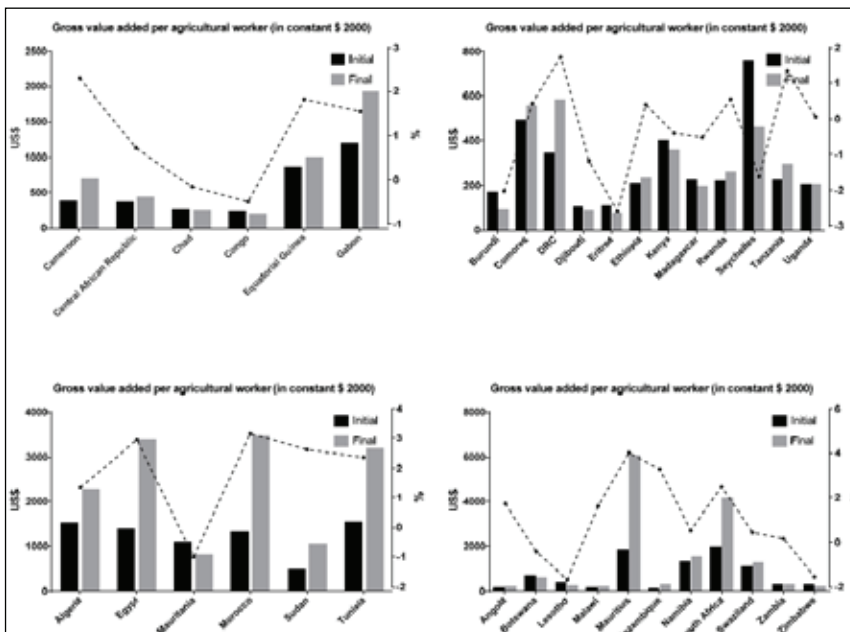
Some observations are in order: first, in the initial year, there are only five countries from all African economies that have industry as the largest sector in their GDP; and only one country has industry as the largest employment sector. In the final year, there are only eight countries that have industry as the largest sector in GDP and there is no country that has industry as the largest sector in employment. In addition to the initial five countries, three countries – Angola, Congo, and Djibouti – have joined the rank. Second, for a majority of the countries, the service sector represents the largest sector in GDP. Third, agriculture is the largest employment sector for a majority of the countries while the share of agricultural output in GDP has been declining.

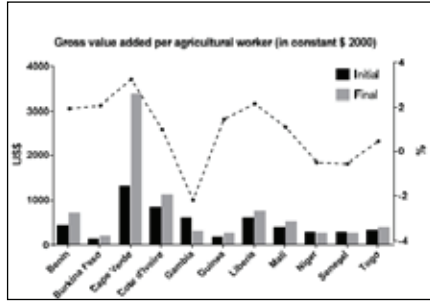
The data in Africa has reinforced the evidence that the process of economic structural transformation has been moving employment and output from the agriculture sector to industry and services sectors. While factors that affect the direction and pace of structural transformation of an economy may include demand and supply factors, demographic and geographic variables, organisational capabilities, institutions, and policies and actions, each sector has its own development paths and stages to go through. In the following three sections, we examine more closely what the paths and stages of development are in each of the three sectors, agriculture, manufacturing and services, of African countries.

Agricultural Sector

The productivity of the agricultural sector plays an important role in defining the stage of agricultural development. It is the increase of agricultural productivity that causes the reduction of employment in the agricultural sector. Figure 3 shows the changes in agricultural productivity in different countries for the period 1960-2012. The percentage change was calculated by comparing the initial and final years of data for each country. There are five charts, one for each of the sub-regions in Africa.

Figure 3: Gross Value-added per Agricultural Worker (in constant US\$ of year 2000, and annualized growth, initial and final years)





