African Deparment

Trade Integration and Global Value Chains in Sub-Saharan Africa

In Pursuit of the Missing Link

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Overview

The mid-1990s ushered in two decades of strong and sustained growth in sub-Saharan Africa. The growth takeoff has been attributed to a combination of factors, not least sound macroeconomic policies implemented by the authorities in the region, but also fiscal space created post-debt relief, the strengthening of political and economic institutions, and in a growing number of countries, exit from fragility. Favorable external conditions have undeniably also played a role, with strong demand from advanced economies until the global financial crisis, and from emerging markets afterward, especially for raw materials. These external conditions have, however, turned far less supportive, with sharply lower commodity prices—for oil, in particular—and tightening global financial conditions.

We investigate the extent of trade integration of sub-Saharan African (SSA) countries in the global economy as well as within the region over the period 1995–2013.[1] To assess integration, we use four key concepts: (1) trade openness, captured by import and export flows; (2) the centrality in the global and regional trade network, a measure that takes into account not only the size of trade but also the number of trade partners and the respective weight of these trade partners in global trade; (3) gravity model estimates that account for country- and region-specific determinants of bilateral trade flows; and (4) global value chain (GVC) integration. Using both existing data and a newly available data set based on multiregion input and output tables, we are able to evaluate these four important dimensions of trade integration and assess the degree of integration globally as well as regionally. The main findings of the paper are as follows:

- The region's trade openness has increased strongly since the mid-1990s, reflecting new partnerships with emerging markets, especially China, and budding intraregional trade. High demand for commodities has played a significant role, in particular for oil-exporting countries. However, the export structure of the rest of the region is less skewed toward raw materials, even for other natural resource exporters.

- Increased trade has been a powerful engine for growth. Yet over the past 20 years, labor productivity gains have trailed increases observed in other regions. In addition, by being more integrated in the global economy, the region is now more vulnerable to external shocks.

- Substantial opportunities for further regional and global trade integration still lie ahead. Despite strong growth in trade flows, sub-Saharan Africa's trade has barely kept pace with the expansion of global trade, even as other regions managed to increase their weight in the global trade network over the same period. Indeed, even after accounting for lower levels of income and economic size, generally longer distances between countries, and a large number of landlocked countries, levels of trade flows emanating from sub-Saharan Africa are found to be only half the magnitude of those experienced elsewhere in the world.

- Likewise, the region still has ways to go to better integrate in GVCs—a process that has consistently been associated with higher levels of activity and income growth over time— as has happened in South and East Asia or Eastern Europe. However, while oil-exporting countries are clearly lagging behind, many other countries—both commodity and non-commodity exporters—are showing progress, even if from very low starting points, with the East African Community (EAC) and the Southern African Customs Union (SACU) particular bright spots. In countries that have made the largest strides into GVCs—such as Ethiopia, Kenya, Seychelles, South Africa, or Tanzania—manufacturing, agriculture, and agro-business—and, to a lesser extent, transport, tourism, and textile—have benefited the most from deeper integration. These results highlight the potential sectors where the region could build on its comparative advantages, provided the business environment is sufficiently conducive.

- In that respect, our analysis suggests that, to leverage the region's trade potential and ensure strong job creation and durable growth in the process—especially at a juncture when external demand for commodities is far less supportive—it is more critical than ever to make progress in filling the infrastructure gap, lowering tariff and nontariff barriers, and improving the business climate and access to credit, while continuing to enhance education outcomes.

The rest of the paper is organized as follows. In Section 1, we document SSA's international and regional integration over the past 20 years. In Section 2, we introduce the concept of centrality in the global and regional trade network, which takes into account, for each country, both the size of its trade and the number of its trade partners and their weight on global trade. The third section links trade openness with macroeconomic performances. To investigate the determinants of trade and estimate the order of magnitude of a potential "trade gap" for sub-Saharan Africa, we use a gravity model approach in Section 4, explaining bilateral trade flows with both country- and region-specific determinants. Section 5 assesses the extent of SSA's integration into global supply chains, using the newly created Eora database that provides multiregion input output tables. Section 6 concludes the paper.

1 Trade Integration Over the Past 20 Years

Sub-Saharan Africa's trade experienced a rapid expansion over the past 20 years. While cumulative nominal GDP growth for the region over 1995–2013 amounted to a substantial 350 percent (in U.S. dollars), the equivalent increase for goods exports was even larger, at 500 percent—over the same period, global trade expanded by 260 percent. The region's export-to-GDP ratio[2] rose from 20½ percent in 1995 to 27½ percent in 2013, with the import-to-GDP ratio also increasing, from 19 percent to 23 percent.

In the process, the destination of sub-Saharan Africa's exports changed substantially: trade flows with advanced economies, which represented close to 90 percent of exports in 1995, slumped in the wake of the global crisis. Meanwhile, new trade partnerships were forged with emerging markets such as Brazil, China, and India. China is now the single most important trading partner of sub-Saharan Africa (IMF 2012, 2014c). Moreover, the share of intraregional trade almost doubled, although from a very low base, to reach 3½ percent of the region's GDP.

Trade patterns, however, are extremely heterogeneous across the region. In fact, while the export-to-GDP ratio has more than doubled for resource-rich non-oil exporters over 1995–2013—with South Africa accounting for about two-thirds of that increase—it has stagnated for non-commodity exporters as a group, and even dropped for oil exporters (Figure 1).

We conduct a more country-specific analysis that corroborates these findings. We define resource-intensive exporters as those for which nonrenewable resources represent 25 percent or more of goods exports over 2009-12. By dividing SSA countries into groups of oil exporters versus resource-intensive non-oil exporters, and coastal non-resource-intensive exporters versus landlocked non-resource-intensive exporters, Figure 2 depicts the changes in export shares between 1995 and 2013. New natural resource exporters over the period, such as Chad

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[2] We measure trade openness with export- and import-to-GDP ratio to document actual trade flows in sub-Saharan Africa as it has been commonly used in the literature; see, for example, Baldwin 2004. Alternatively, one could also study tariffs and impediments to trade, which would be more suited to an analysis of the effects of trade liberalization. The analysis on the determinants of trade openness includes tariff and other nontariff barrier measures in the later sections.

