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Industrialisation and Structural Change: Can Sub-Saharan Africa Develop without Factories?*

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Abstract

With its sustained growth, the unprecedented wave of foreign direct investment and the sharp decline in poverty, Sub-Saharan Africa's track record over the past fifteen years has been largely positive. Yet, this rebound in growth, accompanied by major economic reforms, democratic progress and a lower incidence of conflicts, remains fragile. In Africa, structural change—which in most of toady's developed countries has come about through a transfer of resources from the primary to the secondary sector, then to the tertiary sector—appears to have "bypassed" the secondary sector.

.../...

Keywords: Sub-Saharan Africa, (de-)industrialization, structural change, manufacturing, services, exports, poverty, employment, productivity, growth.

JEL Classification: F1, J2, L6, O11, O14, O47, O55.

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…/… In fact, be it in terms of jobs or value added, manufacturing has never really flourished in Sub-Saharan Africa. Rather, the trend in most of these countries is towards de-industrialization and this does not seem to have been reversed by the recent growth. The main contributing factors, widely documented by the literature and statistics, include business environment uncertainties associated with public governance failures, high labor costs relative to worker qualifications, inadequate energy and transport infrastructure (often tied to governance issues) and dysfunctional credit markets. Despite recent improvements in the business climate, few countries in Sub-Saharan Africa offer attractive conditions for manufacturing investment compared to alternative locations, especially those in South East Asia. Can Sub-Saharan Africa pursue its development through its service sectors? To date, cases of countries that have achieved development "without factories" are too scarce and idiosyncratic to serve as a model. However, given the technical progress in services and the lack of plausible alternatives in manufacturing, the question remains open.

I. Introduction

After a "lost generation", Sub-Saharan Africa (SSA) seems to have engaged in an economic take-off since 2000. A radical change of course has been taken in economic policy. Prudent macroeconomic policies have been adopted, trade has been liberalized and most state-owned enterprises and export monopolies have been removed, leading to reduced distortions, uncertainty and transaction costs. Although predatory behavior, short-term rent-seeking and corruption are still commonplace, a protectionist and interventionist philosophy incompatible with public management has eventually given way to a fairly widespread consensus on *laissez-faire* and *laissez-passer*.

The reforms have contributed to a return to growth of GDP per capita in almost all countries on the continent with an average rate of over 4% per annum, and to an increase in foreign direct investment (FDI) in excess of thirty billion dollars over a decade, five times higher than in the previous decade. This renewed growth has led to a decline, albeit limited, in extreme poverty, which fell from 57% to 41% in less than twenty years. At the same time, the incidence of violence has fallen dramatically. The number of civil wars per annum has halved and democracy has progressed in many African countries, with the average Polity IV score increasing from -5 to +4 (on a scale of -10 to +10) in twenty years.

The continent has thus undergone a profound transformation, touching various economic and political levels. Yet, formidable challenges still lie ahead. The sustainability of Africa's democratic transition largely depends on the ability of SSA economies to generate two growth dividends. First, poverty alleviation and the emergence of a middle class willing to contribute to the provision of public goods, and thus with a vested interest in stability and economic and political freedoms. Second, the creation of enough jobs to absorb the age groups entering the labor market in millions each year McKinsey (2012), for example, estimates that the continent will need to create 122 million jobs by 2020, with demographic trends suggesting that the size of its labor force will top that of China and India by 2035. Such is the magnitude of the challenge. Failure in either of these areas, particularly the second, would likely undermine the recent democratic advances.

If personal incomes are to continue to rise, this demands a sector-wide increase in labor productivity, which for the most part implies making production more capital-intensive.[1] However, investment is still too low in SSA, averaging 15% of GDP compared with 25% in Asia,[2] which reflects the many constraints weighing on firms in the areas of governance and infrastructure.[3] Many of these constraints are "cross-cutting", i.e. they affect all sectors, be it agriculture, industry or services. Inadequate energy and transport infrastructure, as well as a lack of a regulatory framework, are some of the main obstacles. This means that easing these constraints is a prerequisite to pursuing the gains achieved in personal incomes and poverty reduction over the last ten years.

International experience suggests that although increasing within-sector productivity is important, it is not enough to guarantee sustainable and inclusive growth. A further prerequisite is structural change or, in other words, the reallocation of productive resources from agriculture to industry and services. The manufacturing sector has a fundamental role to play in this process. Recent research, along with the estimates derived for this study, clearly suggests that increases in manufacturing value-added have a particularly powerful effect on poverty reduction, especially in comparison with the mining andoil sector, a prominent industry in many African economies. What is needed to achieve this "inclusive", and thus politically stabilizing growth is a structural change centered on expanding the manufacturing sector and now the services sector, which is becoming pivotal for integrating a country into value chains. This will not only help to absorb surplus agricultural labor but also lessen the continent's dependence on natural resources.

However, structural change in SSA has so far failed to materialize. Hopes were placed on structural adjustment reforms, but these have not revived the already limited manufacturing activities destroyed during periods of systematic real exchange rate overvaluations, followed by trade liberalization, given that low levels of investment have not been sufficiently offset by FDI. While the hike in labor costs in China's coastal regions opens up opportunities for potentially buoyant offshoring, neither statistical nor field evidence indicate that SSA today could become a credible light-manufacturing hub. Severe infrastructure constraints persist, political elites are only weakly mobilized, and labor costs barely competitive compared to alternative offshoring countries in South East Asia (Myanmar, Cambodia, Laos). This adds up to rates of return to investment that are still unattractive given the risks associated with the business climate.

This performance has led recent observers (Page, 2012; Arbache and Page, 2010; Rodrik, 2013, 2014) to conclude that "Africa's time" has not yet come. Yet, donors cannot stop at this conclusion. Moreover, it may well not be the final word on the subject. Rodrik's (2013) basic argument holds that only the manufacturing sector can drive convergence, given that services exhibit low productivity, weak growth and a lack of convergence. A very preliminary analysis of firm-level data summarized in the present study suggests on the contrary that productivity converges in several service industries, and that SSA's performance in key sectors such as transport or energy—not to mention telecommunications—gives grounds for optimism.

[1] As this study focuses on structural change, we will not address the issue of agricultural modernisation, which is complex enough to warrant separate treatment. The emphasis on industrialization in no way prejudges the critical importance of agricultural support policies for growth and poverty reduction.

[2] Dinh et al. (2012).

[3] These constraints are documented extensively in the Diagnostic Trade Integration Studies funded by the Enhanced Integrated Framework for all least developed countries (LDCs).

The analysis proposed in this study thus suggests a strategy to support structural change with a focus not only on modernizing and expanding the service industries in SSA, but also on reducing barriers to the expansion of the manufacturing sector, based on the same sectoral priorities—logistics, finance, energy—which is not inconsistent with sustainable development objectives.[4]

The rest of this study is organized as follows: Section 2 reviews the acceleration of African growth, Section 3 analyses SSA de-industrialization and its causes, Section 4 explores the potential for services to contribute to growth and convergence, and Section 5 examines donor actions in the light of structural change and makes some concluding remarks.

II. A Positive but fragile ten-year performance

2.1 Africa has come a long way

2.1.1 The political challenges of growth and employment

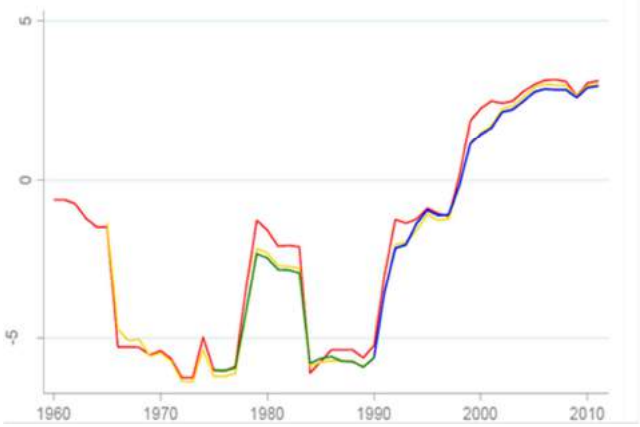
Africa is less violent. The incidence of interstate and civil wars in Africa has fallen dramatically since it peaked in the 1990s (Figure 1, panel a). Noticeably, civil wars have nearly halved in number in fifteen years. Although ethnic tensions persist, particularly in African countries featuring high ethnic fractionalization, States now seem better able to settle conflicts peacefully.

Figure 1: Decline of conflicts and democratic progress in SSA

(a) Incidence of conflicts

Source: Strauss (2012).

(b) Average democracy score



Note: The average Polity2 score in the Polity IV dataset ranges from -10 to +10. The colored curves denote averages calculated for different samples of countries, with the number of countries increasing over time.

Source: McMillan and Harttgen, 2014

[4] Cf. the "ecomodernists", at http://www.ecomodernism.org/manifesto/.

At the same time, autocratic regimes that often—but not always—go hand in hand with economic distortions, favoritism and contained tensions have given way to more democratic regimes in most of the countries (Figure 1, panel b). The continent's average score on the Polity IV scale, which ranges from -10 (strongly autocratic) to +10 (strongly democratic), has risen from -5 to +4 in twenty years; showing considerable progress, albeit with still a way to go. Comparing panels (a) and (b) in Figure 1 further illustrates that the marked advance in democracy from 1990 on coincides with the onset of the decline in civil and interstate wars on the continent.

Looking ahead, the pursuit of democratic transition in SSA will depend on a host of institutional, historical and political factors. It will also, and above all, depend on the capacity of African economies to generate two types of dividend.

The first involves fostering the growth of a substantial middle class, which typically has the greatest interest in maintaining political stability and good governance. Birdsall (2015) estimates that governance stabilization occurs when the middle class[5] reaches 20–30% of the population. Currently, only South Africa at 17% is close to this threshold (McKinsey, 2012), but Africa has seen significant progress in this area over the last decade. McKinsey (2012) notes that 31 million African households joined the ranks of the "consumer class" between 2001and 2011, bringing the total number to 90 million households.[6]

Second, and perhaps more importantly, SSA economies will have to create enough jobs to absorb the hundreds of thousands of young people entering their labor markets. McKinsey (2012) estimates that 122 million jobs need to be created on the continent by 2020 (for instance, nearly 200,000 per year in Uganda alone). The colossal employment problem faced by SSA governments stems from its highly dynamic demographics (some SSA countries have annual population growth rates of around 3%) coupled with the huge surplus of agricultural labor, which still employs half of SSA's workforce (Timmer, de Vries and de Vries, 2014). Without sufficient job creation, this influx of young people, in the age groups potentially the most politically volatile, may be a real time bomb that could jeopardize all the gains reaped with respect to reducing violence and furthering democracy.

Uncertainty as to the capacity of SSA economies to generate sufficient dividends to sustain the political gains of the last quarter century could in itself discourage investment and create a vicious circle. It is thus crucial to understand both Africa's potential to witness inclusive growth and the challenges the continent faces in achieving such goal.

2.1.2 Overall performance is improving…

After its "lost generation", SSA has seen growth accelerate since the 1990s and, from 2000 on, a return to sustained growth of per capita income, exceeding 2% per annum after a decade of acceleration (Figure 2, panel a). This return to growth, which was practically zero in the 1980s (and in many cases negative), is not peculiar to SSA as Latin

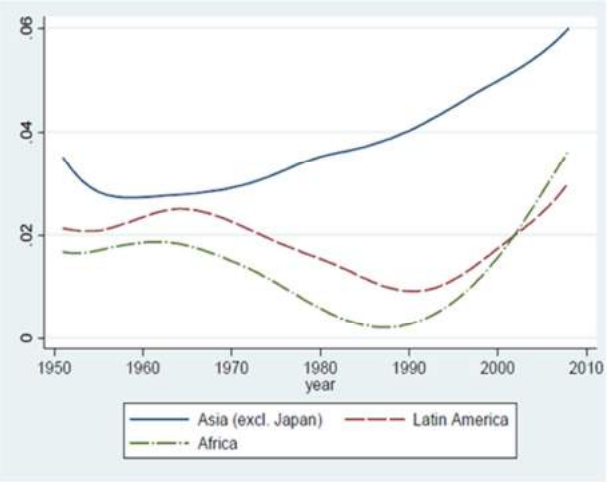
[5] The middle class is variously defined as all individuals with an income of between ten and fifty dollars a day (World Bank) or as households with an annual income greater than $5,000 (McKinsey calls this the "consumer class", whose households spend less than 50% of their income on food and basic necessities).

[6] McKinsey's figures, though interesting, are often difficult to interpret due to questionable choices of categorisation, notably the choice to combine Sub-Saharan Africa and North Africa.

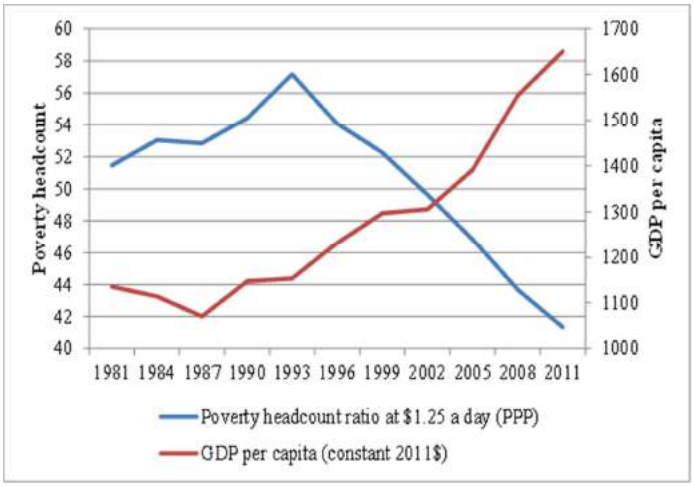
America has followed the same trajectory. However, it is more pronounced in SSA, which started from a lower level. Although this trajectory did not enable SSA to catch up with Asian growth rates (which also accelerated over the same period, reaching 6% in 2010), it resulted in a rise of over 40% in the level of per capita income in constant dollars,[7] and this, as already mentioned, despite very dynamic demographics.

Figure 2: Growth, income and poverty in Sub-Saharan Africa

(a) GDP per capita growth by region, 1950-2010



(b) GDP per capita and poverty headcount ratio in Sub-Saharan Africa



Note: In panel (a), growth is expressed algebraically (0.02 = 2%). In panel (b), the sample includes 43 SSA countries. Simple averages. Poverty line at $1.25 per day, PPP.

Source: Rodrik (2011) for panel (a); authors' calculations based on PovcalNet and WDI for panel (b).

With this increase in income came a substantial reduction in the incidence of extreme poverty, which dropped from an average of 57% in 1993 to 41% in 2011. This much faster than anticipated decrease has suggested to some observers that the Millennium Development Goal of halving the incidence of extreme poverty is not only attainable in Asia (where it already seems to have been reached), but even in SSA.

The improvement in living standards in SSA appears to have even exceeded what national accounts data would suggest. Young (2012) illustrates this using an unconventional approach based on data on durable goods consumption, the quality of households' dwelling unit, and child health and mortality indicators included in demographic and health surveys conducted over the last twenty years in SSA and elsewhere.[8] Young's method has the advantage of using data that are easy to collect during surveys and not prone to error (ownership of a bicycle or car, material used to cover the floor, children's health) as opposed to consumption data that are reconciled with generally unreliable and not strictly comparable price data. For the period 1990-2006 that is covered by his data, Young estimates annual consumption growth at between 3.4% and 3.8% on average for 27 SSA countries, significantly more than the

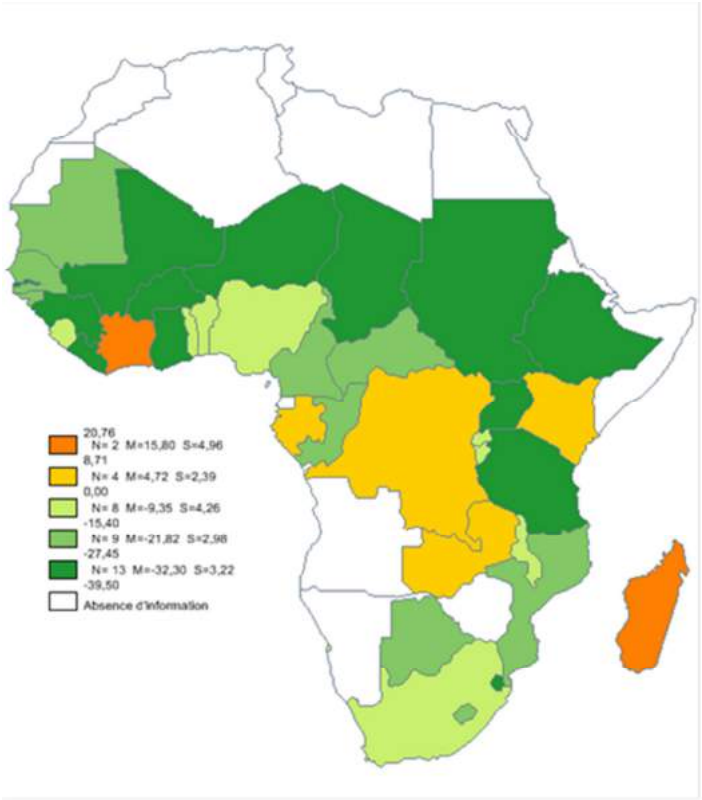
[7] This increase must, however, be interpreted with caution. For countries in the franc zone, for example, the increase largely reflects the appreciation of the euro against the dollar.

[8] The USAID-funded Demographic and Health Surveys in question are conducted periodically. They replaced the World Fertility Survey. See http://www.dhsprogram.com.

average calculated using the same method for 29 developing countries outside SSA (2.0 to 2.2%).[9]

Looking beyond average values, country-level poverty reduction shows somewhat varied results (Figure 3). Some countries have experienced no reduction at all due to serious political dysfunctions (Madagascar) or violence (Côte d'Ivoire, Democratic Republic of Congo – DRC). In other cases, such as Kenya, the situation is less clear. While the Sahel zone has enjoyed substantive poverty reduction overall, this is largely down to rents from natural resources. The fact that these rents have been distributed widely enough to affect poverty levels is in itself a new phenomenon in Africa and suggests that the donors' various policies—conditionality terms for the Heavily Indebted Poor Countries (HIPC) initiative, etc.—appear to have had an impact.

Figure 3: The decline in poverty has been uneven across the continent



2.1.3 …thanks to reforms

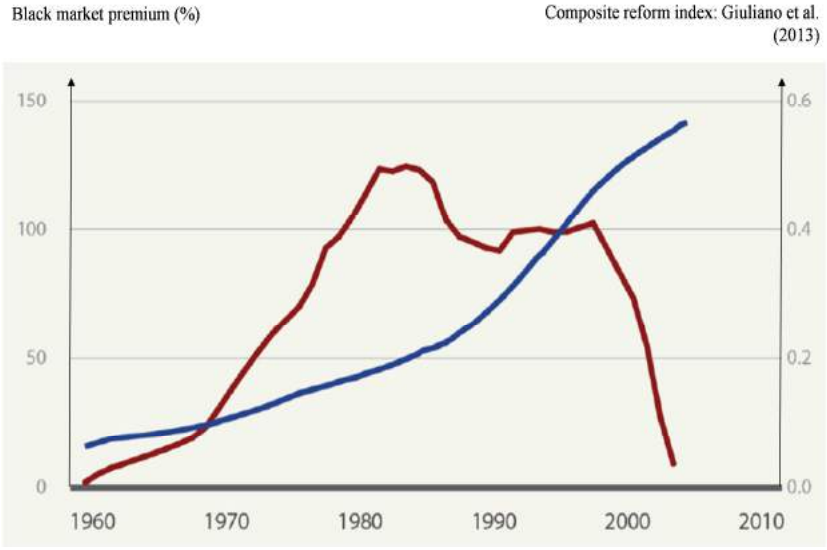
The improvement in the continent's overall economic performance came in the wake of a large wave of reforms. As known, the 1970s had marked the beginning of the "great divergence" between the developing countries of South East Asia, and the developing countries of Africa and Latin America. The causes of this divergence have been widely reported in the literature and, in the case of SSA, include various "syndromes", discussed, for example, by Collier and Gunning (1999) and Fosu and O'Connell (2005). These "syndromes" include systematic exchange rate overvaluation – a policy often

[9] As Young's growth estimates are based on surveys spaced far apart and at irregular intervals, he does not give a breakdown of his growth estimates by country or period. It is thus impossible to know if this average includes an acceleration between 2000 and 2006.

designed to despoil export crop farmers to the benefit of urban elites (see, for example, Krueger, Schiff and Valdés, 1988, or Easterly and Levine, 1997 for the case of Ghana) - export monopolies; widespread corruption; predatory taxation; neglect of public infrastructures; expropriation of business and industrial elites (e.g. the DRC or Madagascar); and conflict.