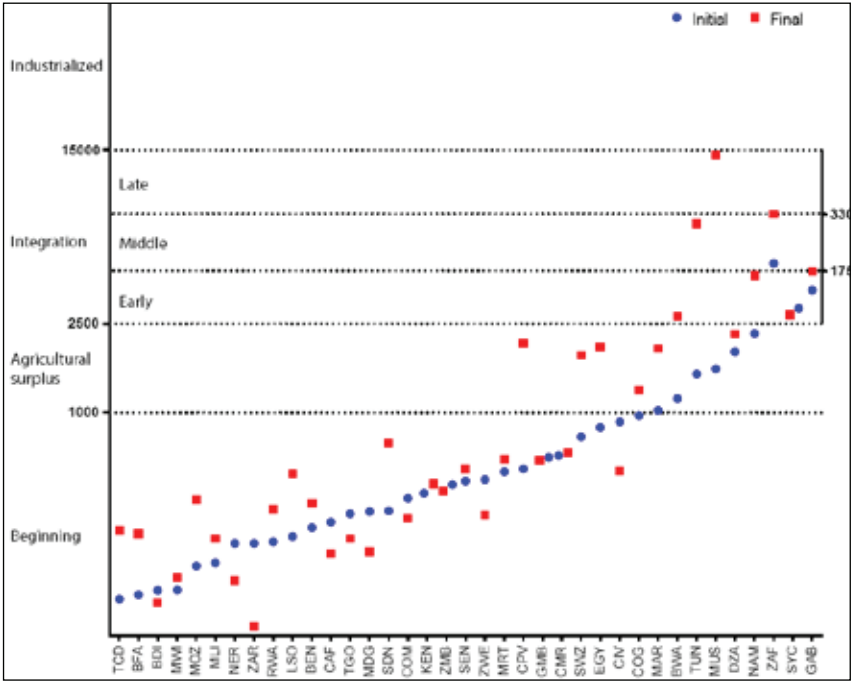
Source: World Bank, ADI (accessed September 2014).

During the period of our analysis, the productivity of agriculture in about a quarter of the countries in Africa has been falling, ending up with a negative percentage increase. As a result, most African countries could not reduce the large proportion of people employed in the sector and keep the agricultural sector as the largest sector in total employment.

A useful way to characterise the degree of transformation in Africa’s agriculture is to follow Timmer’s (1988) approach of defining agriculture into four phases: the beginning stage; agricultural surplus; integration; and industrialisation. This provides a summary of the state of agriculture and the basis for a proper assessment of the sector’s prospects. At the beginning stage, the productivity of agricultural labour starts to increase. Eventually, productivity rises sufficiently to enable a transition to the second phase of agricultural surplus. The surplus allows industry and services to grow by mobilising labour, savings, and tax revenues from the agriculture sector. In the integration phase, industry and services become increasingly significant – agricultural development depends on its being progressively linked to the rest of the economy through improved infrastructure and the development of markets. When integration is successfully completed, the economy is deemed industrialised. At this phase, surplus labour in agriculture will have been absorbed by the other sectors of the economy and labour productivity in agriculture is like that of industry and services.

The diagram in Figure 4 below was constructed by using ‘output per worker’ measured in constant US\$ of year 2000 for the period 1980 to 2010.

Figure 4: Stages of Agricultural development in Africa, Timmer’s Classification, (initial and final years)



Source: Author, based on World Bank, ADI (accessed September 2014).

The stages are defined by income level measured by GDP per capita and agricultural productivity. High income refers to GDP per capita at US \$15,000 and above. Middle income is equal to US \$2,500–\$15,000 GDP per capita. Low income represents those with GDP per capita of US \$2,500 or less. The sub-stages under the integration phase are as follows: middle-income economies with labour productivity of US \$1,750 or below are in the early integration phase; those between US \$1,750 and US \$3,300 are in the middle integration phase; and those above US \$3,300 are in the late integration phase. Due to scarcity of data points, the agriculture value-added per worker (constant US\$ in year 2000) of the initial year is the calculated average between the years of 1980-1990. That of the final year is a calculated average between the years of 2001 and 2011.

Table 2 provides the list of country codes and their corresponding country names as used in Figure 4.

Table 2: Country Names and Country Codes Used in Figure 4

Code	Country Name	Code	Country Name	Code	Country Name
AGO	Angola	GHA	Ghana	RWA	Rwanda
BDI	Burundi	GIN	Guinea	SDN	Sudan
BEN	Benin	GMB	Gambia, The	SEN	Senegal
BFA	Burkina Faso	GNB	Guinea-Bissau	SLE	Sierra Leone
BWA	Botswana	GNQ	Equatorial Guinea	SOM	Somalia
CAF	Central African Republic	KEN	Kenya	SSD	South Sudan
CIV	Côte d'Ivoire	LBR	Liberia	STP	São Tomé and Príncipe
CMR	Cameroon	LSO	Lesotho	SWZ	Swaziland
COD	Congo, Dem Rep.	MAR	Morocco	SYC	Seychelles
COG	Congo, Rep.	MDG	Madagascar	TCD	Chad
COM	Comoros	MLI	Mali	TGO	Togo
CPV	Cape Verde	MOZ	Mozambique	TUN	Tunisia
DJI	Djibouti	MRT	Mauritania	TZA	Tanzania
DZA	Algeria	MUS	Mauritius	UGA	Uganda
EGY	Egypt, Arab Rep.	MWI	Malawi	ZAF	South Africa
ERI	Eritrea	NAM	Namibia	ZMB	Zambia
ETH	Ethiopia	NER	Niger	ZWE	Zimbabwe
GAB	Gabon	NGA	Nigeria		