Figure 1. Exports of Goods Shares by Partner, 1995–2013

Oil exporters

Countries in group: 7
GDP share: 42.3 percent

Percent of GDP (y-axis 0–40)

1995: Euro area 11.2, Advanced (non-euro) and others 21.2, Sub-Saharan Africa 2.1, India 1.0, China 0.6, 0.6
2013: Euro area 7.0, Advanced (non-euro) and others 10.0, Sub-Saharan Africa 2.0, 1.7, India 2.9, China 5.9

Resource-intensive non-oil countries[1]

Countries in group: 15
GDP share: 38.3 percent

Percent of GDP (y-axis 0–40)

1995: Euro area 4.3, Advanced (non-euro) and others 9.2, Sub-Saharan Africa 1.7
2013: Euro area 4.1, Advanced (non-euro) and others 9.4, Sub-Saharan Africa 4.1, India 1.6, China 9.7

Non-resource-intensive coastal countries

Countries in group: 15
GDP share: 11.3 percent

Percent of GDP (y-axis 0–40)

1995: Euro area 10.3, Advanced (non-euro) and others 7.8, Sub-Saharan Africa 3.8, 0.3
2013: Euro area 6.0, Advanced (non-euro) and others 3.1, Sub-Saharan Africa 7.5, 0.9, China 0.9

Nonr-esource-intensive landlocked countries

Legend:
- China
- India
- Brazil
- Sub-Saharan Africa
- Advanced (non-euro) and others
- Euro area

Countries in group: 7
GDP share: 8.1 percent

Percent of GDP (y-axis 0–40)

1995: Euro area 5.2, Advanced (non-euro) and others 4.8, 0.3
2013: Euro area 2.1, Advanced (non-euro) and others 3.3, 1.9, 0.7

Source: IMF, *Direction of Trade Statistics.*.
Note: Excludes South Sudan due to data availability. Oil-rich sub-Saharan Africa includes: Angola, Cameroon, Chad, Republic of Congo, Equatorial Guniea, Gabon, and Nigeria. Resource-intensive sub-Saharan Africa inlcudes Botswana, Burkina Faso, Central African Republic, Democratic Republic of Congo, Ghana, Guinea, Liberia, Mali, Namibia, Niger, Sierra Leone, South Africa, Tanzania, Zambia, and Zimbabwe. Non-resource-intensive coastal sub-Saharan Africa includes Benin, Cabo Verde, Comoros, Côte d'Ivoire, Eritrea, The Gambia, Guinea-Bissau, Kenya, Liberia, Madagascar, Mauritius, Mozambique, São Tomé and Príncipe, Senegal, Seychelles, and Togo. Non-resource rich landlocked sub-Saharan Africa includes Burundi, Ethiopia, Lesotho, Malawi, Rwanda, Swaziland, and Uganda.
[1] Resource-intensive countries are defined as those for which nonrenewable resource exports are 25 percent or more of goods exports on average over 2009–2012.

and Sierra Leone, have seen their export share increase substantially, driven by growing emerging markets' interest for commodities. Conversely, export shares in most longtime commodity exporters, such as Angola, Equatorial Guinea, or Zambia, have declined over time—underscoring the difficulty to broaden the export base in countries with a longtime role of commodities. Moreover, in many countries, rapid GDP growth has been accompanied by the development of buoyant nontradables sectors, leading not only to a welcome diversification of growth sources but also to a somewhat lower trade share, with Nigeria standing out in that respect. As for regional trade, countries such as Côte d'Ivoire, Senegal, and Togo, in the West

Figure 2. Change in Export Shares, 1995–2013

Oil exporters: Chad, Congo, Rep. of, Gabon, Cameroon, Equatorial Guinea, Angola, Nigeria

Resource-intensive non-oil countries: Botswana, Sierra Leone, South Africa, Congo, Dem. Rep., Guinea, Namibia, Tanzania, Burkina Faso, Ghana, Mali, Zambia, Niger, Zimbabwe, Central African Rep.

Non-resource-intensive coastal countries: Seychelles, Mozambique, Togo, Guinea-Bissau, Côte d'Ivoire, Comoros, Cabo Verde, Senegal, Benin, Madagascar, São Tomé and Príncipe, Kenya, Mauritius, Gambia, The

Nonresource-intensive landlocked countries: Lesotho, Swaziland, Rwanda, Malawi, Uganda, Ethiopia, Burundi

Percentage points of country GDP

Sources: IMF, *Direction of Trade Statistics*; and World Economic Outlook database.
Note: Excludes South Sudan due to data availability.

African Economic Monetary Union (WAEMU) stand out for increased regional trade integration, as do Botswana, Lesotho, Namibia, and Swaziland in the SACU. On the other hand, landlocked countries with no natural resources remain more closed economies—with exports at only about 10 percent of GDP—and still struggle to increase trade integration, handicapped by poor transportation infrastructure and limited interest from emerging markets.

The strong increase in the region's exports has reflected favorable price developments. That is, not only have export volumes increased, but the relative prices at which sub-Saharan African countries sold these exports have surged substantially. More precisely, the fivefold increase in the real value of sub-Saharan Africa's exports over 1995–2013 (deflated by the U.S. GDP deflator) is explained by both a 2.5-fold increase in volumes and a twofold increase in the

relative price at which those exports were sold, a trend in sharp contrast with the experience observed prior to 1995 (Figure 3). This led to a welcome increase in purchasing power for the