The 1990s mark a break in the spiral of worsening poverty. As a number of countries adopted structural adjustment programs following balance-of-payments crises and external debt defaults, the general thrust of macroeconomic and industrial policies changed radically. Fixed exchange rate regimes were largely abandoned, freeing up monetary policies and, when maintained—as in the franc zone—, were considerably adjusted. Most export monopolies were removed, the business environment was enhanced, and donors put in a major effort to rehabilitate infrastructures, particularly transport, Sub-Saharan Africa being a major beneficiary of official development assistance (ODA). The improvement in the macroeconomic environment is epitomized by the fall in the average black market foreign exchange premium, which is a conventional measure of currency overvaluation. This fall began in the 1980s and accelerated hugely after 2000 (Figure 4).

Figure 4: Macroeconomic distortions and reform in SSA



Note: The reform index of Giuliano et al. (2013) includes components covering the banking system (introduction of competition), capital markets (openness), product markets (competition), agriculture markets, international trade and current accounts.

Source: UNECA (2014), based on data from Giuliano, Mishra and Spilimbergo (2013).

The late 1990s was a relatively disappointing decade as regards the effects of structural adjustment programs. These programs incurred enormous adjustment costs without generating noticeable growth dividends. It was not until the 2000s that these dividends finally became apparent, as mentioned earlier.

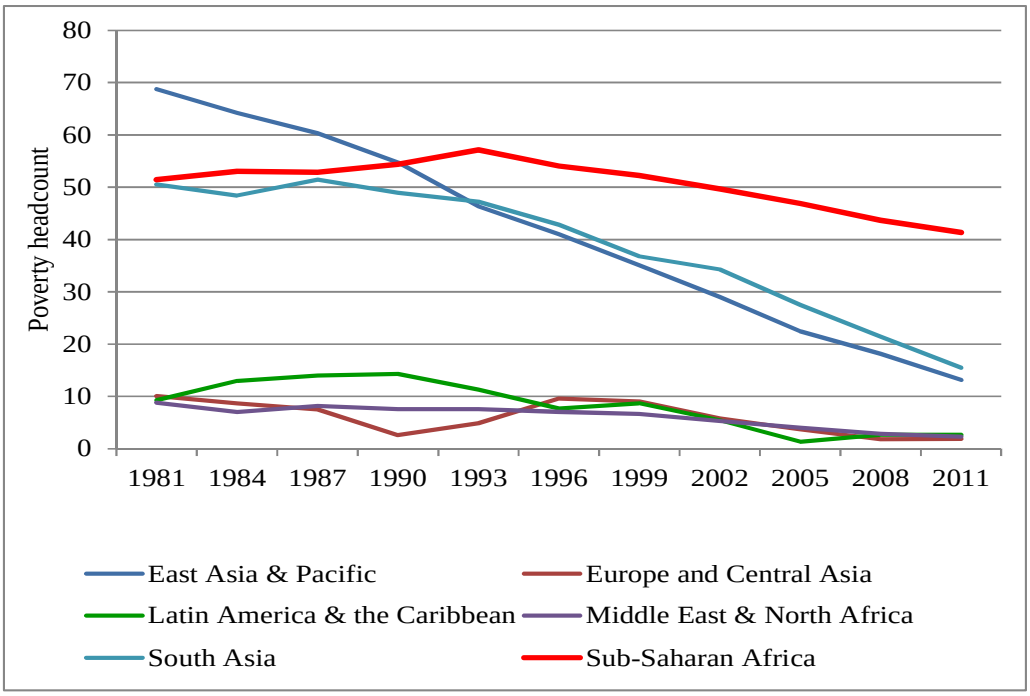
Today, no country seriously challenges the need to ensure that the private sector can operate in a predictable and rational environment—be it in terms of monetary and macroeconomic stability, legal certainty or freedom to import and export—, which

marks a significant change from previous decades. In most countries, quality targets in public service delivery and concomitant efforts in the areas of training and investment have gradually been integrated into the culture of government administrations, particularly Customs. These micro-illustrations of a fundamental change in climate are consistent with the idea of a return to growth based on sound foundations, as shown in Figure 4 not only by the fall in black market foreign exchange premiums but also by a general index of economic reforms conducive to competition and market openness (Giuliano, Mishra et Spilimbergo 2013).

2.2 Gains that remain limited and fragile

2.2.1 The decline in poverty is still limited

Figure 5: Poverty headcount ratio by region, 1981–2011



Note: poverty line at $1.25/day PPP (2005). Simple average by region.

Source: Povcalnet, 101 countries including 43 in SSA. Average income per capita by region in 1993 (weighted by population, in constant 2011 dollars): EAP: 723; ECA: 2329; LAC: 5549; MENA: 1471; SA: 427; SSA: 702.

Looking at SSA's growth and poverty trajectory over the past decade, doubts as to the capacity of growth alone to reduce poverty without proactive policies of redistribution and support for the most disadvantaged populations have perhaps been exaggerated, as suggested by Dollar and Kraay (2002) and Dollar et al. (2013). Kraay (2006) estimates that growth in average income accounts for 70 to 95% of observed poverty reduction. Dollar et al. (2013) estimate that 62% of the level of income growth in the poorest 20% of households can be attributed to the average growth in income. In sum, growth does indeed have a "trickle-down" effect,[10] especially in low-income countries.[11] This does not

[10] As the incomes of the richest are re-injected into the economy through investment or consumption, they contribute directly or indirectly to growth and job creation.

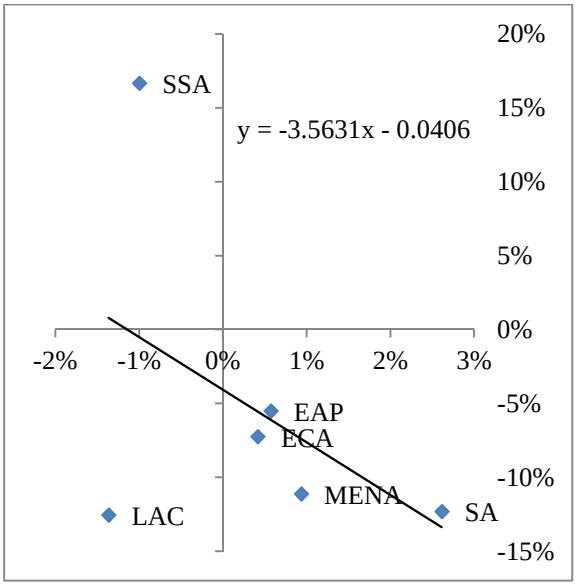
mean that institutions are not important: Dollar et al. (2013) also show that the quality of institutions is positively correlated with income growth of the poorest deciles. Growth nonetheless has a direct effect, even on the poorest populations.

However, Figure 5 confirms that the decline in extreme poverty in SSA (red line) is recent, beginning only in 1993. More importantly, it is still weak relative to other regions, especially East Asia and South Asia (blue lines), where extreme poverty has fallen under the 20% mark.

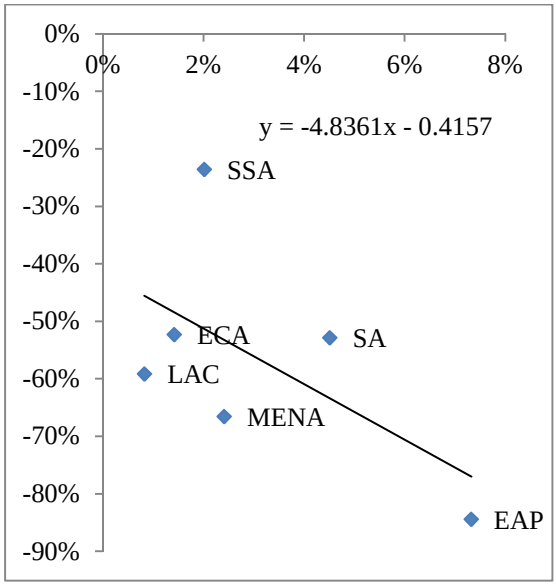
On the other hand, Figure 6 shows that while experiences are quite varied in this respect depending on the region and the period, the extent to which SSA has converted growth into poverty reduction is so far slight, compared to other regions. The stagnation in the 1980s resulted in a huge increase in poverty, and the return to growth has resulted in only a limited decline in poverty compared to other regions (panel b).

Figure 6: Poverty headcount rate reduction and GDP per capita growth

(a) 1981-1990



(b) 1993-2011



Note: Simple averages by region: 1981–1990 and 1993–2011. The sample comprises 101 developing countries including 43 countries in Sub-Saharan Africa. Growth is population-weighted for each region. Note, however, that the Latin American sample is not very representative.

Source: PovcalNet, poverty line at $1.25 per day (PPP).

So, although poverty has begun to recede in SSA, reversing the trend of the previous generation, this movement is still recent and limited compared to other regions. Given these limited gains, it is uncertain whether the growth dividends are sufficient to solidly anchor democracy and the peaceful reduction of social and ethnic conflicts. Yet it is crucial that this trend be sustained.

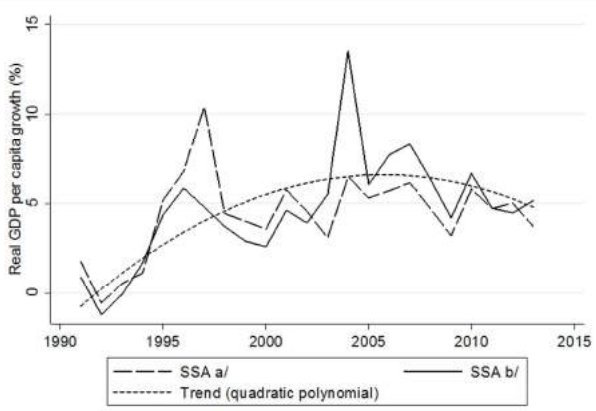
[11] Olinto et al. (2014) consider that the inequality elasticity of poverty reduction increases with the level of development and that in low-income countries the poverty elasticity of growth is higher. This leads the authors to conclude that, in countries with high initial poverty, policies that increase growth are more effective than those aimed at reducing inequality.

2.2.2 …and sustaining growth remains a challenge

Africa's economic history is a long series of failed takeoffs, often associated with commodity price booms. The fact that the continent's return to growth coincides with the last upswing in mineral and oil prices hence prompts caution. Is Africa's decade of growth the latest demonstration of the usual boom-bust cycle? Figure 7 gives a nuanced picture in this regard.

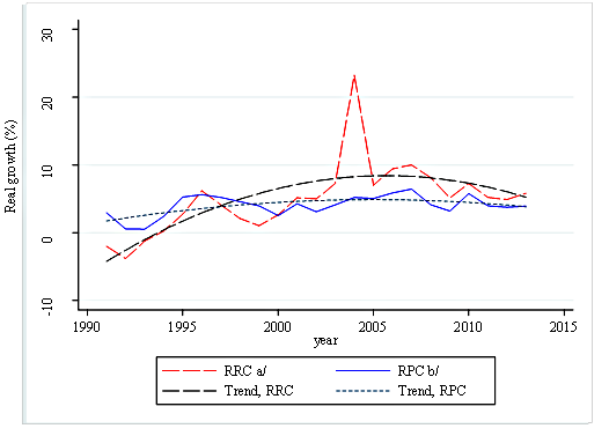
Figure 7: Growth in Sub-Saharan Africa, 1990–2013

(a) SSA average



Notes
a/ Sub-Saharan Africa, simple average.
b/ Sub-Saharan Africa, GDP-weighted average

(b) Resource-rich countries vs. Resource-poor countries



Notes
a/ RRC: Resource-rich countries (GDP-weighted average); total natural resources rents greater than 15.05% of GDP; b/ RPC: Resource-poor countries (weighted average); total natural resources rents greater than 15.05% of GDP. Trend: quadratic polynomial

Source: authors' calculations based on the World Bank's World Development Indicators.

Panel (a) shows the GDP per capita growth trend for SSA, excluding South Africa. In the mid-2000s, growth clearly ran out of steam, a slowdown that subsequently worsened. Panel (b) decomposes the trend into resource-rich countries (minerals and oil) and resource-poor countries.[12] The concavity observed in the trend is largely attributable to resource-rich countries, namely Nigeria. Real per capita growth in resource-poor countries has been relatively stable since 1995 at about 5% per annum. If sustained, this high rate suggests that per capita income would double in 14 years and quadruple over a

[12] The distinction between resource-rich and resource-poor countries is ad-hoc. It is based on the proportion of rents linked to natural resources (minerals and hydrocarbons) in GDP. Rents are defined in the World Bank's World Development Indicators (WDI) as the difference between the market price and extraction cost. This proportion is used to define a binary variable equal to one for resource-rich countries and zero for the others. Two thresholds were used in this study's calculations. First, a "liberal" threshold, which is the median ratio (half of the countries are therefore considered resource-rich). The second, "conservative", shifts the pointer to include Zambia but excludes Egypt (see the list in Appendix A), which puts it just above 15%. This is the definition used in this study's graphs, although the liberal definition has also been used in the robustness calculations that are not reproduced in the study.

generation (28 years). As mentioned earlier, this would be a break-away from the pattern of SSA growth performance over the last forty years.

Box 1: Sustainability of macroeconomic conditions in SSA

Is SSA overheating? Maintaining high growth rates in an environment where resource constraints relating to skilled labor, energy and services soon weigh in could quickly lead to bottlenecks and fuel inflationary pressures. This is particularly the case in the event of massive supply-side shocks, for example, the food price crisis in 2007–8 and 2011. The signs of overheating are, however, limited on the African continent. After peaking at 15-20% in East Africa in 2011, inflation rates have generally returned to relatively stable, albeit quite high, levels (between 6% and 8%).

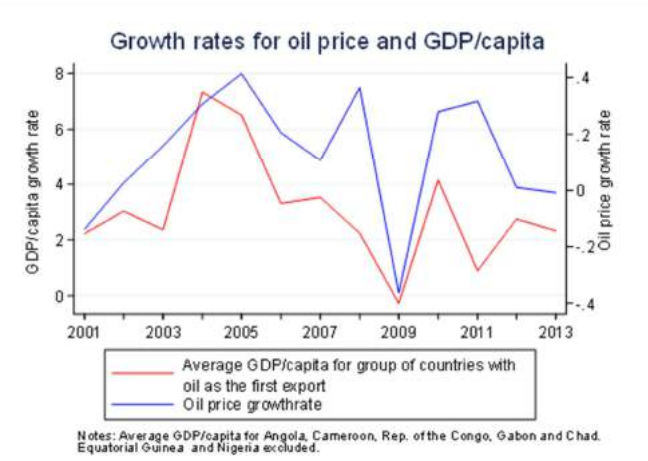
As for fiscal policy, budget deficits may be rather high in some cases (more than 5% of GDP in Senegal) or even at levels that raise questions about stability (10.7% of GDP in Ghana and 7% in Tanzania), with deteriorating public deficits generally more pronounced in the group of resource-rich countries. They have not, however, reached the catastrophic levels that sparked the crises and structural adjustment programs of the 1980s.

On the other hand, real effective exchange rates, which could have been subject to upward pressure due to FDI and the 2000–2007 boom in raw materials, have on the whole remained stable (with a sharp real depreciation in Malawi in 2012). This demonstrates a certain maturity in the region's capacity with respect to monetary management.

The slowdown in growth in SSA resource-rich countries raises the question of the linkage between growth in resource-rich countries and commodity price fluctuations. The end of the 2009–2011 commodity boom may well have halted the growth cycle in resource-rich countries, with contagion effects extending to the continent as a whole. Taking the examples of oil and gold, Figure 8 suggests that this conjecture may effectively prove to be correct. In countries with oil as the main export, the average trend rate of growth is broadly parallel to that of oil prices, and the same pattern applies to gold.

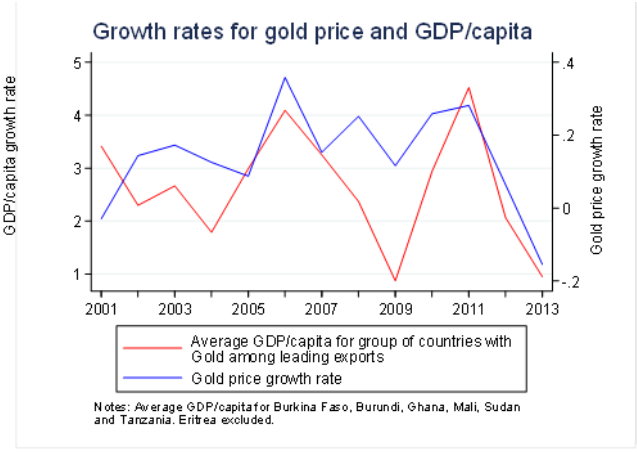
Figure 8 : Growth in GDP and commodity prices

(a) Oil



Source: World Bank, WDI; Comtrade; IFS

(b) Gold



Source: World Bank, WDI; Comtrade; IFS

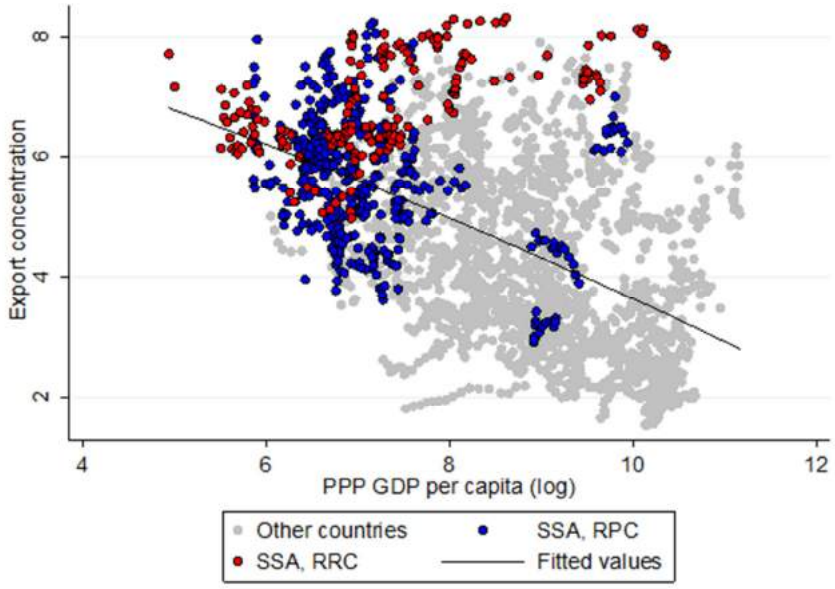
2.3 African export portfolios are slowly diversifying

2.3.1 Sectoral concentration is high but "within norms"

Export concentration is both a symptom of lagging structural change (development in manufacturing is generally accompanied by diversification) and, in itself, a contributor to this lag (see Lederman and Maloney, 2007). This section shows that the lack of diversification in SSA is largely driven by countries with abundant natural resources. Once the resources factor and a number of other ad hoc determinants are accounted for, SSA does not stand out as having a higher degree of concentration than the average country export basket. In other words, SSA countries lack export diversification because they are small, poor, far from markets and, in some cases, rich in natural resources; there does not therefore seem to be an African peculiarity.

Figure 9 describes the relationship between the degree of export concentration and income level. On the whole, countries diversify exports as they advance along a development pathway, then tend to re-concentrate (see Klinger and Lederman, 2006; Parteka, 2007 and Cadot, Carrère and Strauss-Kahn, 2011a). The turning point however occurs at a high GDP per capita and does not appear when the log of GDP per capita is used, which draws a clearer picture of how SSA countries are positioned. The red dots denote resource-rich countries (RRC) and the blue resource-poor countries (RPC). Overall, SSA countries remain clustered together in the upper left of the scatter plot when log GDP per capita PPP is used, showing a clear concentration of RRCs. The degree of export concentration of RPCs is not homogeneous but remains proportional with figures for non-SSA countries (shown in grey).