As shown in Figure 4, most of the countries are still at the 'beginning' phase of the development of agriculture. About six countries have moved into the range of 'agricultural surplus' and about seven countries are in the phase of 'integration'. None of the countries have yet reached the stage of 'industrialised' agriculture.

More specifically, in both the initial and final years, i.e. 1980 and 2010, there was no country that had reached the industrialised phase. In the initial year, i.e. 1980, there were only three countries in the early stage of the integration phase: ZAF (South Africa), SYC (Seychelles), and GAB (Gabon). In the final year, i.e. 2010, four more countries, in addition to ZAF (South Africa), SYC (Seychelles), and GAB (Gabon), had joined the integration phase: BWA (Botswana), TUN (Tunisia), MUS (Mauritius), and NAM (Namibia); while MUS (Mauritius) had jumped from the agricultural surplus phase to the late stage of the integration phase. For the remaining six countries, two were in the middle stage of the integration phase: TUN (Tunisia) and ZAF (South Africa); and the remaining four countries were in the early stage of the integration phase: BWA

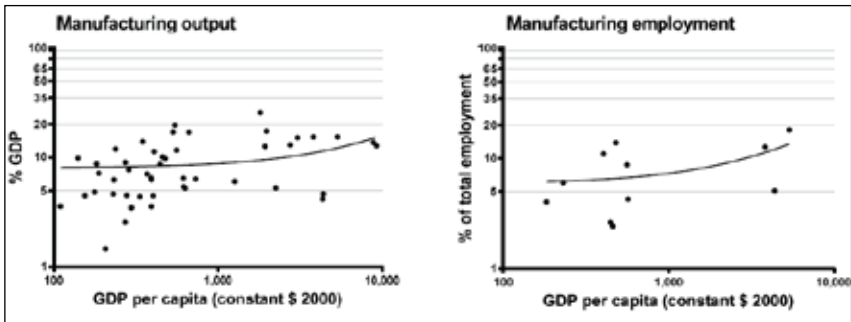
(Botswana), NAM (Namibia), SYC (Seychelles), and GAB (Gabon). There were six countries in the agricultural surplus phase in the initial year: MAR (Morocco), BWA (Botswana), TUN (Tunisia), MUS (Mauritius), DZA (Algeria), and NAM (Namibia). As shown above, four of them had moved up to the integration phase: BWA (Botswana), TUN (Tunisia), MUS (Mauritius), and NAM (Namibia). Two countries, MAR (Morocco) and DZA (Algeria), joined by four more countries, CPV (Cap Verde), SWZ (Swaziland), EGY (Egypt), and COG (Congo, Rep.), formed the new six countries that were in the agricultural surplus phase in the final year (2010). Besides these total thirteen countries – i.e. one quarter of the total countries, six in the integration phase and seven in the agricultural surplus phase – all other African countries, i.e. 76 per cent of the total countries, still remained in the same beginning phase after the three decades, 1980-2010. Given their income per capita, the productivity of agricultural labour in these economies has not increased significantly.

Industrial Sector

The share of manufacturing output and employment against real GDP per capita is shown in Figure 5. The data for manufacturing employment are especially scarce. Presently only about eleven countries have reported such data to the concerned international and regional organisations, which is what are thus available to the international community.

Figure 5 shows that both the percentage of manufacturing output measured by the value added to total GDP and the percentage of manufacturing employment relative to total employment are showing an increasing trend in their shares along with the income level measured by GDP per capita at constant US\$ in year 2000.

Figure 5: Manufacturing Output and Employment Shares



Sources: GGDC. 10-Sector Database and World Bank, ADI (accessed September 2014).