Figure 3. Real Export Value Decomposition, 1981–2013[1]
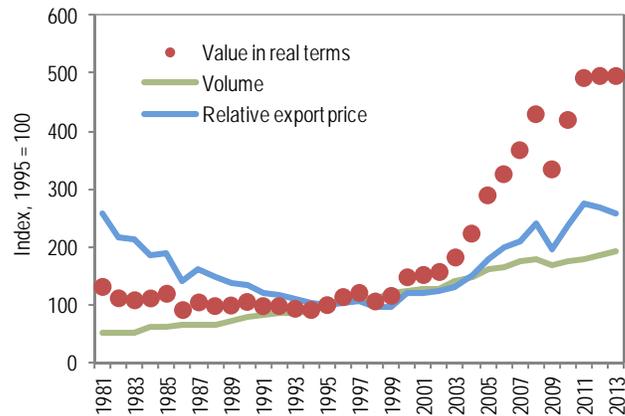
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
[1]The export value corresponds to the U.S. dollar value of exports deflated by the U.S. GDP deflator. The volume refers to real exports from the national accounts for each of the sub-Saharan African countries weighted according to the region's 2006 export structure. The relative export price is the ratio of the real export value by the export volume.

region and helped finance a much-needed increase in infrastructure investments (IMF 2014b). However, the improved terms of trade did not reflect stronger pricing power or better quality of exported goods, but rather a decade-long increase in commodity prices fed by tight supply conditions and strong demand from emerging markets. Unfortunately, this leaves the region's commodity exporters particularly exposed to a reversal in prices, as it is currently experiencing.

Once again, this overall picture masks substantial heterogeneity in the structure of exports across the region. While commodities represent about half of all goods and services exports for sub-Saharan Africa as a whole, this ratio climbs to 80 percent for the eight oil exporters but conversely drops to about 35 percent for other countries, including those that export commodities other than oil—a share that is quite similar to that in emerging and low-income countries elsewhere in the world (Figure 4).

Indeed, while the decline or stagnation in export ratios in many oil-exporting countries over 1995–2013 has occurred regardless of whether oil is playing a larger (Cameroon, Congo, Gabon), stable (Angola), or declining (Nigeria) role in the export structure, the situation is much more diversified among other countries (Figure 5). On the one hand, in South Africa and to a lesser extent Namibia, the increase in the export-to-GDP ratio has gone hand in hand with an increase in the share of commodities in exports. But in other non-oil-commodity exporters,

Figure 4. Goods and Services Export Compositions, Average 2008-12
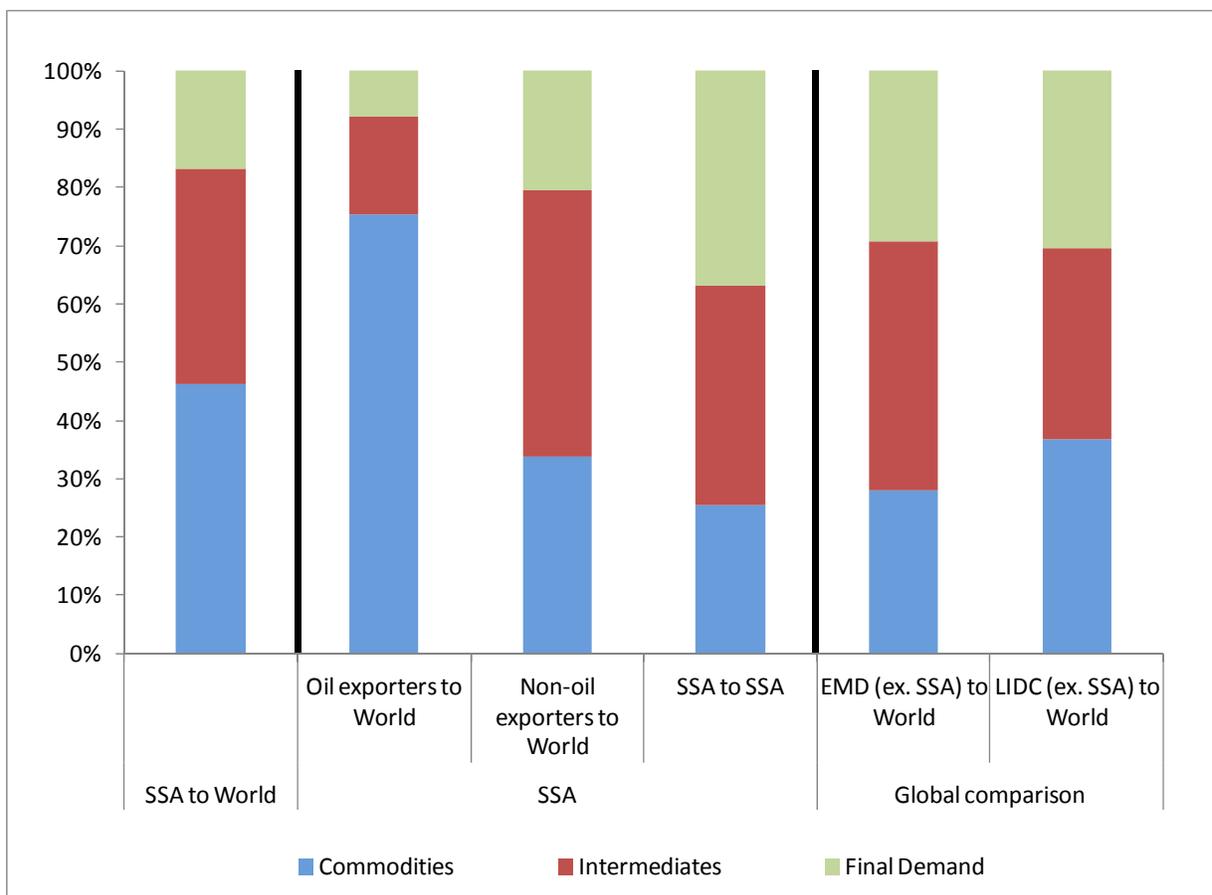
Sources: Eora database; and IMF staff estimates.
Note: Emerging Markets and Developing Countries(EMD)and Low-income and Developing Countries (LIDC) are WEO aggregations. Sub-Saharan Africa (SSA)oil exporters include Angola, Cameroon, Chad, Republic of Congo, Equatorial Guinea, Gabon, Nigeria, and South Sudan.

such as Botswana, Democratic Republic of Congo, or Guinea, export shares progressed despite a stable or even declining role of commodity trade. Similar progress was registered from non-resource-intensive countries such as Seychelles and Togo. On the other hand, some resource exporters, such as Central African Republic and Zimbabwe, saw their export ratios drop despite an increase in the share of commodity exports.