Figure 9: Over-concentration in SSA is driven by resource-rich countries

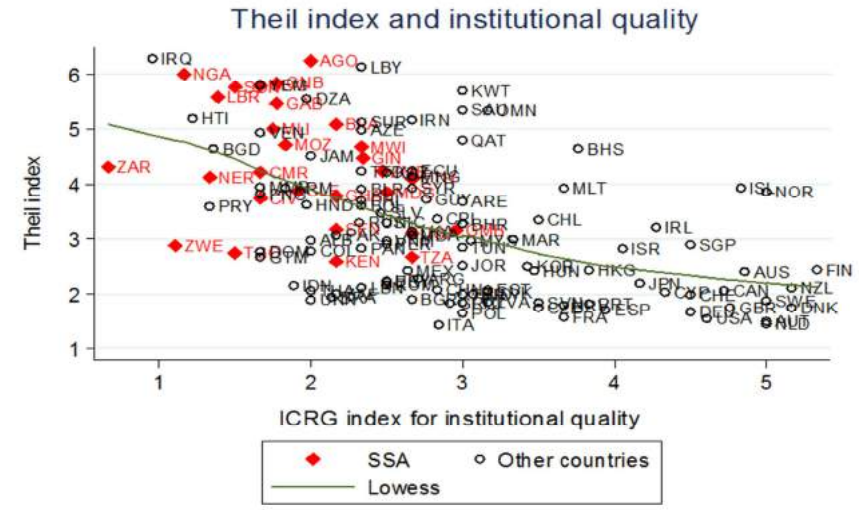


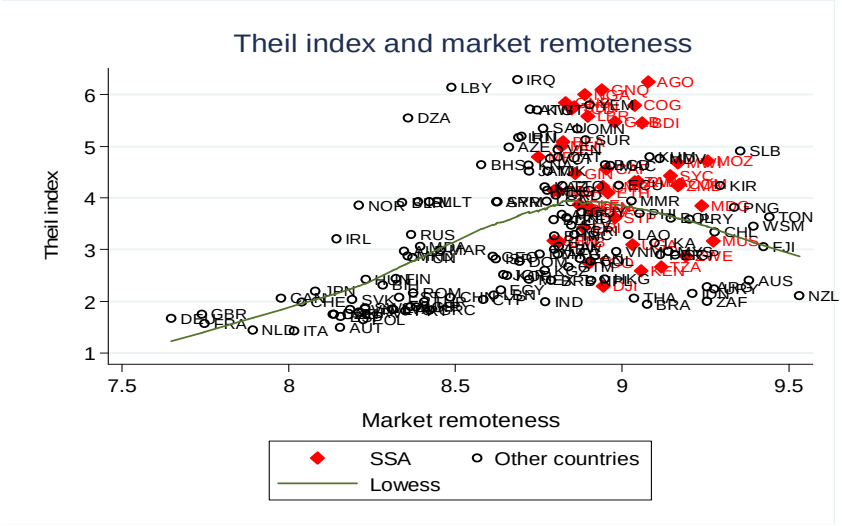
Source: Authors' calculations based on the IMF Diversification Toolkit

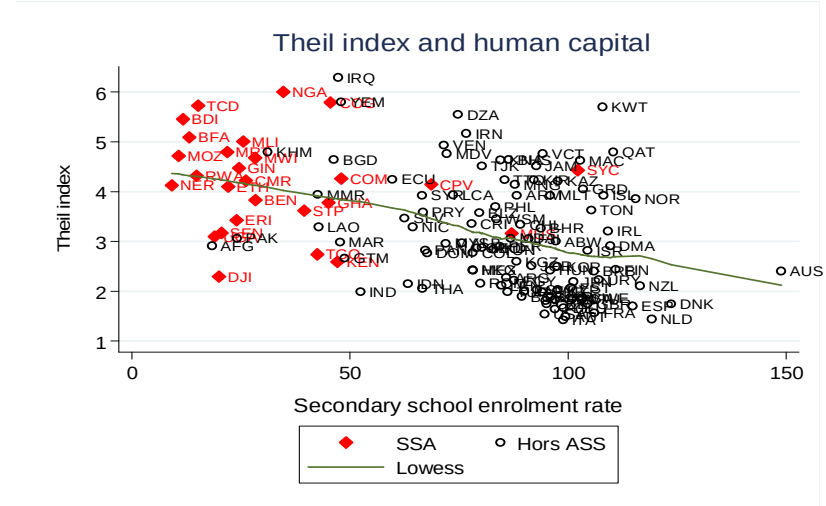
In addition to per capita income, the literature mentions a range of factors that influence the extent to which a country's export basket is diversified. Working with a global sample of 79 countries for the 1962–2000 period, Agosin et al. (2012) find a positive correlation between concentration and trade costs, proxied by the country's remoteness from main markets. In the same vein, Dutt et al. (2008) show that WTO membership and preferential trade agreements are conducive to export diversification. However, export diversification appears to be hampered by abundant oil resources, corruption and conflict (Bebczuk and Berrettoni, 2006; Starosta de Waldemar, 2010). Exchange rate appreciation also seems detrimental to export diversification (Ben Hammouda et al., 2006) as well as FDI if this targets sectors that are capital-intensive enclaves with limited spillovers for the rest of the economy. Elhiraika and Mbate (2014) focus on the African context to explore the determinants of export diversification in 53 countries. They highlight the role of market size, human capital, investment, terms of trade and the quality of infrastructures.

The three panels in Figure 10 below show the relationship between the Theil index of export diversification in 2005 and some explanatory variables measured in 2004 for a hundred or so countries. Observations for SSA countries are shown in red. To avoid any *a priori* functional specification, each relationship is explored using a nonparametric regression (Lowess). The signs seem to fit those predicted by the literature.

Figure 10: Some correlates of export diversification (2004)







Note: For the relationship between the Theil index and market remoteness, the United States appears as an outlier with very low levels of both variables; it has thus been removed to improve readability of the graph.

Source: authors' calculations from WDI, GeoDist and the IMF Diversification Toolkit (see Table A2 in the Appendix).

Table 1 presents a more formal analysis of the determinants of export diversification based on a global sample for the 1995–2010 period. The Theil index provided by the IMF Diversification Toolkit is regressed on a set of lagged macroeconomic variables (see Table A2 in the Appendix for data sources).[13] Although the use of fixed effects and the period lag may not purge all endogeneity bias, the statistically significant results confirm the correlations established in the literature (except for population, as the size of the country in this case is paradoxically associated with a concentrated export portfolio, which calls for caution when interpreting the results). Otherwise, we find the quadratic relationship between diversification and the level of development identified in the literature.

The Theil index is positively correlated with REER appreciation. This is consistent with the results observed at the firm level by Chatterjee, Six-Carneiro and Vichyanon (2012), showing that firms tend to tighten their export product basket when the domestic currency appreciates. The Theil index is also positively correlated with market remoteness, and negatively with human capital and investment. Although column (2) suggests that SSA country export portfolios are on average 2.58 more concentrated than other countries, the effect changes significantly when the dummy variable "SSA" is made to interact with a dummy variable for natural resource endowment (column 6). The effect is thus more than absorbed by the "SSA Xresource-rich countries" interaction, suggesting that it is the level of resource endowment (characteristic of many African countries) that is correlated with export concentration. In other words, Cambodia may be expected to be less concentrated than Cameroon, but not necessarily less than Kenya. However, this interpretation of results needs to be qualified since regressions include country fixed effects that capture a large share of between-country heterogeneity. The relationship between export concentration and membership of the franc zone in columns (4) and (5), though consistent with Cottet et al. (2012), is not robust to the inclusion of the dummy for resource richness (column 7). In other words, countries in the franc zone have higher export concentration because they are resource rich.

[13] It is important to emphasize that the results should be treated with caution given the low temporal variability of the dependent variable used.

Table 1: Correlates of Export concentration: regression results

Dependent variable: Theil	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log GDP/capita	-1.319**	-1.319**	-1.319**	-1.319**	-1.319**	-1.319**	-1.319**
	(0.518)	(0.518)	(0.518)	(0.518)	(0.518)	(0.518)	(0.518)
Log GDP/capita^2	0.091***	0.091***	0.091***	0.091***	0.091***	0.091***	0.091***
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Log Population	0.385*	0.385*	0.385*	0.385*	0.385*	0.385*	0.385*
	(0.228)	(0.228)	(0.228)	(0.228)	(0.228)	(0.228)	(0.228)
Log REER	0.040*	0.040*	0.040*	0.040*	0.040*	0.040*	0.040*
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Remoteness	0.252**	0.252**	0.252**	0.252**	0.252**	0.252**	0.252**
	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)	(0.106)
Human capital	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Investment	-0.007**	-0.007**	-0.007**	-0.007**	-0.007**	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Institutions	-0.026	-0.026	-0.026	-0.026	-0.026	-0.026	-0.026
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
SSA		2.588**			-1.557*	-3.046***	4.725***
		(1.161)			(0.889)	(0.792)	(1.426)
Resources			2.051***		-1.644*	-2.256***	3.710***
			(0.488)		(0.914)	(0.558)	(1.055)
Franc zone				1.155***	2.830***		-1.805**
				(0.295)	(0.882)		(0.713)
SSA* Resources						2.418***	-0.719
						(0.385)	(0.761)
Constant	1.268	-3.182	-0.594	1.456	3.100	2.784	-3.182
	(4.120)	(5.367)	(4.405)	(4.406)	(3.828)	(4.187)	(5.367)
R^2	0.959	0.959	0.959	0.959	0.959	0.959	0.959
Ajdusted R^2	0.954	0.954	0.954	0.954	0.954	0.954	0.954
Observations	1302	1302	1302	1302	1302	1302	1302
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses. All explanatory variables are lagged by one period.

2.3.2 … and surges in growth point to a certain dynamism

Although SSA exports still account for a minute share of global exports (2% in 2013), they have nonetheless experienced appreciable surges in recent years, pointing to some degree of momentum. These surges can be identifiedat the sector level, using a set of criteria similar to those used by Freund and Pierola (2012) at the aggregate level:

1. The average growth of exports during a three-year takeoff must be greater than the world average, which is 8% in the sample.
2. The average export growth during the takeoff must be 30% greater than that of the baseline period, also three years long, and must be at least 3 percentage points higher that the reference period.
3. The minimum level of exports during takeoff must be greater than the maximum pre-surge level in order to filter out episodes of high volatility.
4. The average post-surge growth, calculated excluding the year with the strongest growth, must be greater than the average pre-surge growth. This criterion discounts a surge due to just one year of very strong growth in exports.

Applying these criteria to manufactured products on a sample of 196 countries reveals 3,990 episodes of manufacturing export surges at the sector level between 1995 and 2013.[14]

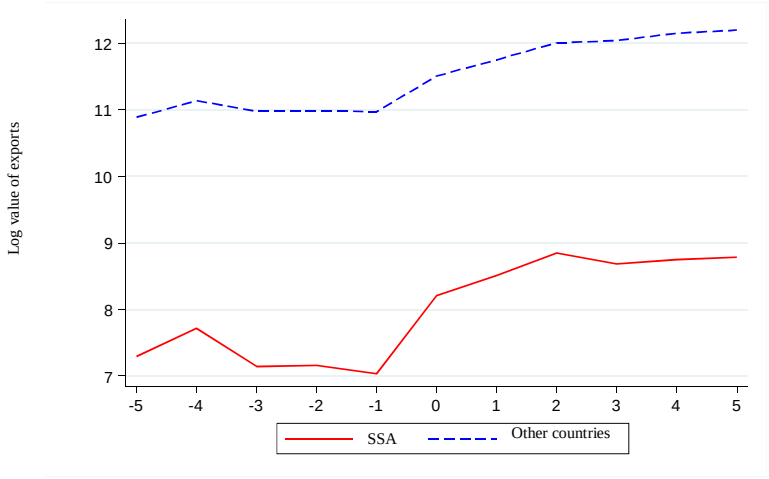
The best performances are registered by emerging countries, including China, India, Turkey and Russia, which each had experienced some thirty surges. Similarly, the results for East Asian countries such as Cambodia and Vietnam indicate a vibrant manufacturing sector. The worst performers are mostly islands and small landlocked countries. The sectors exhibiting the most surges include food and beverages, leather products and mined-metal products. These export surges identified at the product or sector level have been shown by Cadot et al. (2015) to explain a large share of aggregate export growth, and seem to have a ratchet effect on export levels, insofar as they do not revert to their initial value once the surge phase is over (Figure 11).

Nearly 18% of export surges occurred in SSA, where the country average numbered 17 surges a year over the period covered. SSA's performance may be assessed by comparing it to a basket of low-income and lower-middle-income countries, as classified by the World Bank.[15] Very similar profiles emerge and the distribution of surge episodes follows the same trend in both groups: 55% of surges began before 2004; their number fell during the recent economic crisis but a recovery is discernible as from 2010. In addition, there is a striking similarity between the profile of the average SSA country and the global average. In short, these preliminary results suggest that SSA is not, on average, an outlier relative to the comparator group and the rest of the world.

[14] A similar exercise at the origin-hs6-destination-year level is conducted by Cadot, Disdier, Jaud and Suwa-Eisenmann (2015) on a sample of developing countries and shows that export surges account for between half and two-thirds of aggregate export growth on average and three-quarters of between-country growth variability.

[15] The countries making up the comparison group are: Afghanistan, Armenia, Bangladesh, Bhutan, Bolivia, Cambodia, East Timor, Egypt, El Salvador, Georgia, Guatemala, Guyana, Haiti, Honduras, Indonesia, Kiribati, Democratic Republic of Korea, Kyrgyzstan, Laos, Micronesia, Moldova, Mongolia, Morocco, Myanmar, Nepal, Nicaragua, Pakistan, Papua New Guinea, Paraguay, the Philippines, Samoa, Solomon Islands, Sri Lanka, Syria, Tajikistan, Ukraine, Uzbekistan, Vanuatu, Vietnam, Yemen. The group excludes India.

Figure 11: Export surges have a ratchet effect on export levels



Note: average value of exports by "analytical year," where year zero is the base year for each sector-country cell.

Source: Woldemichael (2015).

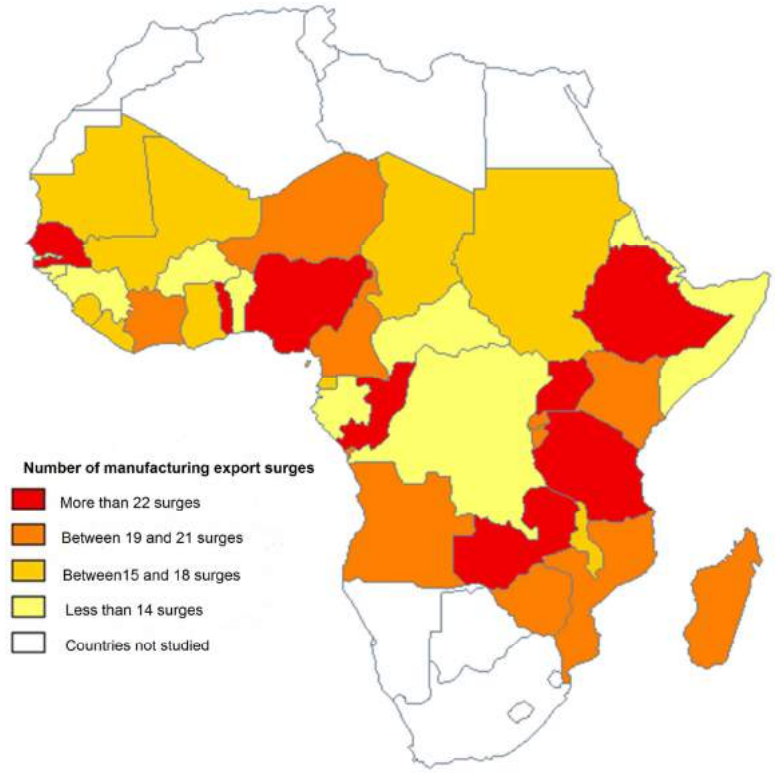
However, individual country experiences are fairly mixed. Uganda, the best performer with 32 surges, manages to hoist itself to the same level as emerging countries, while Burkina Faso has eight times fewer surges over the same period. African heterogeneities are also spatially perceptible (Figure 12): the vertical corridor from Ethiopia to Zambia passing through Uganda and Tanzania appears to be the most dynamic region with 164 surges, i.e. 20% of the total in SSA.

The appearance of this North-South pseudo-corridor is surprising. Indeed, all of the countries with a high occurrence of surges (in red on the map) are landlocked, apart from Tanzania, whose port Dar es Salaam, is notoriously inefficient. Furthermore, were there to be an identifiable corridor in terms of regional coherence and current common infrastructure projects, it would be the East-West corridor, from Kigali to Mombasa. However, this corridor does not show up on the map.

Nor is a West Africa corridor visible, marking out the Abidjan-Lagos axis, if not for the fact of a higher number of export surges in Nigeria, Togo and to a lesser extent Côte d'Ivoire, but not in Ghana, which ought to be an important link in the corridor. It is rather Togo, Nigeria, Cameroon and Congo that appear to form an unlikely high-performing cluster on the continent, amassing 111 out of 736 surges recorded from 1995 to 2013. Finally, the two isolated cases of Mauritius (not shown on the map) and Senegal each had 24 manufacturing export surges.

Although the determinants of these export surges have not yet been systematically analyzed, the exchange rate appears to have some bearing on GDP growth surges, according to the analysis of Freund and Pierola (2012) and Hausmann, Pritchett and Rodrik (2005).

Figure 12: Export surges appear to be more frequent in an East African corridor



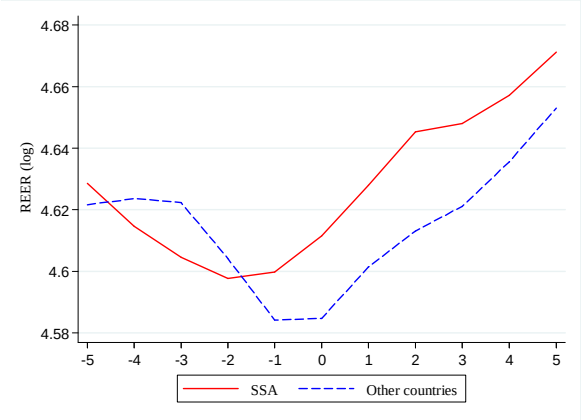
Source : Woldemichael (2015).

Indeed, Figure 13, describing the change in the real effective exchange rate (REER) indicator weighted by relevant sector-specific trade weights, indicates that on average the pre-surge phase is often associated with a sectoral REER depreciation that marks an upturn during the surge takeoff and post-takeoff. The systematic REER appreciation during takeoff and post-takeoff, which does not appear in the work of Freund and Pierola, is surprising and currently unexplained. Moreover, we note that the pre-surge depreciation is less pronounced in SSA than elsewhere.

Ricardian effects, referring to an increase in pre-surge sector productivity, can also be detected to some extent in Figure 14, but only for countries outside SSA (blue line).

The lack of a clear trend for SSA (red line) probably reflects to some extent the lack of reliable productivity data for the continent. Still, sectoral labor productivity (data do not allow estimating total factor productivity [TFP]) seems to grow before the surge phase begins, suggesting that a supply-side factor intervenes in determining surges. On the other hand, the trend turns around during and after the start phase, which is surprising given that the export value gains appear to be sustained (Figure 11).

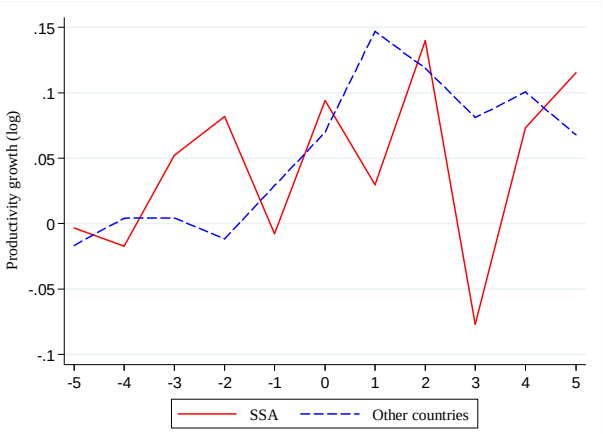
Figure 13: Export surges appear to coincide with a temporary sector-specific REER depreciation…



Note: The years measured on the horizontal axis are "analytical years", where zero is the start year for each sector-country cell.

Source: Woldemichael (2015).

Figure 14: : …but Ricardian effects seem low for SSA



Note: The years measured on the horizontal axis are "analytical years", where zero is the base year for each sector-country cell. The vertical axis measures labor productivity.

Source : Woldemichael (2015).