The degree of industrialisation is usually described by an inverted U-shape curve representing the two phases in the process of industrialization (ADB 2013). The first is the industrialisation phase where employment and output shares increase up to a specific level of income per capita. This is followed by the second phase, i.e. the de-industrialisation phase where both employment and output shares decline. The pattern is driven by demand and supply factors that derive from structural transformation. On the demand side, as per capita income rises, the proportion of income spent on food declines, which leads to a shift in the pattern of demand from agricultural products to manufactured products and services. On the supply side, when the productivity of agriculture increases, it frees up more labour to move out of agriculture into industry and service sectors. As the country develops further, demand shifts increasingly toward services, and the share of expenditure devoted to manufacturing stabilises and, then ultimately falls in relative terms. The share of employment in manufacturing should also stabilize and eventually fall.

De-industrialisation appears to mainly reflect the impact of the differences in growth of labour productivity between manufacturing and services. If labour productivity in manufacturing increases consistently, then services will have to absorb an ever greater share of total employment, just to keep their output rising in line with that of manufacturing. The continuous increase in the share of employment in services reflects both the shift in employment from agriculture to services during the industrialisation phase and later, from manufacturing to services during the de-industrialisation phase.

There is another reason for the shift in employment: as economic specialisation and automation increase with economic growth, it becomes efficient for services once provided within a firm or household to be contracted out to experts outside the organisation. Legal, accounting and data processing services are examples for firms; day care, housekeeping and restaurants are examples for households. This may mean two things. Firstly, that the same volume of services is being provided as before, but that these services are now measured as a separate market activity. Secondly, increased specialisation can lead to higher quality and/or lower average costs for some services, which would increase the demand for and production of such services.

To identify the turning points in the shares as well as the related income level at which de-industrialisation starts, ADB (2013) ran a regression analysis based on the data of both industrialised and developing economies. The result of their analysis was that the manufacturing share peaks at about 18 per cent for both output and employment, which occurs at an income level of about US \$8,000 GDP per capita.

Table 3 shows the year when the highest share was obtained and the actual value of the highest share of manufacturing output and employment. The average of the value of the highest share of output is 12.9 per cent and the average of the value of the highest share of employment is 11.2 per cent. The correspondent figures in Asia are 27.8 per cent and 20.8 per cent, and in the OECD countries are 25.9 per cent and 25.7 per cent respectively.

Table 3: Peak Manufacturing Share in Output and Employment, African Economies

Economy	Output			Employment		
	Data since	Year when highest share was obtained	% value of highest share	Data since	Year when highest share was obtained	% value of highest share
Botswana	1965	1976	9.3	1991	1991	6.2
Ethiopia	1981	1985	7.8	1991	2010	6.1
Ghana	2000	2000	9.0	1991	1991	13.8
Kenya	1964	1993	11.6	1991	2008	14.5
Malawi	1975	1992	16.5	1991	2010	4.0
Mauritius	1976	2001	20.9	1991	1991	32.5
Nigeria	–			1991	1991	11.8
Senegal	1979	1996	13.9	1991	2010	8.8
South Africa	1960	1981	19.3	1991	1991	20.5
Tanzania	1990	2011	10.1	1991	2010	2.4
Zambia	1965	1992	10.9	1991	1991	3.0

Source: Author based on World Bank, ADI (accessed September 2014).

Using the ADB 18 per cent shares of manufacturing output and employment that marks the start of de-industrialisation as the criteria, one can classify the economies into three groups: first, economies that have industrialized and de-industrialized (in output and in employment); second, economies that have industrialised but not de-industrialised; and third, economies that never industrialised. In this group, the share of manufacturing never reached 18 per cent on a sustained basis.

Table 4 shows industrialisation, de-industrialisation, and non-industrialization in Africa including industrialised and de-industrialized, industrialised and not de-industrialised, and not industrialised countries

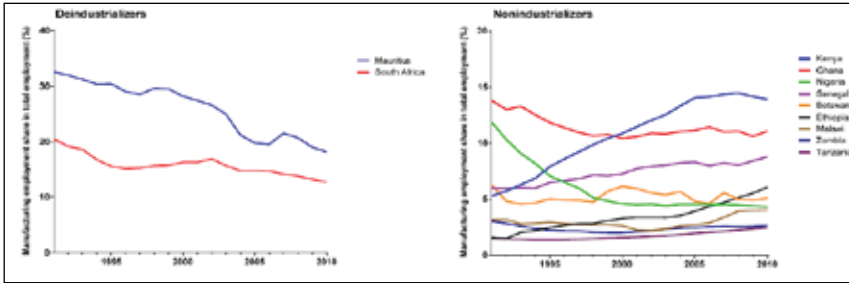
based on the breakdown by output and employment. Measured by output, Mauritius and South Africa are in the zone of ‘industrialised and not de-industrialised’ and none of the countries have reached ‘industrialised and de-industrialised’. A majority of countries are still in the range of ‘not industrialised’. Measured by employment, only Mauritius has reached to the range of ‘industrialised and de-industrialised’ and none of the countries are in the ‘industrialised and not de-industrialised’ category. A majority of the countries again fall in the area of ‘not industrialised’.