Figure 5. Change in Export Shares, 1995–2013

Change in natural resource exports to total exports, 1995–2012 or latest available, percent (y-axis)

Change in total exports to GDP, 1995–2013, percent (x-axis)

ZWE, CAF, GHA, TZA, CMB, RWA, CIV, MDG, NAM, ZAF, BDI, GMB, MWI, UGA, SEN, MUS, AGO, MLI, STP, GAB, BWA, KEN, CPV, SYC, NER, BEN, COD, ZMB, GIN, NGA, TGO

Oil exporters
Resource-intensive non-oil
Others

Sources: IMF, *Direction of Trade Statistics*; IMF, World Economic Outlook database; and World Bank, *World Development Indicators*.
Note: See Annex 3.2 Country Groups for a list of countries in each group.

2 Centrality in the Global and Regional Trade Network

Sub-Saharan Africa's overall progress in trade integration, however, needs to be put in perspective with developments in global trade over the same period. Global trade took off following the implementation of the Uruguay Round, the creation of the World Trade Organization (WTO) in 1995, and China's entry in the WTO in 2001. This rapid expansion was characterized by the emergence of new trade giants and the decline in advanced economies' contribution to world trade. In fact, it is only to the extent that sub-Saharan Africa was able to redirect trade toward these new trade players, particularly China, that it managed to keep its place in world trade—a place that nonetheless remains small in the global scene. As a simple illustration of this fact, export ratios at the global level rose by about as much as in sub-Saharan Africa, from 17 percent of GDP in 1995 to 25 percent of GDP in 2013 (versus 20½ percent and 27½ percent of GDP in the region, respectively).

A more granular measure of the region's integration in global trade—its centrality in the global trade network—paints a similar picture. This measure takes into account not only the size of exports for a given country but also the number of its trade partners, as well as the relative weight of these trade partners in global trade, therefore better capturing the country's interconnectedness within the web of global trade (De Benedictis and others 2014).

The centrality measure is estimated here using the PageRank algorithm created by Brin and Page (1998). The centrality score of each exporting country is computed as the probability that the country is chosen in the trading network by an importing country. The PageRank algorithm treats the trading network as a stationary distribution of a random walk defined on a set of trading countries.

The random walk tracks a randomly chosen importer with probability p at each step, and with probability $1 - p$, the walk starts afresh from an exporter chosen at random according to a uniform distribution. More specifically, the centrality values satisfy the following equation:

$$C(i) = p \sum_{j \to i} \left[\frac{1}{d_j} C(j) \right] + \frac{1-p}{N}, \qquad for \ i = 1, \dots, N$$

where $C(i)$ is the centrality of country i, d_j is the number of countries that country i is exporting to, and p represents the probability of exporting to a country when abandoning the random walk. The sum in the first term on the right-hand side of the equation above is taken over all

Figure 6. World Centrality per Region, 2000–13[1]
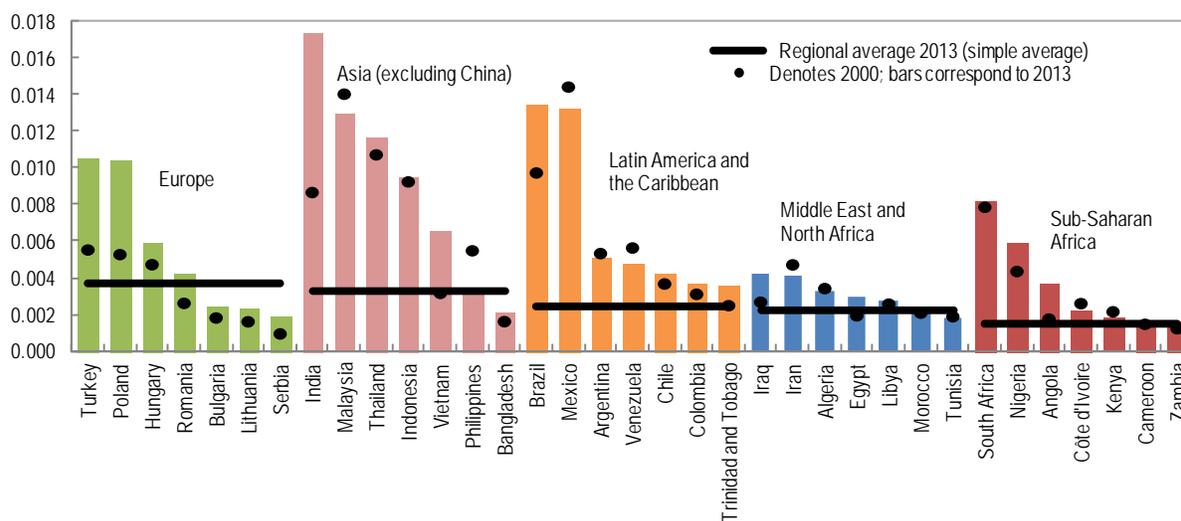
Source: Staff calculations based on data from IMF, *Direction of Trade Statistics*.
Note: Only emerging market and developing countries with 2013 GDP per capita below US$ 20,000 from each region are considered. China is excluded from the Asia group as its centrality measure is about 28 times higher than the average for that region and five times the second largest centrality measure, corresponding to India.
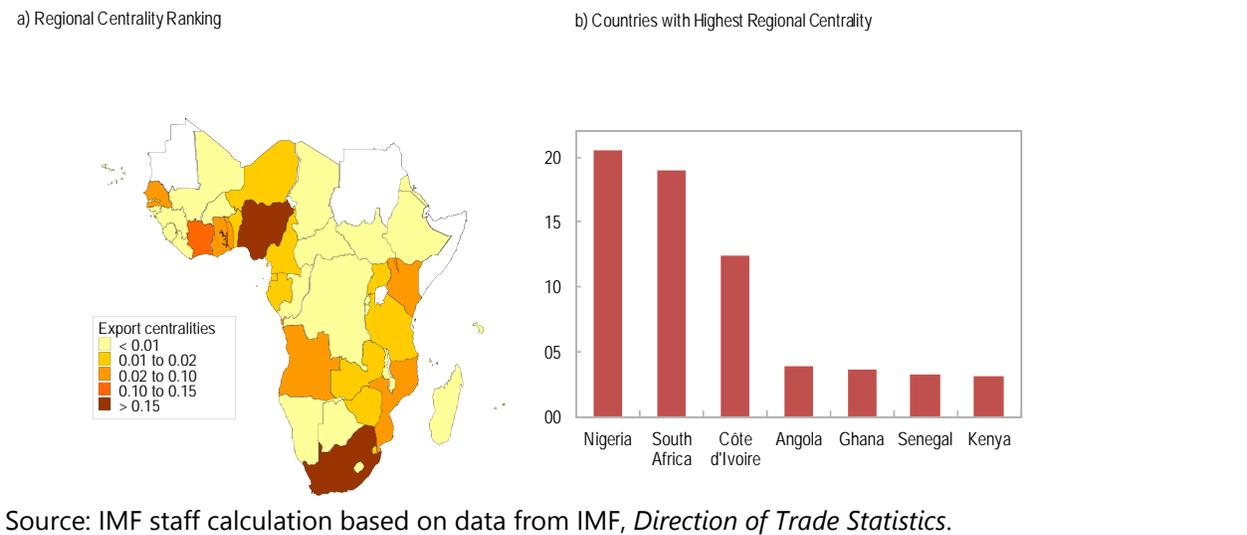[1]This measure is the PageRank centrality and takes into account the size of exports for any given country, the number of its trade partners, and the relative weight of these partners in global trade (see Brin and Page 1998 for a description of the computation).