III. Despite growth, Africa is de-industrializing

3.1 The manufacturing sector in African economies

3.1.1 The stakes: industrialization and poverty

Industrialization is generally correlated with poverty reduction. Based on a panel regression with country and year fixed effects, Table 2 shows that increases in value-added are poverty-reducing for all major sectors, except the mining industry. In fact, the size of the SSA mining sector plays a large part in explaining why growth has belatedly kicked in as a poverty-reduction driver. Growth based on the natural resource sector not only appears to be volatile and vulnerable, but also has little effect on poverty reduction. Increases in agricultural value-added have no significant effect on the poverty headcount ratio (i.e. the proportion of the population living under the poverty line), which is surprising. It does, however, have a significant but quantitatively weak effect on the poverty gap (the difference between the mean income of the poor and the poverty line).

Table 2: Manufacturing value-added is a stronger driver of poverty reduction

Dependent variable: Fixed effects OLS estimator	Poverty headcount ratio	Poverty gap	Squared poverty gap	Poverty headcount ratio	Poverty gap	Squared poverty gap
Elasticity of poverty to value-added:						
agriculture	-0.666* (0.356)	-0.824** (0.340)	-1.092** (0.452)	-0.582 (0.405)	-0.766** (0.304)	-1.120*** (0.344)
services	-2.247*** (0.811)	-1.817** (0.857)	-1.762* (0.962)	-1.901*** (0.659)	-1.056 (0.780)	-0.962 (0.998)
industry	-0.465 (0.309)	-0.548 (0.355)	-0.644 (0.392)	-	-	-
manufacturing	-	-	-	-3.872*** (1.214)	-5.010*** (1.455)	-6.158*** (1.756)
mining	-	-	-	-0.564 (0.364)	-0.584 (0.433)	-0.621 (0.456)
Obs.	629	614	601	556	541	530
Number countries	85	83	82	78	75	74
Adjusted R^2	0.143	0.139	0.108	0.163	0.175	0.162

These results differ from those published in the World Bank's *Africa's Pulse* (Chuhan-Pole, 2014) and strongly challenge, at least in the light of our sample, the hypothesis that growth in industrial value-added has no impact on poverty reduction in SSA. By our estimation, a 1% increase in industrial value-added reduces poverty by 1.1%. This elasticity is significantly higher than that observed in both the agricultural and services sectors.[16]

Whatever the variable of interest—the poverty headcount ratio, poverty gap, or squared poverty gap—the strongest poverty reduction effect is associated with manufacturing value-added; for the poverty gap, the multiple between agriculture and manufacturing is more than one to five; between services and manufacturing, it is just one to five.[17] This means that industrialization is above all a major stake for poverty reduction.

The regression results in Table 2 can be shown graphically (Figure 15) by comparing the reduction in poverty observed from 1993 to 2011 across subsamples of countries broken down by the median rate of industrialization and initial poverty headcount ratio. Several observations come to light.

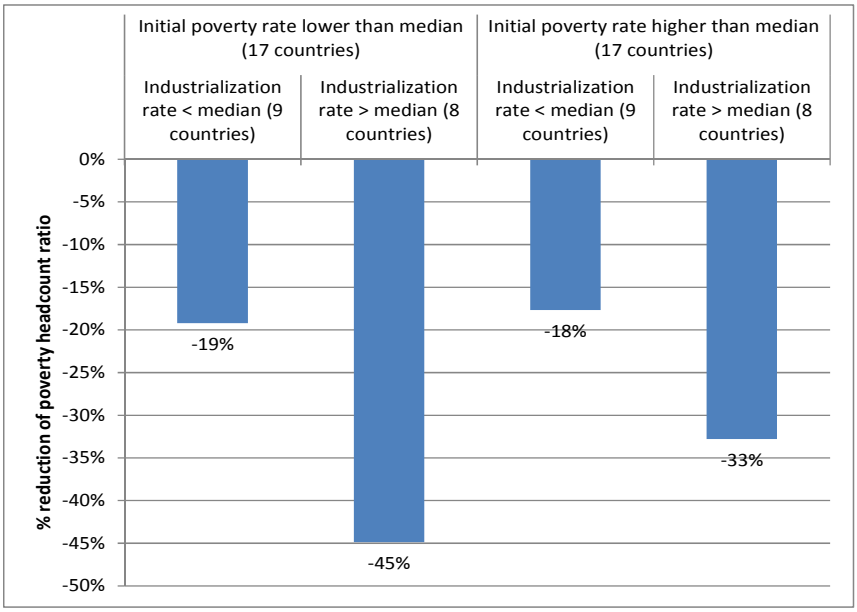
[16] [16] This difference in results can be explained mainly by the composition of our sample, which varies in line with the various retrospective revisions brought to the data. In fact, our sample includes 10 more countries than the World Bank's sample. Moreover, the World Bank estimation spans the period 1990–2011, whereas our dataset covers a longer period (1981–2011). However, our results remain robust when the period under study is shortened (1990–2011), and when the sample is manipulated in line with the sample used in the World Bank study. Hence, over the 1990–2011 period, the results obtained are very similar to those reported in Table 2. This is also the case when the 10 additional countries are not included in the estimation.

[17] However, as we shall see later, the services value-added makes an increasing contribution to poverty reduction over the decade, whereas the value-added contribution of manufacturing declines; these observations thus need to be interpreted with caution. This question will be discussed in Section 4 below.

First, if the poverty levels had converged, the reduction would be greater on the left side of the figure. This is partly the case, but chiefly for the eight countries that had become relatively more industrialized (or less de-industrialized) over the period.

Second, whatever the initial level of poverty, this declines much more steeply when the increase in the rate of industrialization is above the median (around twice the level for poorly industrialized countries). The statistical link identified in the Table 2 regressions thus clearly appears to translate into a reduction in the incidence of poverty in countries where manufacturing value-added has experienced the highest rise.

Figure 15: Industrialization is strongly poverty-reducing in countries with a high initial poverty headcount ratio



Notes: The sample comprises 34 sub-Saharan African countries. Simple averages. Poverty line is $ 1.25 a day, PPP. In parentheses, the number of countries in each category. Industry includes the manufacturing sector only (the mining and construction sectors are excluded).

Source: PovcalNet and WDI.

3.1.2 The SSA manufacturing sector is below its potential

The size of the manufacturing sector, which as we have just seen plays a key role in the fight against poverty, is unusually small in SSA and, moreover, on a downward slope. As this persistent trend is a cause of serious concern, it is important to measure it against a sound counterfactual. To this end, Table 3 shows the results of a regression of the share of manufacturing value-added in GDP over an unbalanced panel comprising all the countries covered by the World Bank's World Development Indicators (WDI) database since around 1960. Regressions include country and/or year fixed effects, per capita income (log GDP per capita, in current dollars) and its square, as well as interaction terms with a dummy variable for SSA. The aim is to obtain a sort of "general law" on industrialization as a function of income, the squared term serving to identify a non-monotonicity in the relationship.

The regression results show that the share of manufacturing value-added in GDP follows a hump-shaped curve, even in the presence of country and year fixed effects (column 5). The non-monotonicity is thus very robust, and the turning point—whose location in terms of GDP per capita is itself quite sensitive to the specification—characterizes the individual trajectory of each country. Introducing linear and quadratic interaction terms with a dummy variable marking SSA countries produces no qualitative change in the basic result (concavity). It does, however, shift the turning point to a GDP per capita level that is slightly lower than for the mean of all countries.

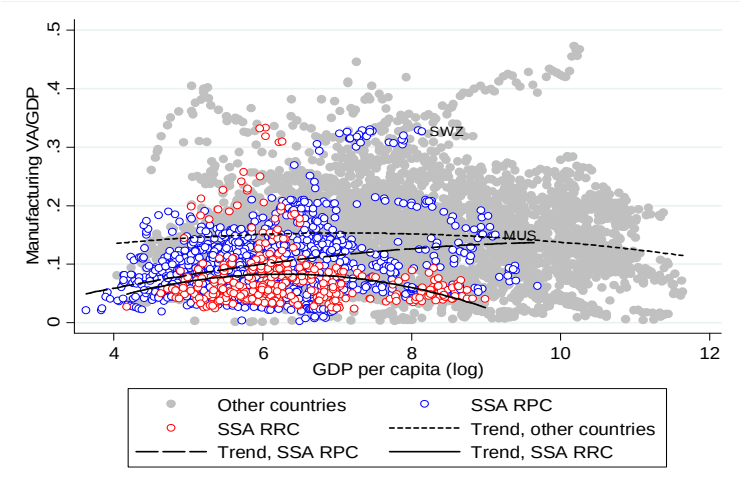
The results in Table 3, which are world averages, suggest that the concavity of manufacturing value-added in GDP is verified for the individual trajectories of each country, which seems to reflect the standard pattern of structural change identified by Chenery and Syrquin (1975), showing a shift from agriculture to industry, and then on to services as per capita output increases. They provide a yardstick to determine whether the manufacturing share in the GDP of SSA countries is at a normal level given their income, and whether their individual trajectory appears to follow the general pattern.

Table 3: The share of manufacturing value-added in GDP follows a hump-shaped curve

Estimator	OLS	OLS	Within	OLS	Within
Dependent variable: MVA/GDP	(1)	(2)	(3)	(4)	(5)
log GDP/cap, current dollars	0.064	0.025	0.078	0.083	0.066
	(14.56)***	(3.76)***	(5.41)***	(17.21)***	(3.43)***
log GDP/cap²	-0.004	-0.002	-0.005	-0.005	-0.004
	(13.07)***	(4.13)***	(5.62)***	(15.04)***	(3.52)***
SSA		-0.164			
		(4.11)***			
log GDP/cap x SSA		0.028			
		(2.42)**			
log GDP/cap² x SSA		-0.001			
		(1.71)*			
Intercept	-0.129	0.054	-0.131	-0.177	-0.113
	(7.99)***	(2.03)**	(2.45)**	(9.04)***	(1.65)
R^2	0.05	0.10	0.08	0.09	0.12
Observations	6133	6133	6133	6133	6133
Number of countries			186		186
Fixed effects					
Country	no	no	yes	no	yes
Year	no	no	no	yes	yes
Turning point (dollars)					
All countries	5384		1231	8298	1829
SSA		4998			

Figure 16 suggests that SSA countries are poorly industrialized, even when their level of income is taken into account; still more worrisome is that the share of manufacturing value-added in GDP is declining in all cases, whereas the "normal" trajectory would be a further long stretch of industrialization.

Figure 16. The share of manufacturing value-added in GDP is small and declining prematurely in SSA



Note: SSA: Sub-Saharan Africa, excl. South Africa; RRC: resource-rich countries (natural resource rents above 15.05% of GDP, see the list in Table A1).

Non-SSA countries are shown in grey, resource-rich SSA countries in red and resource-poor SSA countries in blue, using the same classification as in Figure 7. The hump-shaped curve for all countries, shown as a dotted line, is clearly visible. The curve for SSA resource-rich countries reaches its turning point much earlier, at an absurdly low income level ($e^6 = \$408$ per capita). The curve plotting SSA resource-poor countries has no turning point. However, this monotonicity is strongly influenced by the inclusion of Mauritius, a highly industrialized country compared to the rest of the continent and with a high level of income. When Mauritius is excluded, all SSA countries show a turning point.[18]

This does not seem to be a measurement problem. National accounts data even seem to underestimate the problem, as the share of manufacturing value-added in GDP is rather lower after the GDP rebasing undertaken by several SSA countries (Box 2).

In a nutshell, the share of manufacturing value-added in GDP is on the whole both low and declining in SSA, whereas in light of historical evidence from other countries (and based on between-sector productivity differentials) the continent's level of development would rather suggest that this share should be increasing.

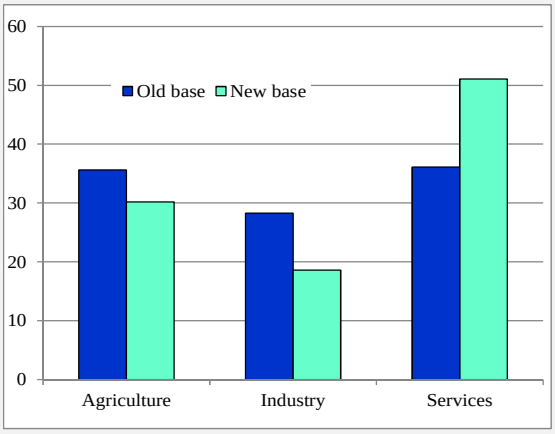
[18] Figure 16 uses WDI data. Figure A 1 A1 in the Appendix shows the same curve based on data from the Groningen Growth & Development Centre, clearly highlighting the "Mauritius effect". Another point to note in Figure 16, is the outlier, Swaziland (a landlocked country bordered by South Africa and Mozambique).

Box 2: The effect of GDP rebasing

In April 2014, Nigeria announced that it was rebasing its GDP or, in other words, it was revising its relative prices and the economic activity categories (dating back to 1990) that it had used to calculate its GDP. The new benchmark year for estimates was 2010, which would give a better picture of reality (see a more detailed discussion of this in Appendix A1). The effect of rebasing was an 89% increase in GDP. Ghana, Kenya and Zambia have recently made the same move. What effect has this rebasing had on standard macroeconomic variables?

The answer is "complicated". The inclusion of new activities involving previously inexistent technologies, the improved statistical coverage of informal activities, and a better valuation of relative prices all make it possible to estimate GDP more precisely. This estimate is often revised upward given the broader range of economic activities taken into account, as happened for Nigeria. However, a "retropolation approach to growth can have a dramatic effect on estimates. For instance, if the new activities included are characterized by down-trending prices—which is often the case for high-technology products—the result may paradoxically be a downwards revision of past growth rates. In a recent VoxEU posting, Leandro Prado de la Escosura hence suggests to estimate GDP growth by interpolating estimates calculated on both the old and new benchmark years.[19]

Figure 17: The effect of rebasing on the composition of Ghana's GDP



Source: adapted from Table 1.1 in UNECA (2014).

As rebasing has a particularly strong effect on services, this may impact the sectoral composition of GDP, with industry's share becoming smaller. This is the case for Ghana, whose GDP has been recalculated using the new prices. The share of industry (manufacturing and mining) in GDP thus shrank by almost ten percentage points (Figure 17), all the adjustment being concentrated in the services share, which increased by nearly fifteen percentage points.

[19] Leandro Prados de la Escosura, "Mismeasuring long-run growth: The bias from spliced national accounts"; VoxEU, 27 September 2014.

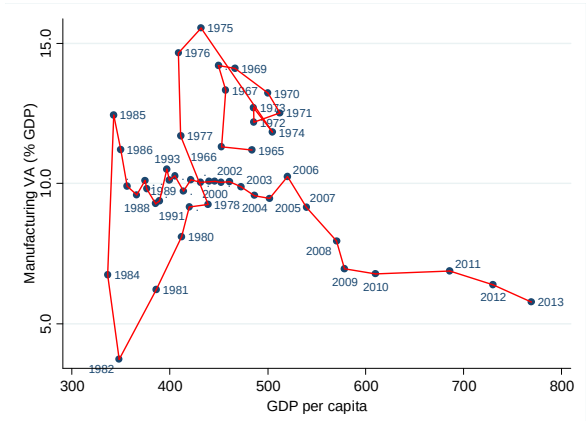
3.1.3 Diverse individual trajectories, but all reflect de-industrialization

All SSA countries—with the obvious exception of South Africa not considered here—should be in an industrialization phase given their level of income, but all are in a phase of relative de-industrialization. This is true even for those countries generally viewed as potentially in the running for an economic take-off, such as Ghana and Ethiopia. The differences between them are simply the date at which the relative decline began.

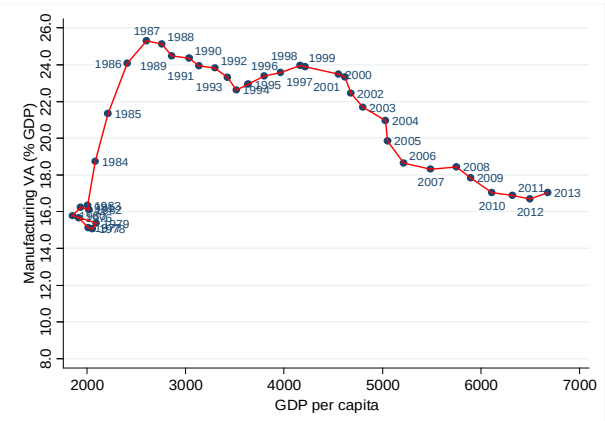
The panels (a)–(d) in Figure 18 show a series of four countries arranged chronologically on their industrialization peaks. Ghana peaks in the 1970s, Mauritius in the 1980s, Ethiopia in the 1990s and Senegal in the 2000s. All are characterized by subsequent de-industrialization, which in the case of Ghana and Ethiopia is catastrophic with the share of manufacturing value-added falling to around 5% of GDP. It is less pronounced in Mauritius and Senegal, where this share reaches 16% and 13.5% of GDP respectively.[20]

Figure 18: Structural change, examples of African trajectories

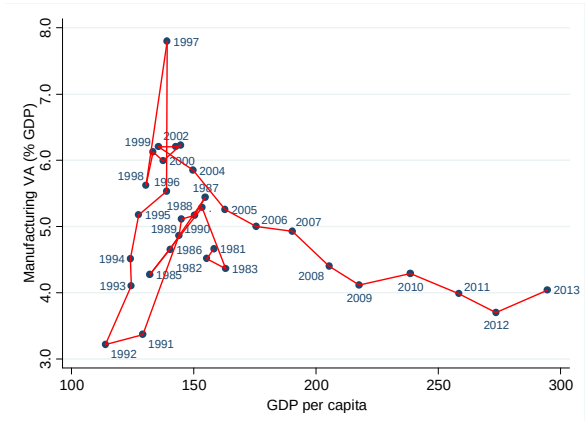
(a) Ghana



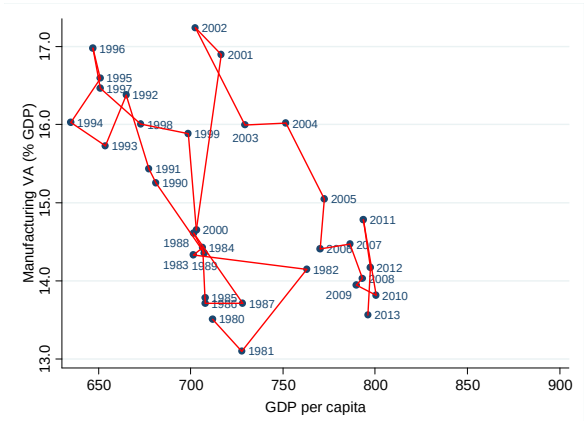
(b) Mauritius



(c) Ethiopia



(d) Senegal



Note: GDP per capita in constant 2005 dollars.

Source: authors' calculations based on the World Bank's WDI.

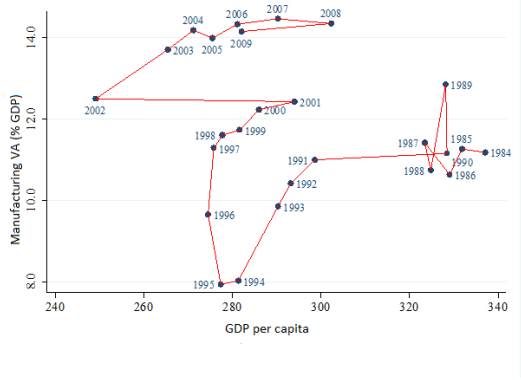
[20] This trend towards de-industrialization is also observed when considering the manufacturing VA per capita.

Figure 19 illustrates the effect of political crises, taking the particularly striking examples of Côte d'Ivoire and Madagascar. In Madagascar, the rapid de-industrialization that occurred between 1991 and 1994 stems from the country's opening-up after years of almost total autarky. Whole swathes of the national industry collapsed, victim of foreign competition and the country's management practices—notably over-diversified conglomerates operating on a sub-optimal scale with obsolete equipment. Once the situation had stabilized, the textile industry, relocated from Mauritius, occupied the front seat in the 1995–2001 period, generating substantial growth gains as from 1998. The relative share of manufacturing increased rapidly between 1995 and 2001 to reach 12.5% of GDP just before the government's succession crisis. Notwithstanding the political crises and all kinds of disadvantages (due to the phasing-out of quotas under the ATC[21], see Box 3), the sector managed to sustain its growth, pushing manufacturing's share in GDP up to 14%. Madagascar is thus doubly atypical, firstly on account of its virtually uninterrupted forty-year-long economic and social collapse and, secondly, the unparalleled resilience of its textile industry, which has helped to create an export structure that is diversified and dominated by manufactured products.