Table 4: Industrialisation, de-industrialisation, and non-industrialisation in Africa

Industrialised and de-industrialised	Industrialised and not de-industrialised	Not industrialised
Output		
	Mauritius, South Africa	Botswana, Ethiopia, Ghana, Kenya, Malawi, Senegal, Tanzania, Zambia
Employment		
Mauritius		Botswana, Ethiopia, Ghana, Kenya, Malawi, Senegal, South Africa, Tanzania, Zambia

Source: Author based on ECA database, GGDC. 10-Sector Database, and World Bank, ADI (accessed September 2014).

Table 4 shows that development stages of the industrial sector are consistent with the development phases of the agriculture sector as revealed in Figure 4. While there was no country in Africa that had reached the industrialised phase, as demonstrated by looking at the agricultural sector, there was no country that had reached to ‘industrialised and de-industrialised’ phase for both output and employment in the manufacturing sector. Judged by both output and employment, only Mauritius and South Africa have reached and almost reached the phase of ‘industrialised and not de-industrialised’ in the industry sector; while both countries have reached the late stage of the integration phase in the agricultural sector. All the rest of the countries are still not yet industrialised.

Figure 6: Africa's De-industrialisers and Non-industrialisers

Sources: ECA database; GGDC. 10-Sector Database; and World Bank, ADI (accessed September 2014).

As shown in the first panel of Figure 6, the proportions of manufacturing employment in Mauritius and South Africa have been declining since 1990, while, in the second panel, the proportions of manufacturing employment in the following nine countries – Kenya, Ghana, Nigeria, Senegal, Botswana, Ethiopia, Malawi, Zambia and Tanzania – have been increasing during the same period but have not yet reached the turning point and thus they are non-industrialisers: that is, they have not yet entered the industrialisation zone.

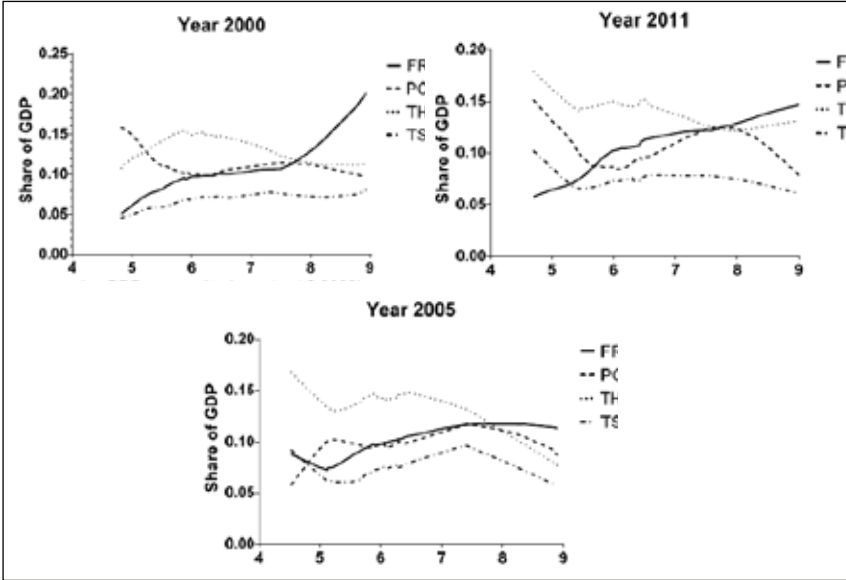
Service Sector

The seemingly unusual high share of the service sector as a proportion of GDP at a relatively low level of per capita income (GDP) in African countries, as shown in Figures 1 and 2, can be nicely explained by the ‘two waves of service-sector’ model proposed by Eichengreen and Gupta (2013). In their model, there is a first wave of service sector growth in countries with relatively low levels of per capita GDP and a second wave in countries with higher per capita incomes. The first wave is made up primarily of traditional services and the second reflects increased scope for producing and exporting modern services.