those countries j that are importing from country i. The centrality is then calculated using an iterative algorithm that corresponds to the principal eigenvector of the normalized bilateral trade matrix. By construction, the sum of $C(i)$ for all countries considered in the network is 1.

By that measure, sub-Saharan Africa remains the least integrated region in the world, with an average centrality of only about half of that observed in other emerging and developing economies (Figure 6). Of course, this partly reflects a relatively lower level of development than in other regions. But even South Africa, the most interconnected and one of the highest-income countries in the region, has a relative position that is substantially lower than other emerging markets such as Brazil or Mexico. And outside of Angola and Nigeria—where the large role of oil exports has led to an increase in centrality—sub-Saharan Africa's most globally integrated members have only maintained their relative foothold in the global trade network between 2000 and 2013. By contrast, countries such as China, India, Poland, Turkey, and Vietnam saw their relative centrality score double over the same period. All in all, this points to substantial potential for a larger role of trade in sub-Saharan African economies.

One bright spot has been the increase in regional trade. As mentioned earlier, the share of regional trade almost doubled over the past 20 years, although from a low base of 2 percent of GDP to 3½ percent of GDP. Measuring centrality at the intraregional level reveals the emergence of trade subregions, with hubs such as Côte d'Ivoire, Nigeria, and, to a lesser extent, Senegal in West Africa, Kenya in East Africa, and South Africa in the southern part of the region (Figure 7).

Figure 7. Regional Centrality, 2013

a) Regional Centrality Ranking

b) Countries with Highest Regional Centrality

Export centralities
< 0.01
0.01 to 0.02
0.02 to 0.10
0.10 to 0.15
> 0.15

Source: IMF staff calculation based on data from IMF, *Direction of Trade Statistics*.

3 Trade Openness and Macroeconomic Performance

The recent period of rapid growth and generally better macroeconomic performance has coincided with expanding trade flows. Sub-Saharan Africa's real GDP per capita growth substantially accelerated toward the end of the 1990s, to average 4.3 percent per year over the 2000s, compared with 2.9 percent a decade earlier. Increased political stability, better macroeconomic management, and access to financing as well as an improved business climate supported investment efforts, which in turn improved the productive capacity in the region. But increased trade integration also played a role, not only via higher demand for exported goods, but also by fostering competition and enabling some transfer of technology and efficiency gains from imported intermediary goods. Indeed, average trade openness—measured here as the sum of exports and imports in percent of GDP—increased from 41 percent of GDP in the 1990s to 45 percent in the 2000s, with a clear positive trend in the past three decades and an acceleration in the 2000s (Figure 8).

Figure 8. Trade Openness to GDP, 1983–2011[1]
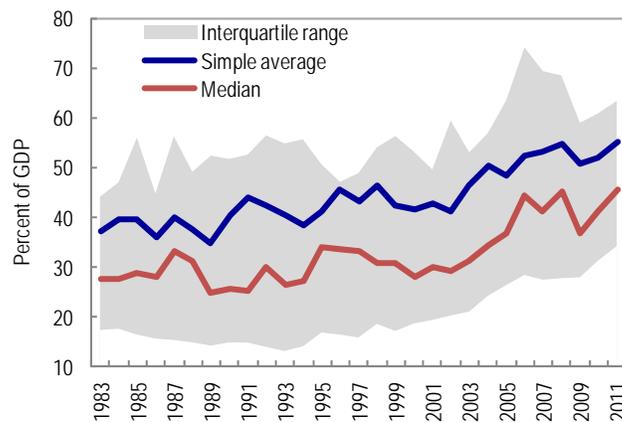
Source: Penn World Tables v. 8.0 ; and IMF staff calculations.
[1] Measured as the sum of real exports and imports in percent of real GDP.