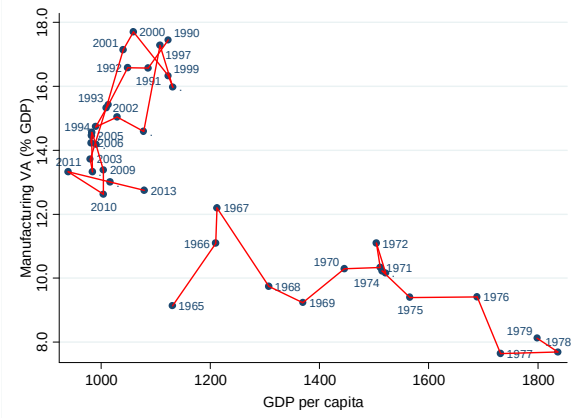
In Côte d'Ivoire, the share of manufacturing output has declined substantially over the last fifteen years, by around 5 GDP points relative to the beginning of the 2000s. The political crisis stretching from 2003 to 2011 was partly to blame for this erosion in a context of a low average annual growth. As far as can be judged from the last available year (i.e. 2013), national reconciliation and a return to sustained growth have not yet given indication that the manufacturing industry has the capacity to regain the performance it achieved in the early 2000s.

Figure 19: The impact of political crises

(a) Madagascar



(b) Côte d'Ivoire



[21] Agreement on Textiles and Clothing

Box 3: The extraordinary resilience of Malagasy textile exporters

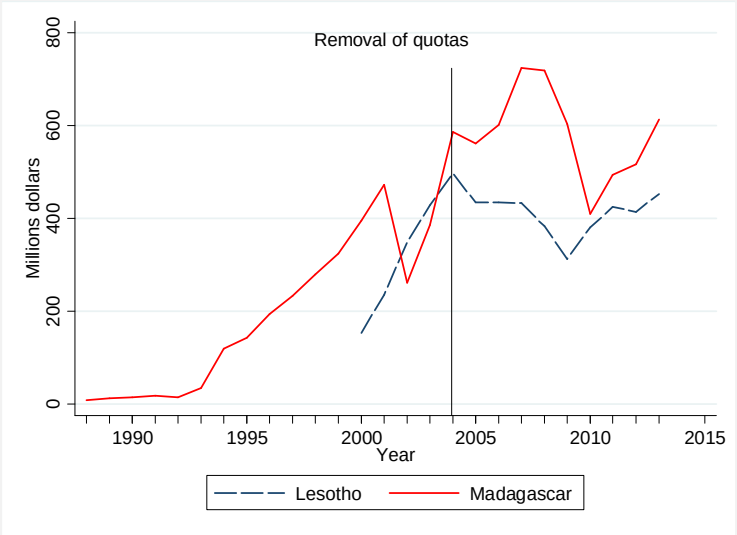
With a decline in per capita income averaging 1% a year since independence—in 2013, the level of income in constant dollars stood at 56% of its worth at independence—Madagascar is suffering from one of the longest crises in Africa.

A nascent textile industry had developed in Madagascar thanks to the import substitution strategy pursued in the 1970s. It was, however, plagued by a critical lack of competitiveness and disappeared following the country's economic liberalization in the 1980s.

During the 1990s, the Mauritian garment industry had become increasingly disadvantaged due to its rising labor costs, compared to emerging Asian competitors. The relative protection afforded by both the ATC (Agreement on Textiles and Clothing, which supplanted the Multi-fiber Arrangement) and preferential access to the European market under the Cotonou Agreement encouraged Mauritian manufacturers to relocate some of their production to Madagascar, where they enjoyed a free-zone regime and significantly lower labor costs.

Initially, the model functioned quite well despite multiple governance and infrastructure issues. During 2001-2002, the sector was shaken by a violent crisis following the unrest caused by the dispute over who was to succeed President Ratsiraka. The Tananarive-Tamatave highway, a critical route for the industry's supply line and exports, was blocked on several occasions, as rival factions used it as a pawn. The end of the crisis led to a recovery between 2002 and 2004, as exports to American markets were bolstered by the African Growth and Opportunity Act (AGOA). The Act includes a favorable clause that relaxes the local-content rule normally applied under the Generalized System of Preferences (GSP) requiring a local "double transformation" (from yarn to fabric to apparel). This rule severely penalizes the LDCs where yarn production is barely profitable. Relaxing this rule has enabled Malagasy manufacturers to benefit from the duty free regime, as they are now allowed to assemble CMT ("cut, make and trim") garments from imported fabric. De Melo and Portugal (2014) estimate that the removal of the local-content rule for the five top exporters benefiting from AGOA has produced an effect four times higher (168 per cent) than the effect of preferential tariff access.

Figure 20: Textile exports, Madagascar et Lesotho



Source: Comtrade.

These gains in competitiveness, however, came under severe pressure from Asian competition when quotas were removed in December 2004, dealing a fresh blow to the industry. Even so, the sector made a vigorous recovery (Figure 20). The hardest blow came yet again from a political crisis in 2008, causing Malagasy producers to lose 30% in the space of two years. Yet, exports picked up again in 2011–12, showing an extraordinary degree of resilience.

3.2 Why has Sub-Saharan Africa missed the boat?

3.2.1 Has structural change played out in the wrong direction?

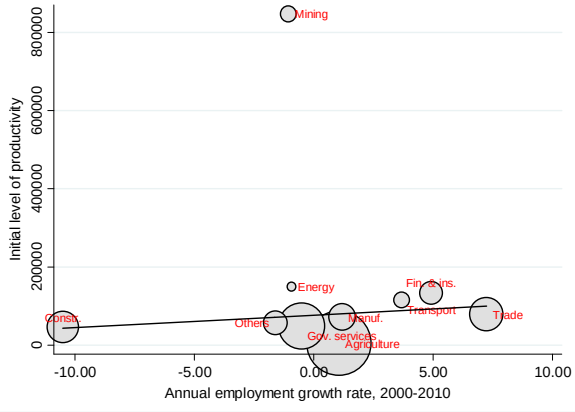
McMillan and Rodrik (2011, 2014) have shown that structural change, rather than facilitating the shift of resources from less productive to more productive sectors, has had the opposite effect in Latin American countries and SSA, producing a negative impact on total labor productivity growth. It is only since 2000 that the trend has begun to turn around, showing a (slightly) positive correlation between variations in sectoral employment and productivity. Figure 21 revisits the question on a country basis, drawing on GGDC series for the 2000–2010 period, which make it possible to calculate productivity and employment growth for ten sectors including agriculture, industry (manufacturing and mining) and services (energy, transport, finance, insurance & real estate, government services, trade, construction & public works, among others). Overall (except in the case of Kenya), the correlation is slightly positive, with the share of agriculture, the least productive sector, being small or declining across almost all the countries.

Yet, in virtually all SSA countries, manufacturing hovers midway along the horizontal axis, with the variation of its share in total employment close to the median of the ten sectors. Clearly, labor appears to out-migrate from agriculture, but more towards services than manufacturing. An important point to remember, however, is that the GGDC employment data also include informal employment and self-employment. The weak expansion of employment in manufacturing is not therefore a statistical illusion reflecting the low level of formalization of African businesses.

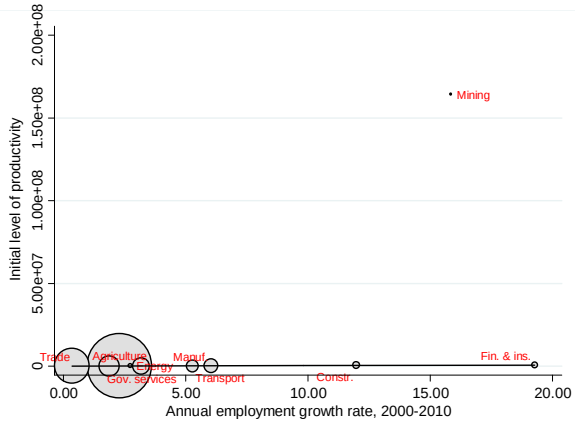
Panels (a) and (b) in Figure 21 depict the case of two resource-rich countries, Botswana and Nigeria. In both cases, the mining sector (oil for Nigeria) is an outlier in terms of productivity; stable in terms of employment in Botswana, increasing in Nigeria. In both cases manufacturing employment growth is weak, between 0 and 5%, and agricultural employment is stable or increasing slightly. Neither case qualifies as a country undergoing structural change.

Figure 21: Structural change and productivity

(a) Botswana



(b) Nigeria



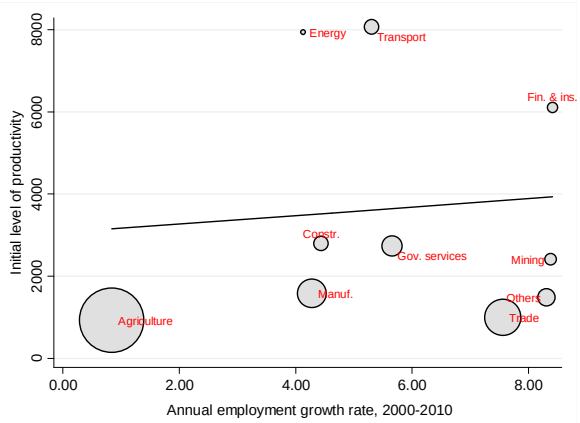
Source: authors' calculations using data from the Groningen Growth & Development Centre (GGDC).

Panels (c)–(h) portray the case of six countries where structural change seems to be heading in the right direction, pushing employment out of the less productive sectors towards the more productive ones. In five of the six cases, however, manufacturing is located towards the middle of the scatter plot, with the highest employment gains reported in the services sector (trade in Ghana and Zimbabwe; construction, a sector that creates little employment, in Ethiopia; and transport in Senegal and Tanzania). In Mauritius, (panel h), manufacturing holds the same position as agriculture showing a high loss of jobs, while the finance sector is the most dynamic, as is usually the case in a country undergoing structural change.

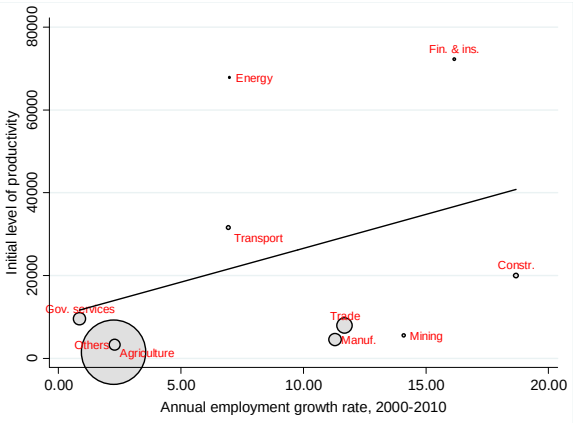
Malawi and Kenya are both unusual cases. In Malawi, the slope of structural change is "flat" if the mining sector is excluded; in Kenya, structural change played in the wrong direction, , with an expanding manufacturing sector yet characterized by a productivity level that barely exceeds that of agriculture.

Figure 21: Structural change and productivity (cont.)

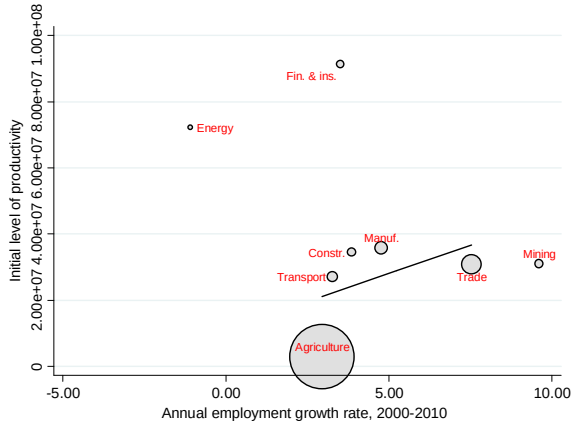
(c) Ghana



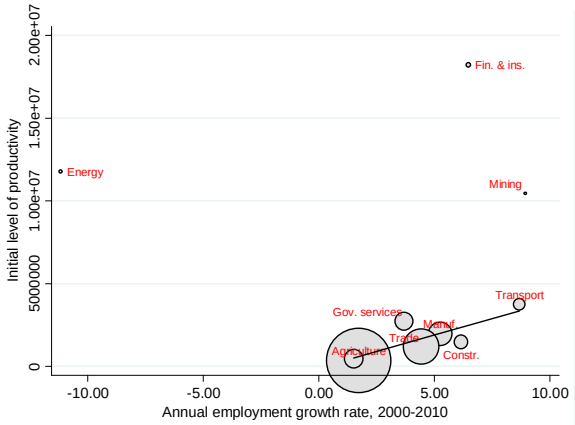
(d) Ethiopia



(e) Zimbabwe



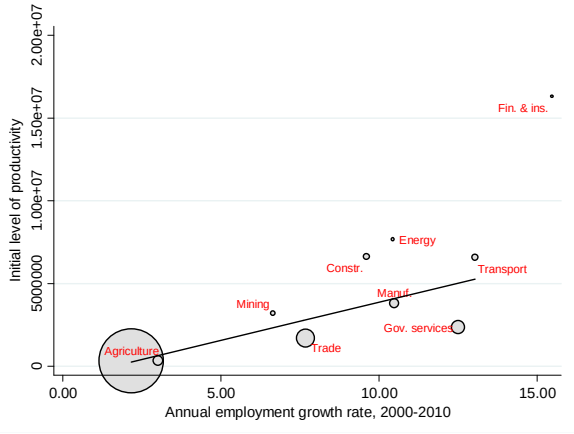
(f) Senegal



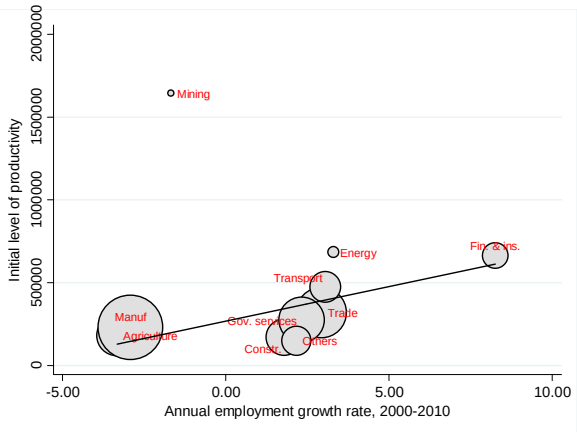
Source: authors' calculations using data from the Groningen Growth & Development Centre (GGDC).

Figure 21: Structural change and productivity (end)

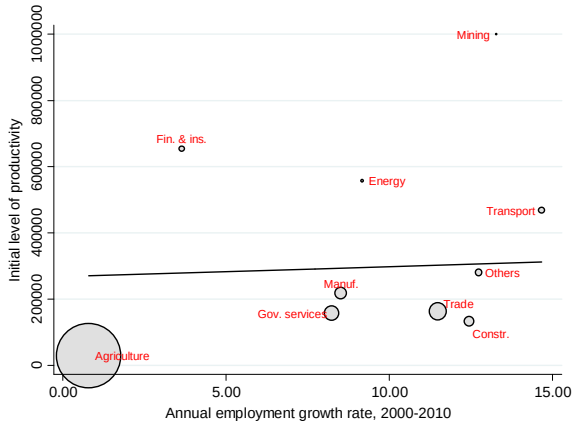
(g) Tanzania



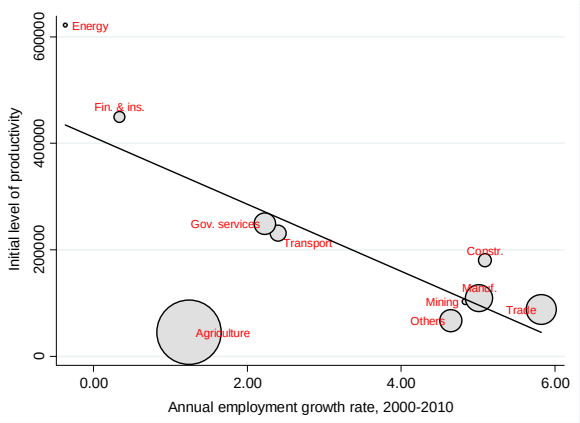
(h) Mauritius



(i) Malawi



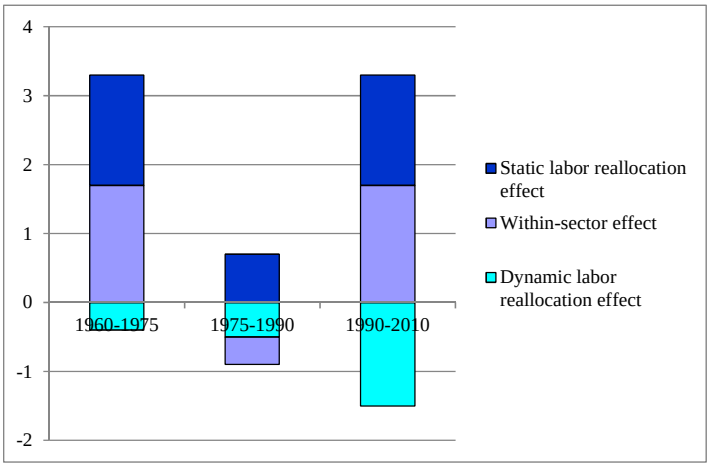
(j) Kenya



Source: authors' calculations using data from the Groningen Growth & Development Centre (GGDC).

The individual cases reported in Figure 21 show that, regardless of their differing patterns of employment shares in the ten sectors listed by GGDC, the overall diagnosis is similar for all of the countries—employment in agriculture, where productivity is generally lowest, is either declining or experiencing weak growth. Yet, manufacturing is not the main beneficiary of this labor reallocation, and its productivity is not in fact conspicuously higher than that of the other sectors. The sector that gains most is services and more specifically, in many cases, trade (wholesale and retail), which is largely sheltered from international competition.

Figure 22: Decomposition of productivity growth in SSA, 1960–2010



Source: adapted from Timmer et al. (2014), Figure 2.

While structural change has not ostensibly shifted resources from low- to high-productivity sectors, has it at least reallocated them to sectors with fast-growing productivity levels? Timmer et al. (2014) term this component of aggregate productivity growth as the "dynamic reallocation effect". The approach basically involves measuring the correlation between the growth in employment shares and productivity growth, rather than productivity levels as in the previous section. Figure 22 shows aggregate productivity growth in SSA (based on the formula derived in Appendix A2) decomposed by time periods. The dark blue area represents the static contribution of within-sector reallocation effects ($\sum_i \Delta s_i q_i^0 / Q$); overall, this is positive for all of the time periods, which is consistent with the individual country experiences reported in the Figure 21 panels, except for Kenya over the 2000–2010 period. On the other hand, the turquoise area, corresponding to the dynamic contribution of within-sector reallocation effects $\sum_i \Delta s_i \left(q_i / Q\right)\left(\Delta q_i / q_i\right)$, shows up negative across all the time periods. It can therefore be argued that resources were reallocated not so much to low-productivity sectors (Figure 21 shows that productivity in services is not lower than in agriculture), but more to sectors where productivity was growing at a slow pace.

3.2.2 Belated industrialization?

Sub-Saharan Africa is a latecomer to the development process for reason of its "lost generation" (the 1970–1995 period plagued by disastrous policies, a worsening business climate, and their long-term consequences). As such, the context at the time of its entry was fundamentally different from the one faced by countries that industrialized in the 1970s. For instance, in many of the most dynamic sectors, scale economies have become very large and market size is thus a crucial factor. As capital intensity had risen due to technical progress, productivity is higher across all sectors.

The shift of productive resources, particularly labor, from agriculture to industry and then to services—which is the classic path taken by economic development in almost all industrialized countries—has been widely covered in the economic literature, notably in the wake of Kuznets' (1966) work. What drives labor to out-migrate from agriculture is the farm-nonfarm productivity differential, which generates differences in pay that

attract young rural individuals towards urban centers. Drawing on patchy data, Gollin, Lagakos and Waugh (2013) estimate that, in the 1980–1990s, Ghana's agricultural productivity was less than half the average productivity in the other sectors, even controlling for human capital differentials. Further, McMillan and Rodrik (2011) show that the productivity gap between agriculture and the rest of the economy does not behave monotonically as a function of income: it follows a U-shaped curve, reaching its lowest point at an aggregate productivity level of around USD 9,000 per worker, which is much higher than in most SSA countries. As a result, the incentive for workers to move out of the agricultural sector is very high, and this is likely to increase in future years.