Figure 7 replicates a similar approach used by Eichengreen and Gupta (2013) with data from all African countries, whenever available (using GDP per capita in constant US\$ of year 2000 as throughout this paper), i.e. this uses Lowess plots to the relationship between per capita income and share of services in GDP with four sub-sectors i.e. FRB, THR, TSC, and PCSP, for the three years of 2000, 2005 and 2011:

- FRB: Financial intermediation, real estate, renting, and business activities,
- PCSP: Public, community, social, and personal services,
- THR: Trade (wholesale and retail), hotel, and restaurant services, and
- TSC: Transport, storage, and communication services.

Figure 7: Services and Development in Africa: Sector Shares – a two-wave pattern (Lowess regressions)



Source: Author’s Calculations based on ECA database (accessed September 2014).

The thresholds that demarcate the three phases, i.e. the two waves of the service sector, are identified first at a log per capita GDP of 6.0 that is approximately US \$403, and second at a log per capita income of 7.75 that is approximately US \$2,322. According to Eichengreen and Gupta (2013), this is interpreted as follows: for income levels below US \$403 the share of services in GDP increases at a decreasing rate, that is the first wave; between US \$403 and US \$2,322, the share of services increases linearly with respect to per capita income; and for incomes above US \$2,322, the share of services increases at an increasing rate, that is the second wave. The fastest growth sub-sectors in the first wave or Phase 1 are PCSP and THR; while the fastest growth sub-sectors in the second wave or Phase 3 are FRB and TSC.

Table 5: African Economies: The Two Waves of the Service Sector

	Phase 1 (first wave)	Phase 2	Phase 3 (second wave)
2000	Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, DRC, Eritrea, Ethiopia, Ghana, Guinea, Guinea Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Sierra Leone, Tanzania, Togo, Uganda, Zambia	Algeria, Cameroon, Cape Verde, Congo, Côte d'Ivoire, Djibouti, Egypt, Gambia, Kenya, Mauritania, Morocco, Namibia, São Tomé & Príncipe, Senegal, Sudan, Swaziland, Tunisia, Zimbabwe	Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Seychelles, South Africa
2005	Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, DRC, Eritrea, Ethiopia, Ghana, Guinea, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Tanzania, Togo, Uganda, Zambia, Zimbabwe	Algeria, Angola, Cameroon, Cape Verde, Congo, Côte d'Ivoire, Djibouti, Egypt, Gambia, Kenya, Lesotho, Mauritania, Morocco, Nigeria, Senegal, Sudan, Swaziland	Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Namibia, Seychelles, South Africa, Tunisia
2011	Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, DRC, Eritrea, Ethiopia, Guinea, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Niger, Rwanda, Sierra Leone, Togo, Uganda, Zimbabwe	Algeria, Angola, Cameroon, Cape Verde, Congo, Côte d'Ivoire, Egypt, Gambia, Ghana, Kenya, Lesotho, Mauritania, Morocco, Mozambique, Nigeria, Senegal, Sudan, Swaziland, Tanzania, Zambia	Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Namibia, Seychelles, South Africa, Tunisia

Source: Author based on ECA database (accessed September 2014).

Table 5 uses the estimated regressions for the four service sub-sectors in Figure 7 to position African economies in the two waves at three points in time. The Table shows when countries pass through each of the two waves. For example, a majority of the countries are still in the first wave or Phase 1 in the development of the service sector. Eighteen countries were in Phase 2 and only seven countries were in Phase 3 or the second wave in the development of a service sector in 2000. Between 2000 and 2005, three countries, Angola, Lesotho and Nigeria, managed to move from the first wave i.e. Phase 1 into Phase 2, and two countries – Namibia and Tunisia – moved from Phase 2 into the second wave or Phase 3. Between 2005 and 2011, four countries – Ghana, Mozambique, Tanzania, and Zambia – moved out of the first wave and into Phase 2 but no additional country moved from Phase 2 to Phase 3.