To disentangle the respective role of these factors, an econometric analysis is conducted, following previous studies on growth determinants, relating per capita real GDP growth in sub-Saharan countries over 1980–2010 to the initial level of development (as lower starting points tend to be associated with higher growth rates, as these countries catch up), investment

and consumption ratios (as they affect physical capital and available domestic savings to support long-term growth), trade openness, and changes in terms of trade (Moral-Benito 2012; Dollar and Kraay 2003; see Appendix 3.1 for a description of the model).
[3] The analysis finds that increased trade has had a significant and positive influence on growth in sub-Saharan Africa. More specifically, both the increase in trade openness and the improvement in terms of trade have contributed to the acceleration of real per capita GDP growth. Of the 1.4 percentage point increase in the annual rate of growth of real per capita GDP between the 1990 and 2000 decades, the increase in trade openness is estimated to have contributed 0.6 percentage points and improved terms of trade another 0.2 percentage points (Figure 9). Together, these increases account for about half of the increase in average growth of per capita GDP in the region. However, it is important to remember that increased trade integration also makes the region more vulnerable to external shocks, as the current situation among sub-Saharan African commodity exporters exemplifies.

Figure 9. Annual Per Capita Real GDP Growth (Percent)

Source: IMF staff estimations.
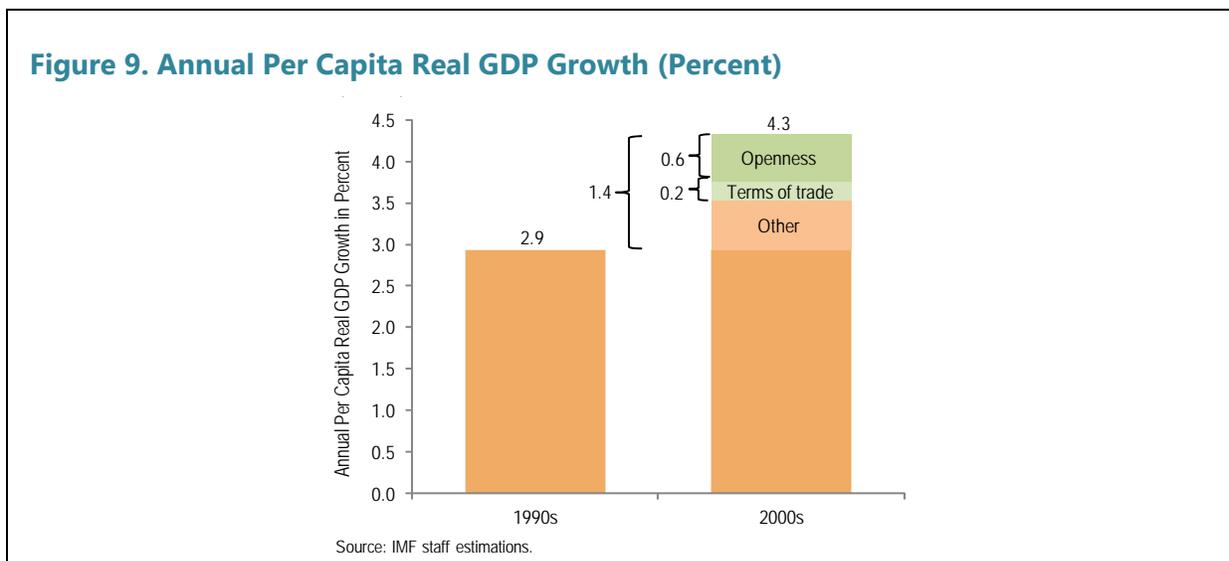
While global integration is found to have supported overall growth, labor productivity itself has not benefited as much as in sub-Saharan Africa as in other regions undergoing trade integration, as evidenced by the slopes of regional trajectories in Figure 10. Over 1990–2010, the increase in labor productivity generated by each percentage point increase in trade openness has been five to eight times lower than in Asia, Latin America, or emerging Europe—a strong reminder that increased trade openness does not necessarily translate into structural transformation and a switch to higher-productivity activities. For these changes to materialize in conjunction with the expansion of trade, accompanying policies have to be in place.

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[3] To address endogeneity issues, we either use lagged variables or we instrumentalize using a 3 Stage Least Squares (SLS) estimation methodology (see also Appendix 3.1).

Figure 10. Trade and GDP per Person Employed, 1990–2011
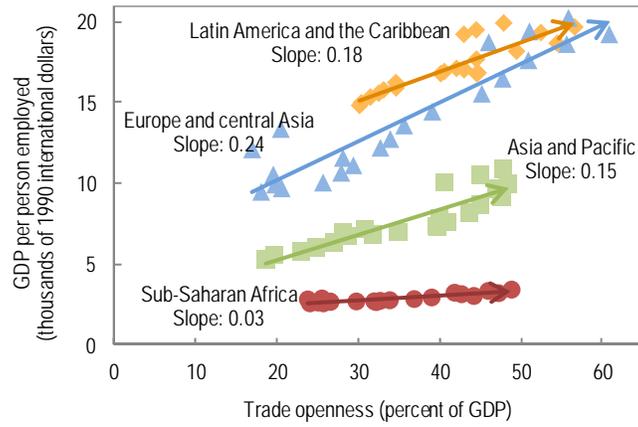
Sources: Penn World Tables 8.0.; and World Bank, *World Development Indicators*.
Note: Only emerging market and developing countries from each region are considered.

4 Scope for Further Integration? An Analysis Based on a Gravity Model

To assess the underlying factors that drive trade integration and to estimate the order of magnitude of a potential "trade gap" for sub-Saharan Africa, we then use a gravity model approach. In general, trade between two countries tends to be more intense the closer the two countries are both geographically and culturally—such as sharing a similar language or past colonial ties. In addition, the size and level of development of the trading economies are important parameters influencing trade flows. A common way in the literature to assess the relative size of such flows is to estimate "gravity models," linking the magnitude of bilateral trade flows to these very characteristics of the trading countries (Head and Mayer 2014).