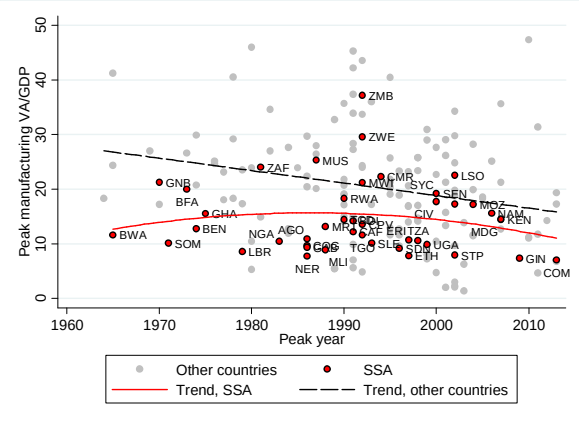
Drawing on various examples, Rodrik (2014) conjectures that latecomers to industrialization seem to reach a turning point earlier and at a lower manufacturing VA-to-GDP ratio. Panel (a) in Figure 23 shows that this conjecture is verified for the set of countries covered by the World Development Indicators database. The vertical axis measures the ratio of manufacturing VA to GDP at its peak, and the horizontal axis shows the peak year, with each point representing a country. As before, non-SSA countries are in grey and all SSA countries in red. What clearly appears is that the least-squares curve (estimated using a quadratic polynomial, without fixed effects) has a negative slope for non-SSA countries. For SSA countries, this curve is concave, suggesting that the countries reaching the highest point of industrialization in the 1990s are those with the highest peaks. But interestingly enough, for the 1990–2010 period, the trend is clearly downwards: the countries having peaked more recently systematically reach their highest point at a lower level (and no country is "censored", in the sense that it reaches its peak only in the last year of available data).

Panel (b) in Figure 23 makes the same conjecture but for employment rather than value-added, and on the basis of the limited GGDC sample of countries. Like Panel (a), it represents the level of manufacturing employment at its peak (turning point) in function of the year that this turning point is reached. As before, non-SSA countries are in grey and SSA countries in red, except for those whose time series is censored, in the sense that the peak is reached in the last year of available data (2010). This is the case for Ethiopia, Malawi, Senegal and Tanzania. The broken-line curve is obtained with the least squares. As Rodrik suggests, it has a negative slope suggesting that the turning points reached later are characterized by a lower manufacturing employment peak. But, what is perhaps most striking is that most SSA countries documented in the sample (except for Mauritius) are again situated below this regression curve. Thus Ghana, Nigeria and Zambia reach their peak very early and at a very low level.

However, the 1995–2010 period during which SSA countries should have reaped the dividends of structural change was not characterized by a fresh increase in manufacturing activities, as if the de-industrialization observed in the crisis years (around 1975-1995) had become irreversible.

Figure 23: Latecomers industrialize less

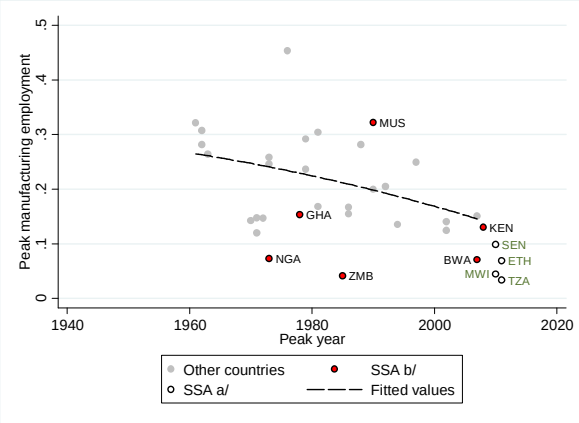
(a) Value-added



Note: SSA excludes South Africa and Swaziland, as their high level of industrialization positions them as outliers, which strongly impacts the regression results.

Source: authors' calculations based on the World Bank's WDI

(b) Employment



Notes: a/: Sub-Saharan Africa, South Africa excluded, censored time series (manufacturing employment peak in the last year of the series); b/: uncensored time series (manufacturing employment peak before the last year of the series).

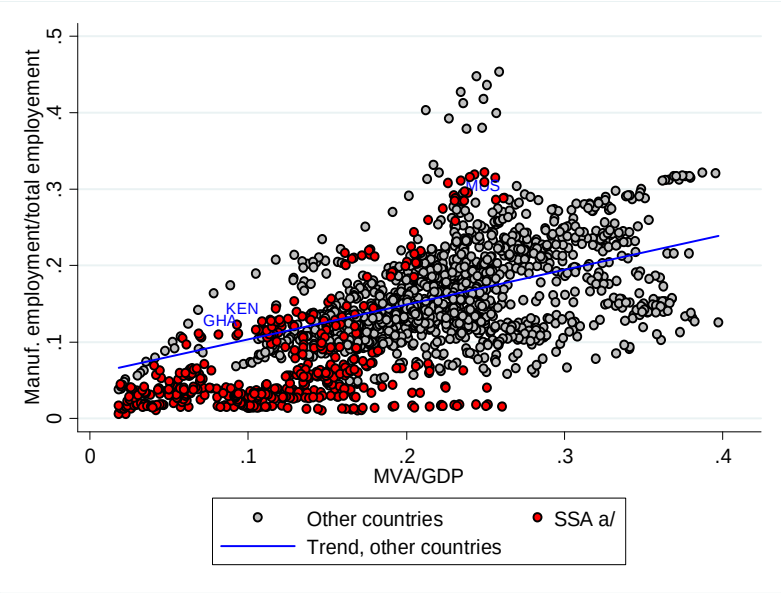
Source: authors' calcuations based on GGDC data.

3.2.3 Paradoxically high labor costs?

Although SSA countries are poor, African labor is not cheap. This impairs the continent's capacity to turn its latent comparative advantage in labor-intensive light manufacturing into a competitive advantage or, in other words, a sufficiently high rate of return to attract foreign investors.

In the case of Africa, the relationship is dichotomous. For Mauritius, Ghana and Kenya, the elasticity of employment to manufacturing value-added is virtually unitary. For the other SSA countries, on the other hand, it is only (and "within") one-third. It should be kept in mind, however, that this pertains to the manufacturing sector and not industry, which includes the mining sector. What is involved therefore are differences in the kind of manufacturing activities. Although this anomaly needs further investigation, at this stage we can say that it reflects an absence of garment industry growth in most SSA countries apart from Mauritius, Lesotho and Madagascar, the latter two not being covered by GGDC data.

Figure 24: Employment and manufacturing value-added

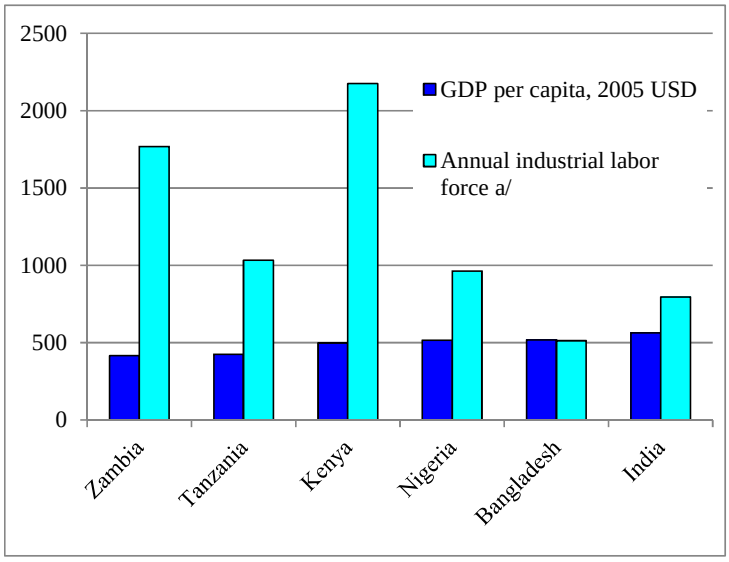


Source: Authors' calcuations based on GGDC data.

Thus, with its share in total employment averaging around 7%, the manufacturing sector in SSA does not appear to be the wellspring of employment that it had been during the industrialization phase of most now-industrialized countries, even in the case of relatively resource-poor countries. In Senegal, the 2010 peak accounted for only 10% of total employment. In Ghana, the peak was reached in 1978, at an extremely low level of GDP per capita. This should be borne in mind in view of the absolute need for job creation, discussed at the beginning of this study. If no spectacular trend reversal intervenes, the manufacturing sector is unlikely to play a consequential role in absorbing labor market entrants.

Some observers, such as Gelb et al. (2013), ascribe this syndrome of jobless growth to the high cost of African labor. Based on data on labor costs for manufacturing firms (listed under ISIC divisions 15–37), the authors built an indicator for the annual country labor cost, in 2005 USD, for years close to those where the World Bank's *Enterprise Surveys* data are available (around 2006/2007). Their sample includes SSA countries and comparators with similar income levels. Figure 25, constructed using the country medians reported in their Tables 1 and 3, sums up the problem. Although its GDP level is comparable to that of Bangladesh, Kenya has labor costs that are four times higher. Clearly, if Nigeria and Zambia are resource-rich countries—which could contribute to increasing labor costs through the well-known general equilibrium effects—this is not the case for Kenya.

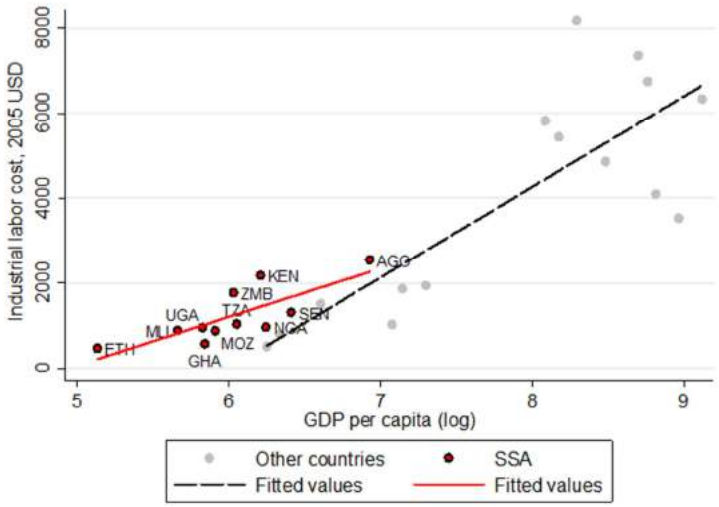
Figure 25: Comparison of industrial labor costs, 2005



a/ cost reported by firms at median level, in constant 2005 USD
Source: Gelb et al. (2013).

Apart from this handful of countries, Figure 26 suggests that SSA countries seem to be characterized by higher industrial labor costs than other countries, although this comparison requires a great deal of caution given that the comparators include countries with much higher levels of income.

Figure 26: Median labor costs, 2005

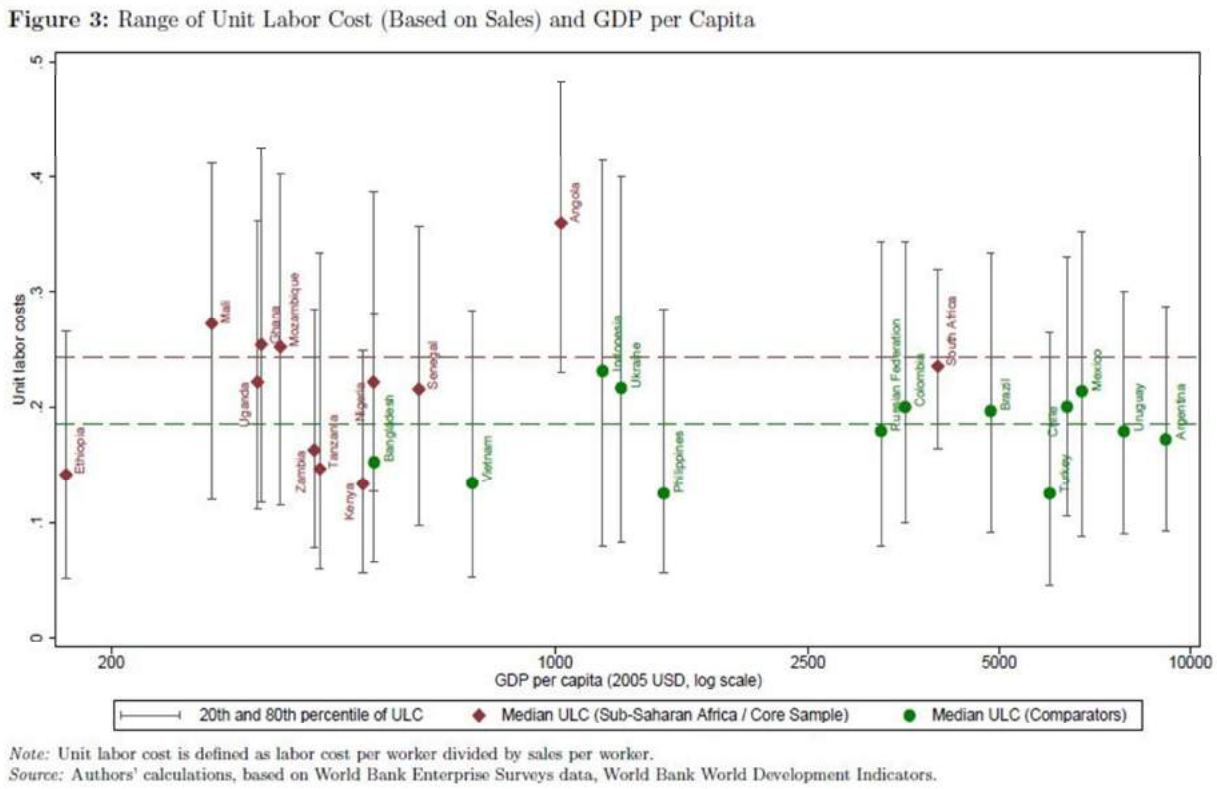


Note: The non-SSA comparator countries selected by Gelb et al. and shown in grey are Bangladesh, India, Vietnam, Indonesia, Ukraine, the Philippines, Russia, Colombia, Brazil, Turkey, Chile, Mexico, Uruguay and Argentina.

Source: Adapted from data in Gelb et al. (2013), Tables 1 and 3

Drawing on data from the *Enterprise Surveys*, Gelb et al. (2013) suggest that this is the case, at least for the economy as a whole, but that productivity gaps between SSA countries and the "comparator group" are nonetheless not enough to offset the labor cost differentials, which leads to a significant difference in unit labor costs (Figure 27).

Figure 27: Unit labor costs, 2006–2007



Note: The vertical bars indicate the distribution of unit labor costs across a country's firms, and the diamonds or circle represent the median. The horizontal broken lines indicate the medians for SSA countries, and the control group. The horizontal axis corresponds to real GDP per capital and the vertical axis the unit labor costs.

Source: Gelb et al. (2013), Figure 3.

Interpreting this type of comparison in terms of economic policy calls for caution. In some cases, wages in the Bangladeshi garment sector are at subsistence levels and do not allow workers (most garment factory workers are women) providing for the needs of even one dependent. These extremely low wage levels prevent any positive spinoff that a higher purchasing power could have had on the local economy, and are often seen by the workers themselves as unfair and involving a State-employer connivance to repress protest movements. As taxation on garment firms is also extremely low (for the same political reasons), the sector generates large rents that remain in the hands of a small number of beneficiaries. It would be ill-advised to prescribe this type of "model" for SSA.

On the other hand, it is important to understand, even on the evidence of patchy information, why wages seem fairly high in SSA relative to its overall level of development. The firm-level analysis by Gelb et al. (2013) suggests that the problem stems from the fact that bottlenecks on the labor market are quickly reached. In fact, a firm-level regression of the average labor cost on average worker skills and on firm

characteristics shows that wages increase faster with the size of the firm in SSA than elsewhere. Thus, exporting firms—typically larger than the others—rapidly come up against the limits of local labor markets, which exerts upward pressure on wages and reducing price competitiveness.

With the case of Madagascar, we referred to some of the formidable hurdles facing industrial firms in SSA. Beyond the extreme case of Madagascar and its recurrent political unrest, Eifert et al. (2008) highlight the role of "indirect costs", such as energy, logistics and all the other factors reported in the World Bank's *Doing Business*. Table 4, based on data from a feasibility study for the production of Men's boxer briefs in Ethiopia commissioned by the World Bank, reveals the sources of competitive disadvantage plaguing SSA's manufacturing sector compared to the industry's leading players, China and Vietnam.

Table 4: Ethiopia's competitive disadvantage is neither labor costs nor productivity

	China	Vietnam	*Ethiopia a/*
Installed capacity (piece/day)	1'500-4'000	6'000-15'000	*1 056*
Capacity utilization (%)	90	70-90	*65*
Transport cost (dollars per container of 20')			
Guangzhou-Djibouti	-	-	*1 880*
Djibouti-Addis-Abeba	-	-	*2 012*
Energy			
Electricity cost (on grid, dollars/kWh)	0,12	0,07	*0,05*
% of time off grid/month	0-10	0-1	*17*
Fuel & oil (liter)	0,92	0,83	*1,76*
Water (m3)	0,63	0.26-0.31	*0,11*
Labor			
Unskilled ($/month)	177-222	78-93	*46*
Skilled ($/month)	265-340	114-130	*185*
Productivity and management			
Labor productivity (pieces/employee/day)	28-40	5.8-23	*17*
Absenteeism rate (%)	1-2	0-2	*11*
Spoilage and rejects (% of pieces)			
In-factory	4-5	0-1	*4*
By client	1	1	*2*
Production waste - scrap (%)	3-8	?	*10*
Unit production cost ($/piece)			
Variable	1.05-1.19	0.11-0.28	*1,02*
Total (variable + amortization)	?	?	*1,51*
Economic rate of return (%)	?	?	*9*

Note: Data for China and Vietnam were gathered directly from the factories producing the same type of shorts. Data for Ethiopia are estimated on the basis of an average established for existing factories producing similar products.

Source: Dinh et al. (2012).

In this report, the figures are presented in an unwieldy manner, making it difficult to identify the contribution of each cost component in the value chain. However, Table 4 assembles the disparate items mentioned in the report more systematically and sheds light on some differentiating factors—and some non-differentiating factors.

The first noteworthy point seen at the bottom of the table is the tremendous competitive gap separating Vietnam and Ethiopia in terms of variable cost, as this is four times higher in Ethiopia. On the other hand, contrary to what the above-mentioned literature suggests, Ethiopia's unskilled labor appears to be extremely cheap ($46/month). This is not, however, representative of the continent as a whole, where unskilled wages are closer to $100 per month. If the study's figures are reliable, Ethiopia thus seems akin to Bangladesh, which leads the world for cheap labor. However, a bottleneck is visible for skilled labor, which is more costly than in Vietnam, and reflects SSA's widespread syndrome of weak educational systems. Productivity is no different from the average for Vietnam; it is certainly lower than in China, but Chinese productivity is driven upwards by high labor costs. The study estimates a very high rate of absenteeism, which corroborates anecdotal information on other countries such as Madagascar and largely reflects the workforce's poor state of health. On this count, there are substantial gains to be made in terms of both competitiveness and human development. Moreover, it may be that pay rises—through the introduction of a minimum wage, for example—could drive improvements in workers' health by giving them access to adequate care.

Although the unit labor cost reported in Table 4 does not appear to be a major disadvantage for the feasibility of textile production in Ethiopia, what does appear is the problem of electricity supply, as power outages are very frequent, as well as a potential (given the lack of direct comparison) logistics problem as road freight costs between Djibouti and Addis-Ababa naturally are high.[22] However, nothing in the information provided by the consultancy firm that conducted the study casts light on the massive difference in the variable cost between Vietnam and Ethiopia. This means that we rest with the above conjectures. Moreover, the study estimates a 9% economic rate of return, which is very low for manufacturing investments, particularly in a business environment as problematic as that found in SSA.[23]

[22] Unfortunately, freight is expressed per container and not per boxer brief, which means that it cannot be compared to the other cost components. The capacity of a 20-foot container depends on the product packaging and varies, according to the forums, between 30'000 et 70'000, which gives between 5ç and 13ç freight cost per boxer brief. If the transport costs between Djibouti and Addis-Ababa were halved, this would reduce the variable cost by between 4ç and 9ç, which, given the industry's extremely tight margins, could make a difference to profitability. On this count, the new railway line connecting the two capitals should be mentioned, as it is expected to unclog truck-congested roads and reduce goods transport time by 48 to 7 hours on average as from 2016. As for Ethiopia's power supply, the mammoth project now underway to construct the Grand Ethiopian Renaissance Dam on the Blue Nile should ultimately generate low-cost electricity and thus benefit industries established in the country.