The characteristic services in the first wave or Phase I are PCSP and THR, i.e. trade (wholesale and retail), hotel, and restaurant services, and public, community, social, and personal services, representing the traditional services. They are typically low skilled, non-tradable, and relatively insignificant users of information and communication technology (ICT), with low income elasticity of demand. The characteristic services in the second wave or Phase III are FRB and TSC, i.e. financial intermediation, real estate, renting, business activities, and transport, storage, and communication services, representing the modern services. Some of them are significant users of ICT and skilled labour, and are tradable. Thus their growing importance could be due to technological change enhancing their tradability and reducing costs of production. They tend to feature high income elasticity of demand and a high leisure elasticity of demand as well as technological progress and learning through exporting. Thus, the patterns in the growth of different services are broadly due to a combination of factors such as differing income elasticities of demand, tradability, skill intensity, differential rates of productivity growth, and the out-sourcing of intensive labour activities from manufacturing.

Summary and Implications of the Observations

To summarise the observations from the above sections, we have found the following facts about the current status of economic structural transformation in Africa:

- First, Africa's growth acceleration in recent years has not been associated with economic transformation. The growth is therefore non-inclusive and is not sustainable.
- Second, despite the fact that the share of its value-added to the total GDP is relatively small, agriculture is still the major employer of

the majority of the labour force. The service sector is the largest sector represented in GDP and in total employment terms for most countries in Africa. Only a minority of countries have the industrial sector as being the largest sector in output, but not in employment.

- Third, in the agriculture sector, productivity is still relatively low. A negative increase in productivity was observed in a number of countries for the period of this study. Agriculture in most countries is mainly at the ‘beginning’ phase and only a few countries are in the ‘agricultural surplus’ phase before reaching the phases of ‘integration’ and being ‘industrialised’.
- Fourth, in the industry sector, a majority of countries are in the stage of ‘not industrialised’ with the exception of only two countries, Mauritius and South Africa, which are in the stage of being ‘industrialised and not de-industrialised’; i.e. not yet fully in the stage of being ‘industrialised and de-industrialised’.
- Fifth, the service sector: most countries are still in the first wave of the development of the service sector and have not started the second wave yet. This sector is dominated by traditional rather than modern services.

Industrialisation is very important to increase the productivity of both agriculture and service sectors and to increase the income level of economies in Africa. For the development of the service sector also relies on the development of industrialisation. African countries have however until the last decade lacked industrialisation. In terms of industrialisation, development in Africa is in a relatively early stage. If following the conventional path of development, it will take a long time for African countries to reach higher stages of developments in agriculture, industries and services. What are the future prospects and how should the continent proceed from here? The picture seems to be pretty gloomy.

The good news is that, according to Baldwin (2011) and also as observed in many African countries’ recent experiences, the new ICT era has made industrialisation faster and easier than before. The inflow of foreign direct investment (FDI), international supply chains, or global value-added chains have brought the opportunity for African countries to quickly catch up with the latest technology and modern management knowledge and skills. Governments have more important roles to play in defining the proper and relevant industrial policies, which are different from what used to be in the past.

Before the mid-1980s, industrialisation meant to build the whole domestic supply chain at home, in which a deep industrial base was a prerequisite, but a large market was necessary to support the industrial base.

The search for markets was thus a key element of industrialisation policy. It could take decades, due to learning-by-doing to create and coordinate the vast array of necessary competencies. ICT has dramatically reduced the cost of coordinating complex activities at a distance and made the geographical dispersal of supply chains feasible and profitable. It has created a strong incentive for rich-nation firms to off-shore segments of their value chains to developing nations in order to profit from the combination of their technology with low-wage labour available in the developing countries.

Nowadays, industrialisation is becoming less lumpy, faster and easier. By joining a supply chain, it is possible for a developing country to switch from a zero-indigenous industry situation to become a globally competitive exporter of a particular part. A developing country can industrialise and thus revolutionize the output of its industry almost overnight; and at the same time, there is no need for the time-consuming nurturing of an industrial base and investment in a broad range of technical competencies. Off-shored factories arrived with elements that took Korea and Taiwan decades to develop domestically: world-class technology, management, quality control, a ready-made market, and thus demand having already been found.

In the new ICT era, the role of government becomes even more important. This cannot be performed by individuals and the private sector. The whole spectrum of economic structural transformation policies has also changed. The policies needed are thus not to build their own industrial enterprises but rather for policymakers to design and establish the right policies and regulations that are conducive to the global value-added chains and FDI, including, for example, import regulation and taxes, income and enterprise taxes, establishing industrial zones, and providing needed infrastructure, facilities, transportation systems, a hospitable business environment, and suitable human capital and labour force. To have a good understanding of the new paradigm of industrialisation is very important. Not following this properly may lead to misinterpretation of data and inattention to important policy questions.

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