We estimate such a gravity model using the IMF's Direction of Trade Statistics (DOTS) database. Our sample covers 167 countries for the 1980–2013 period. While the DOTS database lacks data on services trade, it provides the most extensive panel data set of worldwide bilateral trade flows currently available. Our empirical specifications can be summarized in the following equation:

$$\ln x_{ijt} = a^{Ex} M^{Ex}_{it-1} + a^{Im} M^{Im}_{jt-1} + \theta D_{ijt-1} + a_t + u_{ijt} \, .$$

In this equation, the exports from exporting country i to importing country j in year t, x_{ijt}, are conditioned on M^{Ex}_{it-1} and M^{Im}_{jt-1}, which denote the vectors of the attributes of exporter i and importer j in year $t-1$. Factors that affect trade costs between i and j are represented by D_{ijt-1} and u_{ijt} denotes the unobserved bilateral trade cost determinants. To avoid potential biases from reverse and simultaneous causation, we condition on the one-year lagged values of the regressors and we control for global common shocks by including a year fixed effect, a_t.

Table 1 shows the gravity equation estimates of the determinants of bilateral trade patterns. The standard errors reported in the regressions are robust and clustered at the country pair level to account for bilateral trade correlation across time and to allow for different variance across the pairs.

Table 1. Gravity Model Estimates

	(1) ln (Exports)	(2) ln (Exports)	(3) ln (Exports)	(4) ln (Exports)	(5) ln (Exports)
Exporter ln (population) (lag1)	1.063*** (0.008)	1.043*** (0.008)	1.042*** (0.008)	1.059*** (0.008)	1.319*** (0.012)
Importer ln (population) (lag1)	0.966*** (0.008)	0.981*** (0.008)	0.980*** (0.008)	0.962*** (0.008)	1.087*** (0.012)
Exporter ln (GDP per capita) (lag1)	0.946*** (0.011)	0.854*** (0.013)	0.854*** (0.013)	0.907*** (0.012)	0.827*** (0.023)
Importer ln (GDP per capita)	0.703*** (0.010)	0.712*** (0.011)	0.712*** (0.011)	0.665*** (0.011)	0.651*** (0.021)
Log of distance (lag1)	-1.393*** (0.016)	-1.374*** (0.024)	-1.360*** (0.024)	-1.368*** (0.017)	-1.398*** (0.021)
Common official language (lag1)	0.498*** (0.065)	0.554*** (0.063)	0.561*** (0.063)	0.482*** (0.064)	0.474*** (0.096)
Common language (lag1)	0.337*** (0.066)	0.497*** (0.064)	0.486*** (0.064)	0.515*** (0.065)	0.521*** (0.099)
Common colonizer (lag1)	0.579*** (0.054)	0.690*** (0.054)	0.676*** (0.054)	0.632*** (0.053)	0.674*** (0.084)
Exporter landlocked (lag1)	-0.756*** (0.038)	-0.562*** (0.037)	-0.565*** (0.037)	-0.651*** (0.037)	-0.631*** (0.056)
Importer landlocked (lag1)	-0.811*** (0.037)	-0.785*** (0.035)	-0.787*** (0.035)	-0.735*** (0.036)	-0.758*** (0.051)
Both Asia and Pacific (lag1)		1.889*** (0.109)	1.963*** (0.110)		
Both Europe (lag1)		1.672*** (0.089)	1.758*** (0.092)		
Both Middle East and Central Asia (lag1)		0.006 (0.110)	0.091 (0.112)		
Both North and Latin America (lag1)		1.071*** (0.092)	1.151*** (0.094)		
Both CEMAC (lag1)			0.508 (0.373)		
Both EAC (lag1)			1.607*** (0.419)		
Both SACU (lag1)			-0.061 (0.536)		
Both WAEMU (lag1)			1.097*** (0.290)		
Both sub-Saharan Africa (lag1)				-0.328*** (0.072)	
None sub-Saharan Africa (lag1)				0.727*** (0.033)	
Exporter rule of law (lag 1)					0.364*** (0.037)
Importer rule of law (lag1)					0.153*** (0.035)
Exporter infrastructure (lag1)					0.226*** (0.021)
Importer infrastructure (lag1)					0.165*** (0.021)
Exporter ln (tariff) (lag1)					-0.112*** (0.010)
Importer ln (tariff) (lag1)					-0.057*** (0.011)
Exporter ln (domestic credit) (lag1)					0.302*** (0.033)
Importer ln (domestic credit) (lag1)					0.187*** (0.029)
Observations	484595	484595	484595	484595	54997
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	No	No	No	No
R-Squared	0.624	0.6352	0.6355	0.6244	0.7271

Source: IMF staff calculations.
Note: Robust standard errors are shown in parentheses; * indicates significance at 10 percent, ** at 5 percent, and *** at 1 percent.

Column 1 controls for exporter and importer attributes such as size (population) and development (GDP per capita), as well as trade cost measures (bilateral distances, common language dummies, common colonizer dummies, and dummies representing landlocked countries).[4] To perform intraregional bilateral trade comparisons across regions, we use the group of sub-Saharan African countries as the comparison group in column 2 and introduce regional dummies for regional trade occurring within other regions.[5] Similarly, column 3 allows for intraregional comparisons between sub-Saharan African countries that have formed monetary and trading unions and those that have not. To compare trade flows emanating from sub-Saharan Africa to trade occurring elsewhere in the world, in column 4 we use as the baseline comparison group the group in which either the exporter or the importer is a sub-Saharan African country, and introduce dummies for trade flows where none of the trade partners are from sub-Saharan Africa (for completeness, we also account via a second dummy for sub-Saharan Africa's intraregional trade). Column 5 additionally includes estimates for institutional and policy-related variables.[6] The average values of these institutional and policy-related variables for sub-Saharan African countries and the rest of the countries in our sample are provided in Table 2.

Table 2. Output Drops and Decelerations (1990–2013)

	Sub-Saharan Africa	Rest of the World
Tariffs	7.1	1.6
Infrastructure	2.8	4.6
Rule of law	-0.5	0.5
Domestic credit	24.1	68.8

Sources: IMF, World Economic Outlook database; and World Economic Forum.

The overall analysis suggests that exports and imports from SSA are significantly lower than trade flows elsewhere in the world. Of course, this partially reflects lower levels of income in sub-Saharan Africa, as well as relatively longer distances and a higher number of landlocked countries in the region, as accounted for in the determinants of the gravity model equation. But even after accounting for these determinants, the dummy for trade occurring elsewhere in the world in column 4 of Table 1 still comes out significant. More specifically, column 4's estimation

[4] Common language dummies indicate whether the pair of trading partners shares a common official language or a language that is spoken by at least 9 percent of the population in both countries (Mayer and Zignago 2011).