[23] Given the importance of the diagnosis for policy recommendations, the absence of actionable data is surprising. There is clearly a need to analyse value chains that are comparable and interpretable at an economic level.

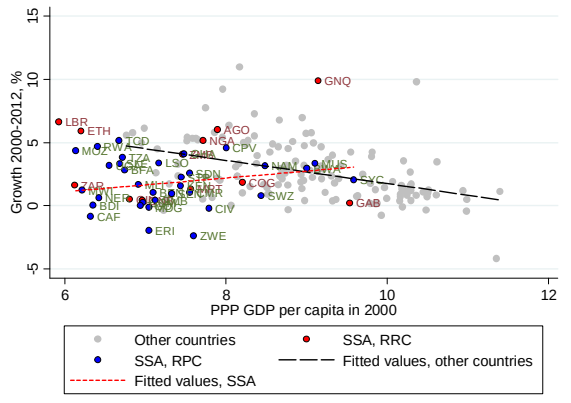
IV. Can Africa "converge" without factories?

While value-chain comparisons give only indirect and patchy indications, "revealed preferences" nonetheless show that international investors have so far not identified opportunities in manufacturing production in SSA that offer a rate of economic return high enough to propel investment on a statistically discernible scale. Certainly, the garment industry appears to be on the brink of a wave of relocations deserting South East China's manufacturing heartland, where wages are now triple those of its competitors (around $300/month for an unskilled worker). As the productivity race in the garment industry has its limits, the only viable solution for the industry's operators is certainly to relocate in the long run. If SSA offered a competitive production environment, it could benefit from these relocations. But Chinese investors have alternative locations at hand that are geographically and culturally closer, such as Myanmar, Cambodia and Laos. Given the slow pace of reform and the weak mobilization of SSA's political elites, the chances that the de-industrialization trend will be reversed remain weak, at least as indicated by the current diagnosis.

The question is thus whether SSA can develop and converge without industrializing. For the moment, SSA is not converging; in other words, despite its low level of income, it is not reporting a growth rate differential relative to other regions that portends a catch-up in the coming decades. This is shown in Figure 28 based on a broad sample of countries covered by the World Bank's World Development indicators.

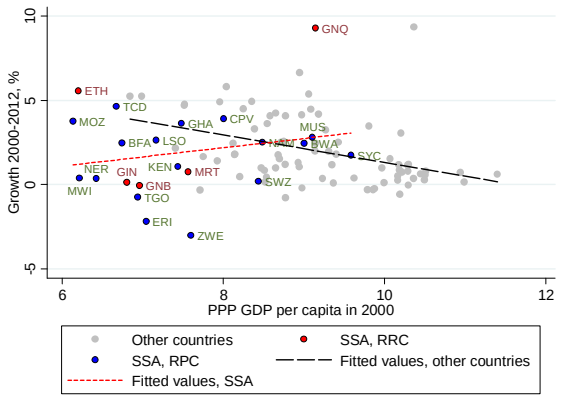
Figure 28: Unconditional and conditional convergence of income, 2000–2013

(a) Unconditional convergence, 2000-2013



Notes: RRC: natural resource-rich countries; RPC natural resource-poor countries

(b) Conditional convergence, 2000-2013



Notes: RRC: natural resource-rich countries; RPC natural resource-poor countries
Conditional growth: growth after controlling for the effect of initial human capital endowment (net primary and secondary school enrolment rates, 2000). For countries with no available data for 2000, initial enrolment is replaced by the 2001 rate, and so on until 2005.

Source: authors' calculations, based on the World Bank's World Development Indicators.

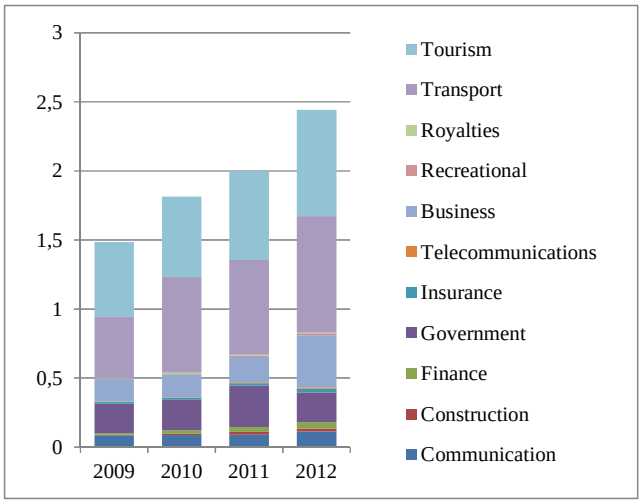
Panel (a) shows unconditional convergence. The slope of regression line is the coefficient of average growth over the period 2000–2013 regressed on income per capita in 2000. The grey dots correspond to non-SSA countries. Most of SSA countries are below this line, except for a handful of resource-rich countries (depicted in red, with SSA resource-poor countries in blue), including Equatorial Guinea (GNQ), Nigeria (NGA), and Angola (AGO). The only resource-poor countries above the least squares line are Mauritius and Cabo Verde.

Panel (b) shows conditional convergence; the slope of the line shows the growth coefficient over the 2000–2013 period regressed on per capita income in 2000 after controlling for the effect of primary and secondary education. The sample is limited by the availability of data, but again, most SSA countries are below the line; moreover, as shown by the positive slope of the broken red line, which is estimated on SSA countries alone,[24] no convergence is to be seen among these countries.

Is it possible to envisage a development model that bypasses the industrialization phase, with productive resources shifting directly from agriculture to services? On this count, SSA is giving signs of innovative services, for example by promoting the expansion of mobile banking services.

This conjecture, discussed by Rodrik (2014), comes up against several objections. Firstly, business services (call centers, etc.) require specific skills that make them virtually inaccessible to a rural workforce newly arrived in urban centers. This of course is not the case for the more traditional services such as catering, the hotel industry, etc. However, although the latter represent a substantial reservoir for the export business and thus employment (Figure 29), they do not have unlimited potential. In India, services were only able to act as a growth engine largely thanks to the country's network of schools of technology, which have no equivalent in SSA.

Figure 29: Service exports in SSA, by type



Note: Weighted average for sampled countries; billions of dollars

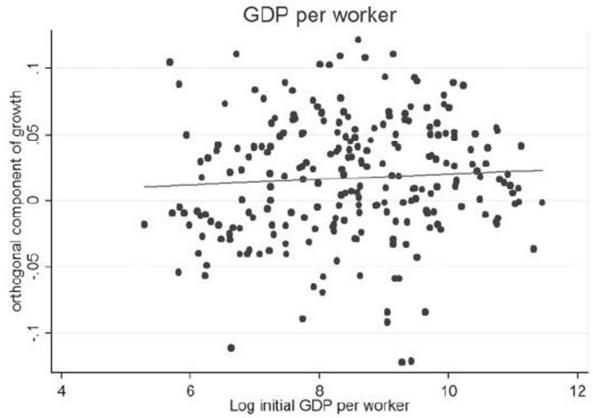
Sources: ITC, UNCTAD, WTO joint dataset.

[24] Its slope remains slightly positive if the estimation is made for SSA excluding Equatorial Guinea. In all cases, South Africa is excluded from the "SSA" category.

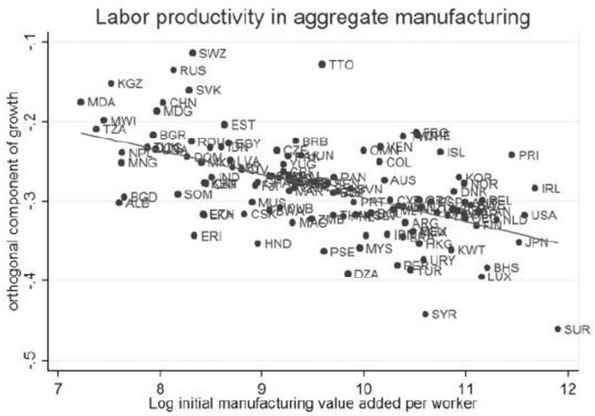
Secondly, and this is Rodrik's main objection, productivity in services is not only low but also growing at a slow pace, contrary to the manufacturing industry. He illustrates this argument by showing that there is no (cross-country) unconditional convergence in long-run aggregate productivity measured in GDP per worker (Figure 30, panel a), whereas manufacturing productivity clearly converges (Figure 30, panel b). According to Rodrik, manufacturing production is a growth engine, whereas services are not.

Figure 30: Unconditional convergence in manufacturing productivity, 1965–2005

(a) All sectors combined



(b) Manufacturing sector alone

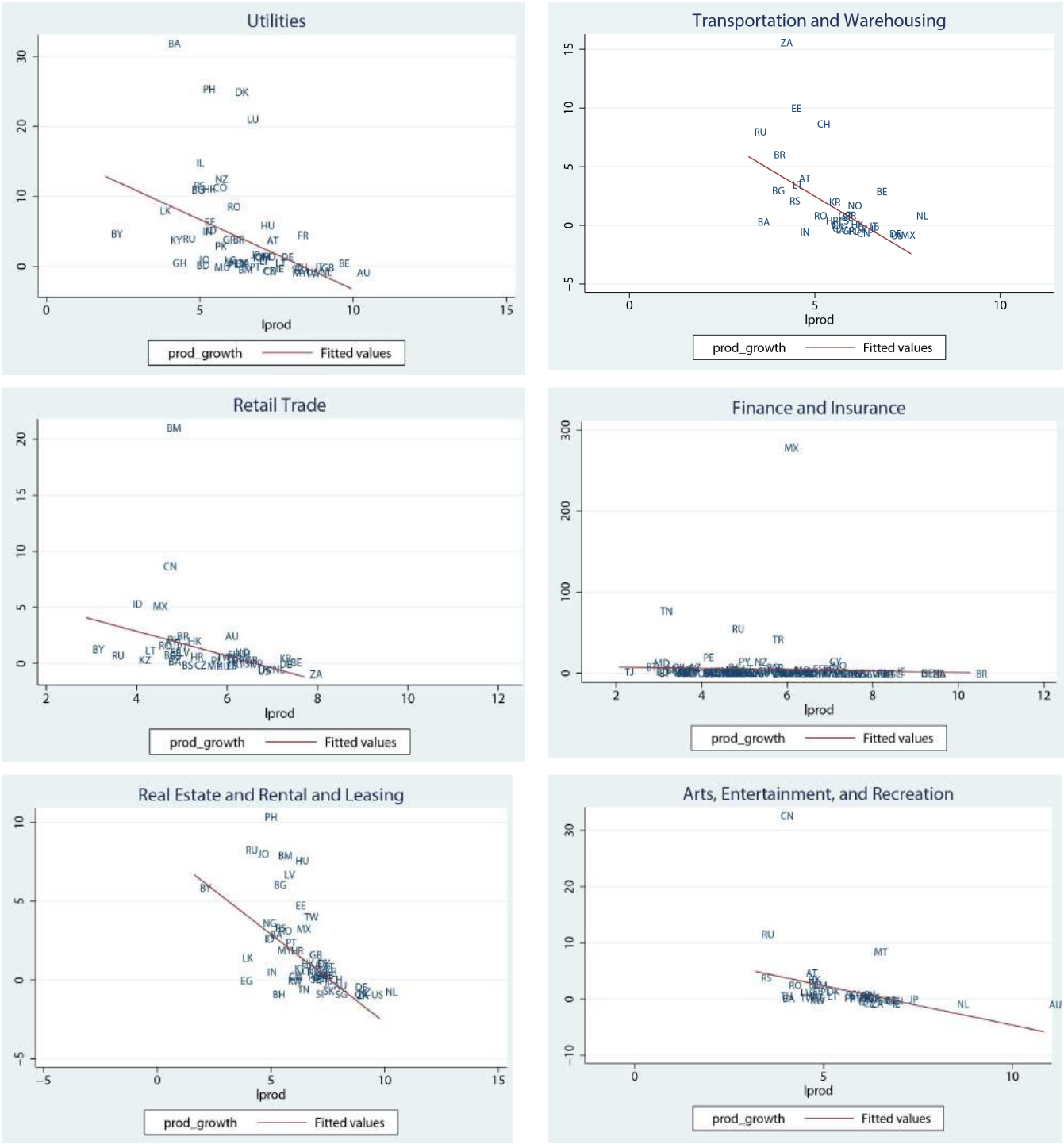


Note: a/ growth controlled for decadal fixed effects

Source: Rodrik (2013), Figures I and III

However, calculating average sector-level labor productivity based on the Orbis firm-level database suggests a more nuanced picture. The different panels in Figure 31 show that, contrary to Rodrik's conjecture, there is clearly between-country convergence at the sector level in terms of labor productivity, apart from the finance sector and possibly others. Given the lack of more formal evidence, it is thus probably too early to eliminate services as a driver of convergence.

Figure 31: Convergence of labor productivity in services, by sub-sector



Source: calculations by Dany Bahar based on Orbis data.

V. In conclusion: What does this mean for donors?

The diagnosis made in this study can be summarized by three findings.

1. The rebound of SSA growth over the past decade is real. It represents a dramatic break with the performance over the previous thirty years and has considerably reduced the incidence of poverty across the continent. Moreover, it is bolstered by a large decline in violence and by progress on the frontline of democratic transition.
2. However, poverty reduction and expansion of the middle-class are weaker than in Asia over the same time period, and the challenge of absorbing the multiple age groups entering the labor market still stands; there is thus no guarantee that the growth dividends will be sufficient to ensure a lasting political stability of the continent.
3. Additionally, SSA has missed the industrialization boat. Almost all African countries passed the turning point of industrialization very prematurely, and for the time being none of them—in the light of very patchy and potentially erroneous data—are in a position to turn a latent comparative advantage in light manufacturing into a competitive advantage.

The conclusions to be drawn from these three findings are far from obvious. Rather than admitting defeat, we can accept the idea that some aid should be channeled into supporting the continent's structural change, and particularly its "weakest link", i.e. the manufacturing sector and the bottlenecks (e.g. high transport costs and no regular access to electricity) that are undermining it.

The debate on what determines the way that development aid is allocated among recipients and on its effectiveness is extremely broad and far from being resolved (see for example, Boone, 1996; Alesina and Dollar, 2000; Burnside and Dollar, 2000; Guillaumont and Chauvet, 2001; Alesina and Weder, 2002: Burnside and Dollar, 2004; Easterly, Levine and Roodman, 2004; Rajan and Subramanian, 2008 or Guillaumont and Wagner, 2012, as well as their references or the contributions for an Aid for Trade symposium (Cadot and Melo, 2014, and Gamberoni and Newfarmer, 2004)).

Regarding productivity-related criteria, the work of Kremer (1993), Jones (2011) and Ugarte (2012) suggest that the existence of "weak links" in terms of productivity (non-tradable sectors characterized by particularly low productivity), combined with other factors, can constrain the development of other sectors, particularly those downstream. A deficient energy sector—very often the case in SSA—or an unreformed banking sector can obviously have negative economy-wide effects, particularly on the sectors best placed to drive structural change. It would therefore be natural for donors to devote part of their funding to removing these constraints.

Conversely, it could be that particularly productive sectors act as a development engine. The most productive firms could get subcontractors to raise their quality standards, or provide technical assistance. This is the case, for example, for certain distribution chains that provide assistance to bring agricultural production up to standard; the mining industry could also in some cases encourage the emergence of high-performing subcontractors.

These conjectures argue for a test that would correlate donor commitments or disbursements for sector-allocable aid with the productivity of recipient sectors, on the understanding that this exercise does not integrate the fact that donors have different

policies; development aid agencies in particular have different rules and strategic priorities from those of development finance institutions (quasi-banking players such as the International Finance Corporation or the French PROPARCO). Based on aid flow data from the OECD Country Reporting System (CRS), Table 5 first suggests that international finance institutions devote a much higher fraction of their commitments and disbursements to upstream sectors (transport, energy, banking and finance) and productive sectors than the development aid agencies, which allocate over a third of their commitments and disbursements to the social sector taken as a whole (health, education, water supply and sanitation, etc.). At first glance, the DFIs thus seem better able to contribute to structural change, given their focus on upstream services. In fact; drawing on input-output tables, Ferro et al. (2014) find that disbursements to banking and energy services make a hefty contribution to exports in the downstream sectors.

This finding, however, needs to be contextualized by two cautionary notes: the flows reported in Table 5 are much higher for development aid agencies than for the DFIs; it is difficult to know, however, to what extent this imbalance is real or simply reflects a lack of available data for DFIs. Even in the case of development aid agencies, the fraction of commitments devoted to sectors likely to make a direct contribution to structural change (upstream services and the productive sector) is very high, standing at around 40% (24% for disbursements).

Table 5: Broad distribution of flows from development finance institutions (DFI) and development aid agencies

	Commitments		Disbursements	
	DFIs	Development Aid Agencies	DFIs	Development Aid Agencies
Social sector a/	1,8	38,3	1,5	37,2
Upstream services b/	52,8	20,9	49,9	16,2
Productive sector	16,1	8,5	14,7	7,4
Other	2,6	29,4	1,7	34,6
Unclassified sectors	26,7	2,9	32,2	4,6
Total (USD)	*113 842*	*1 862 430*	*85 489*	*1 551 733*

Notes: a/ Education, health, water and sanitation, civil society, and other social infrastructure; b/ Transport, energy, communications, banking & finance, business support services.

Source: OECD (CRS).

A more detailed study shows that DFIs allocate a much larger share to the banking sector, whereas, in the case of development aid agencies, the lion's share goes to transport infrastructure.

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Appendices

1. Structural change: what do we know? A literature review

The analytical principles of the long-run modification of national income along the lines of the three major sectors of economic activity were laid down by C. Clark (1940) and J. Fourastié (1949). The stylized facts foregrounded, in the framework of a closed economy, the respective role of demand through the composition of household consumption and, on the supply side, of the productivity gaps associated with the different economic activities. As Engel's Law states, as the level of development rises, consumers spend proportionally less of their income on food and turn increasingly to manufactured goods and services. Productivity is seen as the engine driving supply, with formalized hypotheses that particularly inspired development economists. The canonical two-sector model developed by Lewis (1954) paved the way for an understanding of inter-sector mobility, which goes hand in hand with internal migration. The shift from the primary to the secondary sector is underpinned by the movement of the active population from the countryside to the towns. In a dualist society, the rural population is employed in such a way as to reveal a high level of "disguised" unemployment, in sectors where the productivity of labor is particularly low. This opens the way to the growth of manufacturing activities where productivity will be significantly higher, but where in parallel increasing inequality in the distribution of income will arise in line with the process described by the inverted U-shaped curve of Kuznets (1955).

Productivity gaps, along with the fact that urban wages do not rise rapidly given the surplus of labor fed by internal migration, ensures both a healthy profitability for companies and the financing of capital accumulation. Movements due to internal migration are thus at the root of a virtuous dynamic. Average household income gradually increases, as does the resulting local demand for "superior goods"—which illustrates the case where supply creates its own demand. The relative place of the secondary sector in terms of value-added thus grows larger as populations are reallocated.

The existence of urban unemployment only partly dislocates the above chains of cause and effect. In the Harris-Todaro (1970) model, the urban labor market gives rise to an institutionally set "legal minimum" wage which surpasses the level that full employment would require. This regulation creates the conditions for unemployment with a continuing wage gap advantaging workers in the modern sector. Internal migration driven by expectations of an urban wage premium more or less based on the wage legislation, and also by a probabilistic calculation, is thus compatible with the presence of a non-zero level of urban unemployment.

Although within-sector changes may appear to be determined by the development process itself, Chenery and Syrquin (1975) have shown that these play out differently depending on the country, as they interact with variables such as population or income per capita, which exert a non-linear influence.

The development of now-industrialized countries and even Asian countries has in the main unfolded in line with the linear changes posited by the Clark (1940)-Fourastié (1949) model, even if the successes in China and India led to opposing the "workshop" and the "office", corresponding to the development of the manufacturing production and services respectively. Sub-Saharan Africa and, to quite a large extent, Latin America both seem to break away from this predetermined pattern. In recent years, this observation has moreover dampened the optimism that was setting in given Africa's sustained growth rates. Beyond its resilience to the slowdown of activity in the industrialized world, Africa's inter-sector dynamics seem out of line with a balanced and sustainable development and an effective mobilization of all its productive human potential. The continent may be on the way of sidelining industrialization with negative consequences for long-term development. The fact is that beyond the catch-up visible in the banking, insurance and telecommunications sectors, tradable services—apart from tourism—are generally reputed to accompany industrial development, rather than stimulate it through interaction with the other sectors.

McMillan and Rodrik (2011) have analyzed production data from thirty-eight developing countries, nine of which are in Africa. The authors observe that in Asia, whatever the dominant patterns mentioned above might suggest, China and India have largely been in phase with a Lewis (1954)-type process. Labor has been reallocated from low-productivity activities to ones where productivity has helped to further not only structural change, but also the overall growth of these two new world powers. Sub-Saharan Africa, on the other hand, has gone against the current of this scenario, and against the current of its "golden age" of industrialization that Ellis (2005) places between 1960–1975. Labor prematurely shifted from industry, and more specifically the job-creating manufacturing industries, towards the low-productivity sectors of agriculture and especially services, notably informal activities (De Vries, Timmer and De Vries, 2013). In a country such as Ghana, Jedwab (2013) has shown that the rising income linked to the cocoa trade mainly benefited urban consumption, which in turn increased the demand for services, mainly in the retail trade, transport and catering sectors. We should also of course mention—for Africa as a whole—the increased activity of the construction sector concomitant to commodity price shocks. These have often laid the ground for a real "construction boom" leading to pressure on local land and real-estate prices.

In all events, Africa's long-run trends are tied to the observed de-industrialization that began in the mid-1970s. According to Rodrik (2014), the share of manufacturing in total employment now seems to be well under 8% and the share of GDP around 10%, which is far below the 15% of 1975. What is more, the sector is dominated by small informal businesses that have low levels of productivity and generally drag firms even further away from the productivity frontier. The share of formal employment, in both Senegal and Ethiopia, seems to be not more than 6%.

The reforms introduced to encourage African industries to participate more actively in globalization do not therefore seem to have produced the expected results. The disappointment of these unfulfilled expectations has fed the critical rhetoric against the structural adjustment policies of the 1980s and 1990s. The liberalization of imports, which was to expected to serve as a vector to improve production efficiency and expand

the manufacturing sector, has mostly turned out to be a failure, at least if we judge by the contraction of these productive sectors. Following McMillan and Rodrik's (2011) line of thought, labor reallocation that supports structural change is governed by three types of factors.

The first hinges on natural resources endowment. When a country's comparative advantages are based on the exploitation of mineral or energy commodities, even though the labor productivity within these capital-intensive sectors is high, as shown by McMillan, Rodrik and Verduzco-Gallo (2013), this productivity fails to trickle down into the other sectors. The economy thus becomes over-dependent of a sectoral "enclave" that is only feebly job-creating.

The second factor conducive to targeted structural change is for the State to promote an effective pricing policy that would entail a systematic undervaluation of the home currency. Here, we find the emphasis repeated several times by Rodrik (2008) on the need to offset not only market but also organization and institution failures through an active foreign exchange policy. To cushion these failures, which are particularly punishing for the tradables sector, undervaluing the currency is presented as a second-best solution (Rodrik, 2008). In his CEPR Discussion paper, Rodrik (2014) argues that a 20% real depreciation of the exchange rate constitutes an equivalent subsidy for tradables such that if market inefficiencies are causing the slow rate of industrialization, an undervaluation may appear to be a good substitute with a far greater impact than that produced by slow and uncertain efforts to improve the business climate.

The third and final factor foregrounded by Rodrik and McMillan (2011), and specifically linked to institutions, is transaction costs. These involve corruption, deficiencies in the rule of law, and above all the difficulty of promoting labor market flexibility. Firms need to be able to tailor their workforce to their level of activity, and adjust salaries in line with their own productivity.

Africa's development pattern thus seems to be at odds with the regularity of a conventional development process. The diagnosis is sound, doubtless difficult to recuse despite the poor availability and reliability of the data underpinning it, and requires some degree of nuance. Now more than ever, the metrics used to compute African gross domestic products are subject to debate. In recent years, skepticism about government-reported figures has been gaining ground after some countries decided to readjust their aggregate by adopting a new national macroeconomic accounting framework. The new methodologies have sometimes had such a dramatic impact that—to echo the title of Easterly and Levine's (1997) article on Africa's "growth tragedy", Devarajan (2013) introduced the idea of Africa's "statistical tragedy."

On this count, the findings are instructive: in 42% of the countries, the United Nations System of National Accounts introduced in 1968 continues to be used. This covers about 31% of Africa's population, provided that this percentage is itself reliable given that population censuses are episodic and not always conducted in due form. For 56% of the countries, home to 68% of Africa's population, the 1993 UN methodology is still in force. The updating of GDPs, which involves rebasing the GDP series (cf. Box 2), has sometimes been on an unprecedented scale leading to concrete political consequences. In 2010,

Ghana adopted the 1993 System of National Accounts (SNC) and took this opportunity to revise some of its previous estimates. This led to a 62% upward revision of its GDP, which effectively tipped Ghana out of the low-income into the middle-income country category, where per capita income is above USD 1,000. Malawi embarked on a similar initiative that entailed a 30% readjustment of its GDP (cf. Young, 2012). However, Nigeria remains an outstanding example both in terms of the country's size—over 170 million inhabitants (one African in six is Nigerian)—and the level of its revision, which is the largest in the history of any economy.

By changing the base year used to automatically calculate some of the wealth produced—an operation that had not been carried out since 1990—in 2013, the GDP mechanically rose from 273 to 540 billion dollars, equivalent to an increase of around 90%. Nigeria thus became the largest African power, ahead of South Africa. These revisions by national statistics departments and the implications for the level, and in this case the composition, of GDP and how it should be interpreted in terms of sectoral change thus give grounds for caution. The explanation for these readjustments can certainly be put down to weak financial and human resources, but there is also the political factor, which has led some analysts to claim that there is a political economy of macroeconomic statistics somewhat akin to the communication strategies of states that finance businesses.

The figures produced by statistical departments are not necessarily "hard facts"; they belong to a political economy exposed to the risk of moral hazard, added to which are the issues of public administrations' technical competence (cf. Young, 2012). This pitfall means that statistical departments are probably in need of more resources, more autonomy and transparency, and perhaps less external pressure from public sector donors obliged to demonstrate the effectiveness of aid. In 2013, Morten Jerven questioned the observed shortcomings of national accounts and the eventual use of GDP for political ends in his evocatively titled book, *Poor Numbers: How We Are Misled by African Development Statistics and What to Do about it*. The debate reappeared in a special issue of the *Review of Income and Wealth*. The reliability of statistics is discussed along with the background topic of variation in international classifications of the major widely used data sources, namely the World Bank's World Development Indicators and more particularly the Penn World Tables, which were originally managed by the University of Pennsylvania and are now maintained by the Groningen Growth and Development Centre (GGDC) at the University of Groningen.

The GGDC database has the advantage of facilitating comparative studies on structural change and productivity growth, analytical approaches that have largely been stymied, particularly in the case of Africa, by the paucity of large-scale international data series. The GGDC database fills this gap, but only for eleven Sub-Saharan countries: Botswana, Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Senegal, South Africa, Tanzania and Zambia. It provides historical data series dating back to 1960 and, for each economy included, covers information extracted from national accounts concerning value-added, price deflators and employment for ten large economic sectors.

Just how far is the reality of structural change altered by the observed weakness of GDP statistics, which seems to be testified by the variations between the different sources?

With the relative disillusion of the "Washington Consensus" policies, one of the sectors to structurally benefit from growth was the informal sector, whose dynamic can only be very approximately estimated—and probably underestimated. This is not so for the modern manufacturing sector, whose activity is much more easily traceable on account of its imported or local intermediary consumption, as for example, electricity consumption. Insofar as GDP revisions allow for recognition of a higher contribution of informal activities to economic growth, they may cause a relative increase in the erosion of the manufacturing share. Does the shift from changes in the between-sector production structure towards export diversification dynamics reveal comparable developments?

Trends in production and its between-sector composition are not necessarily reflected by exports and export content. International trade data are expressed in terms of sales and not value-added. This difference alone explains why some small countries have a high export rate, i.e. the export-to-GDP ratio. This is particularly true during a period characterized by growing trade in intermediary goods, within an international trading context largely driven by an increasing fragmentation or decomposition of production processes. Another source of difference between production and trade is that the available data come from the Comtrade database, which only covers global trade in merchandise; services are excluded. Analysis is thus confined to diversification, understood as a country's lesser dependence on primary goods export, its corollary being an increase in the trade of processed goods.

In the literature, this strategy of developing the economy through trade was initially welcomed by some of the "pioneers" in development economics, but in a closed economic framework where the protection of manufacturing output was designed to satisfy local consumption by substituting imports, rather than exporting and supplying foreign demand (cf. Nurkse, 1953). In other words, due to the supposed characteristics of basic products—low income elasticity of global demand and deteriorating terms of trade, together with the particularly high income elasticity of local demand for manufactured products—industrialization through substitution of imports and export promotion appeared as a pillar of growth and development. With the structural adjustment policies and the greater openness of the world's economies, the strategy of protecting infant industries became a simple strategy to promote the export of manufactured products. Adding to the classical earlier-mentioned arguments based on elasticity levels, Elbadawi (2001) holds that export of manufactured goods generates far higher productivity gains than those generated by primary exports. Driven by the structure of domestic demand or the export of "abundant" and "reputedly cheap" labor, diversification towards manufacturing activities thus substitutes for the principle of narrow specialization steered by natural resources endowment.

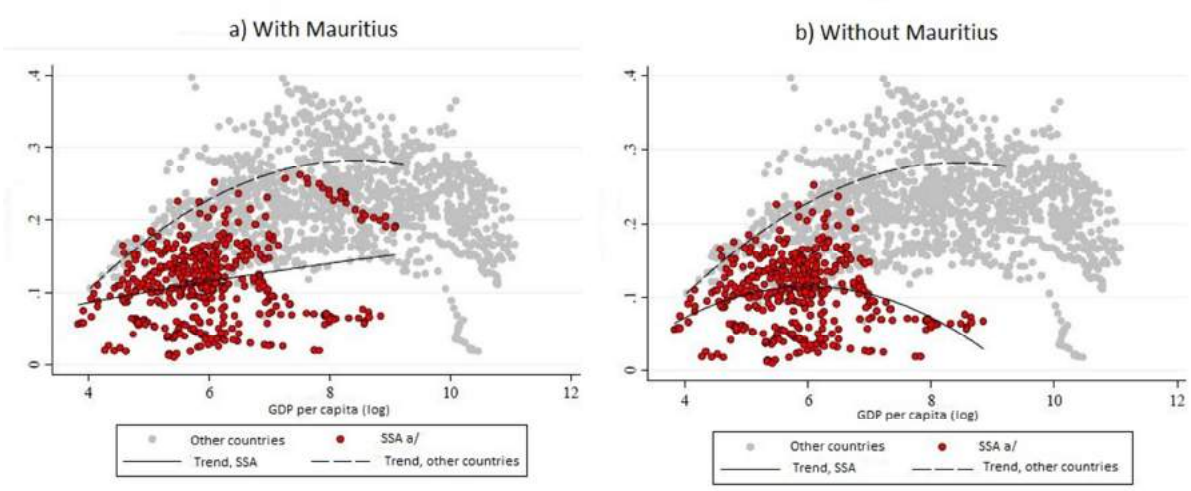
This being said, is an analysis of export diversification less sensitive to measurement issues than an analysis of structural change in GDP? A first remark is that trade data covers a much broader panel of countries given that all of Africa is included *a priori* in Comtrade's scope. Additionally, the quality of its database is enhanced since seller and buyer trade data are matched against each other. On the basis of these "mirror" data, the quality of the exporter's reporting can be checked against what the importing country has declared. This advantage is nonetheless counter-balanced by the errors induced by

re-exports, particularly via informal channels, or errors related to goods initially imported and then sold on to international markets. Hence, according to official trade statistics, several African countries are aircraft exporters!

In light of the above comments, structural changes in GDP—in other words, industrialization dynamics as well as export diversification measured by changes in the relative weight of manufactured goods—should probably be considered as two separate and complementary presentations when analyzing the long-run development process.

2. Structural change based on GGDC data

Figure A 1: Share of manufacturing VA in GDP: the "Mauritius effect"



Notes : a/ Sub-Saharan Africa covered by the GGDC dataset (Ethiopia, Ghana, Kenya, Malawi, Mauritius, Nigeria, Senegal, Tanzania, Zambia); EAP: East Asia and Pacific; excludes Singapore, Hong-Kong, Korea and Taiwan. Trend: least squares curve estimated using a quadratic polynomial.

Source: authors' calculations based on GGDC data.

3. Decomposition of productivity growth

Let Q^t denote aggregate productivity at time *t*, q_i^t the productivity of sector *i* at time *t*, and s_i^t the share of sector *i* in total employment at time *t*. The decomposition of aggregate productivity growth can be written as:

$$
\begin{aligned}
\Delta Q &= Q^1 - Q^0 \\
&= \sum_i s_i^1 q_i^1 - \sum_i s_i^0 q_i^0 \\
&= \sum_i s_i^1 q_i^0 - \sum_i s_i^0 q_i^0 + \sum_i s_i^0 q_i^1 - \sum_i s_i^0 q_i^0 + \sum_i s_i^1 q_i^1 - \sum_i s_i^0 q_i^1 - \sum_i s_i^1 q_i^0 + \sum_i s_i^0 q_i^0 \\
&= \sum_i \left(s_i^1 - s_i^0\right) q_i^0 + \sum_i s_i^0 \left(q_i^1 - q_i^0\right) + \sum_i \left(s_i^1 - s_i^0\right)\left(q_i^1 - q_i^0\right) \\
&= \underbrace{\sum_i s_i^0 \Delta q_i}_{\text{intra-sectorielle}} + \underbrace{\sum_i \Delta s_i q_i^0}_{\text{inter-sect. (statique)}} + \underbrace{\sum_i \Delta s_i \Delta q_i}_{\text{inter-sect. (dyn.)}}
\end{aligned}
$$

This decomposition can be expressed in terms of growth rate, by weighting it by relative productivities:

$$\frac{\Delta Q}{Q} = \sum_i s_i^0 \frac{q_i}{Q} \frac{\Delta q_i}{q_i} + \sum_i \Delta s_i \frac{q_i^0}{Q} + \sum_i \Delta s_i \frac{q_i}{Q} \frac{\Delta q_i}{q_i}$$

4. Classification and sources

Table A1: Natural resource-rich countries, conservative classification (33 countries)

Resource-rich countries	Resource-poor countries				
Algeria	Afghanistan	Costa Rica	Ireland	Namibia	Somalia
Angola	Albania	Cote d'Ivoire	Italy	Nepal	South Africa
Azerbaijan	Antigua and Barbuda	Croatia	Jamaica	Netherlands	Sri Lanka
Bahrain	Argentina	Cuba	Japan	New Caledonia	St. Kitts and Nevis
Bhutan	Armenia	Cyprus	Jordan	New Zealand	St. Lucia
Brunei Darussalam	Aruba	Czech Republic	Kenya	Nicaragua	St. Vincent and the Grenadines
Congo, Dem. Rep.	Australia	Denmark	Kiribati	Niger	Sudan
Congo, Rep.	Austria	Djibouti	Korea, Rep.	Norway	Suriname
Ethiopia	Bahamas, The	Dominica	Kosovo	Pakistan	Swaziland
Gabon	Bangladesh	Dominican Republic	Kyrgyz Republic	Palau	Sweden
Guinea	Barbados	Ecuador	Lao PDR	Panama	Switzerland
Guinea-Bissau	Belarus	Egypt, Arab Rep.	Latvia	Paraguay	Tajikistan
Guyana	Belgium	El Salvador	Lebanon	Peru	Tanzania
Iran, Islamic Rep.	Belize	Eritrea	Lesotho	Philippines	Thailand
Iraq	Benin	Estonia	Lithuania	Poland	Timor-Leste
Kazakhstan	Bermuda	Fiji	Luxembourg	Portugal	Togo
Kuwait	Bolivia	Finland	Macao SAR, China	Puerto Rico	Tonga
Liberia	Bosnia and Herzegovina	France	Macedonia, FYR	Romania	Tunisia
Libya	Botswana	Gambia, The	Madagascar	Rwanda	Turkey
Mauritania	Brazil	Georgia	Malawi	Samoa	Uganda
Nigeria	Burkina Faso	Germany	Malaysia	Sao Tome and Principe	Ukraine
Oman	Burundi	Ghana	Maldives	Senegal	United Kingdom
Papua New Guinea	Cabo Verde	Greece	Mali	Serbia	United States
Qatar	Cambodia	Grenada	Malta	Seychelles	Uruguay
Russian Federation	Cameroon	Guatemala	Mauritius	Sierra Leone	Vanuatu
Saudi Arabia	Canada	Honduras	Mexico	Singapore	Vietnam
Syrian Arab Republic	Central African Republic	Hong Kong SAR, China	Micronesia, Fed. Sts.	Slovak Republic	Zimbabwe
Trinidad and Tobago	Chad	Hungary	Moldova	Slovenia	
Turkmenistan	Chile	Hungary	Mongolia	Solomon Islands	
United Arab Emirates	China	Iceland	Montenegro	Slovak Republic	
Uzbekistan	Colombia	India	Morocco	Slovenia	
Venezuela, RB	Comoros	Indonesia	Mozambique	Solomon Islands	
Yemen, Rep.					
Zambia					

Table A 2 : Source of variables

Variable	Definition	Source
Theil	Theil index of export concentration	IMF, "Diversification Toolkit" https://www.imf.org/external/np/res/dfidimf/diversification.htm
GDP per capita	GDP per capita in constant 2005 dollars (log)	WDI
Population	Total population (log)	WDI
REERI	Real effective exchange rate index, base 100 = 2005	Authors' calculations based on IFS, WEO, WDI, BACI
Remoteness	Remoteness indicator calculated as the average distance of a country from its trading partners, weighted by the country's share of GDP in world GDP	Authors' calculations based on WDI and GeoDist (CEPII) in line with Rose (2004)
Capital humain	Secondary school enrolment rate	WDI
Investment	Gross fixed capital formation, % GDP	WDI
Institutions	International Country Risk Guide (ICRG) for institutional quality, measured as the simple arithmetic average of the corruption, rule-of-law and bureaucratic quality indicators.	ICRG

Acronyms and abbreviations

AGOA : African Growth and Opportunity Act

ATC : Agreement on Textiles and Clothing

BACI : *Base sur le Commerce International* (International Trade Database)

CEPII : *Centre d'Etudes Prospectives et d'Informations Internationales* (Research and Expertise on the World Economy)

CMT : Cut, Make and Trim

COMTRADE : United Nations Commodity Trade Statistics Database

CRS : Creditor Reporting System

DFI : Development finance institutions

DRC : Democratic Republic of the Congo

EAP : East Asia and the Pacific

ECA : Europe and Central Asia

FDI : Foreign direct investment

GDP : Gross domestic product

GGDC : Groningen Growth and Development Centre

GSP : Generalized System of Preferences

ICRG : International Country Risk Guide

ICT : Information and communication technologies

IFC : International Finance Corporation

IFS : International Financial Statistics

IMF : International Monetary Fund

ISIC : International Standard Industrial Classification of All Economic Activities

ITC : International Trade Center

LAC : Latin American and the Caribbean

LDC : Least developed countries

Lowess : Locally weighted scatterplot smoothing

MENA : Middle East and North Africa

MVA : Manufacturing value-added

OECD : Organisation for Economic Co-operation and Development

PPP : Purchasing power parity

PROPARCO : Promotion et Participation pour la Coopération économique (Private-sector financing arm of AFD)

REER : Real effective exchange rate

RPC : Resource-poor country

RRC : Resource-rich country

SA : South Asia

SNA System of National Accounts

SSA : Sub-Saharan Africa

TFP : Total factor productivity

UNCTAD : United Nations Conference for Trade and Development

UNECA : United Nations Economic Commission for Africa

USAID : United States Agency for International Development

VA : Value-added

WDI : World Development Indicators

WEO : World Economic Outlook

WTO : World Trade Organization

"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

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