[5] Cross-regional trading dummies are included, but not shown, in the specifications of columns 2 and 3.

[6] The rule of law and infrastructure quality indicators are taken from the Global Competitiveness Indicators database provided by the World Economic Forum. Tariffs are computed as the averages of effectively applied rates weighted by the product import shares corresponding to each partner country. Credit availability refers to domestic credit provided by the financial sector in percent of GDP. Both variables were obtained from the World Development Indicators database from the World Bank.

suggests that bilateral trade flows from sub-Saharan Africa tend to be, on average, 50 percent lower than trade flows elsewhere in the world, even after accounting for economic and other determinants (Figure 11). Likewise, the dummies for trade occurring in other regions in column 2 are also significant, with the exception of the Middle East and Central Asia, suggesting that sub-Saharan-African regional trade is much smaller than regional trade in most other regions in the world—85 percent lower than in South and East Asia, 80 percent lower than in Europe, and 65 percent lower than in Northern and Latin America.[7] It is noteworthy that sub-Saharan African regional trade exhibits such substantial gaps despite the existence of numerous intraregional trade agreements—possibly because their overlapping groupings greatly reduce their effectiveness.

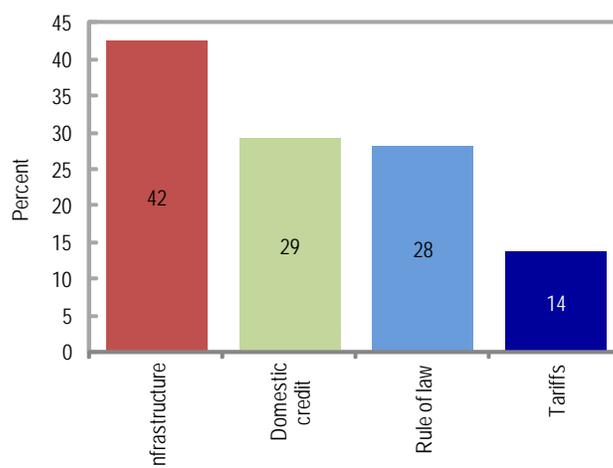## Figure 11. Trade Flows Compared with Other Regions[1]
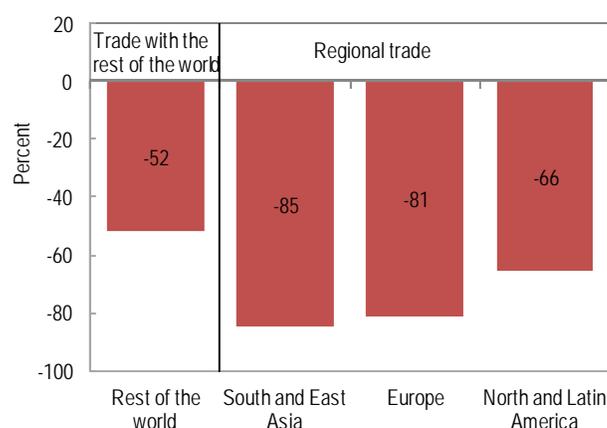
Sources: IMF, World Economic Outlook database; World Economic Forum; and IMF staff calculations.
[1] Sub-Saharan Africa trade compared with trade of other regions, after controlling for size, level of development, cultural ties, and geographical conditions.

What explains these substantial gaps? To shed light on that question, the gravity model described previously is augmented in column 5 of Table 1 to include determinants such as the rule of law, tariff levels, quality of infrastructure, and level of credit to the private sector, as is frequently done in the literature (see, for example, Nordås and Piermartini 2004). These factors are found to play a significant role in further explaining the extent of bilateral trade flows at the global level. All else equal, a more supportive business environment, lower tariffs, better infrastructure, and easier access to credit all favor larger trade flows. And these factors are substantially less conducive to trade in sub-Saharan Africa, with the quality of infrastructure about 50 percent lower in the region than elsewhere in the world, credit-to-GDP ratios about 25 percent lower, and tariffs on average four times higher than elsewhere (Figure 12).

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[7] Unrecorded flows across borders within sub-Saharan Africa are likely to be larger than elsewhere in the world, and the gaps are possibly overestimated as a consequence. Nonetheless, given the magnitude of the gaps estimated here, these would persist even with more comprehensive data coverage.

Figure 12. Potential Increase in Trade¹

Sources: IMF, World Economic Outlook database; World Economic Forum;
and IMF staff calculations.
¹ Percent increase in sub-Saharan Africa 's trade if the variable moves from
the average for sub-Saharan Africa to the average for the rest of the world.

More specifically:

- Infrastructure appears as the most important impediment to trade for the region. In fact, bringing infrastructure to the average level of quality at the global level would help enhance sub-Saharan African trade by as much as 42 percent, as this would substantially lower the cost of cross-border movements of goods. Indeed, efforts to fill the infrastructure gaps are currently under way in the region.

- Further efforts to improve governance and the business climate would also have a very favorable effect: raising the index of rule of law to the average level elsewhere in the world would generate another 28 percent increase in sub-Saharan African trade flows. In particular, measures to lower nontariff impediments to trade—export taxes and duties, but also corruption, regulatory requirements, and delays in clearing customs that all add up to extra costs—would greatly improve prospects for trade, especially at the regional level.

- Likewise, access to credit for the private sector plays a paramount role for the region's trade. Further financial deepening to the level observed elsewhere in the world would support an expansion of trade by as much as 29 percent. Such expansion would need, however, to be accompanied with adequate macroprudential frameworks to carefully manage the corresponding risks (IMF 2012).

- Finally, continuing to work toward lowering tariffs in the region would further support the development of both international and regional trade. On average, bringing tariffs to the average global level could yield about 14 percent additional trade. One consideration, though, is that taxes on trade still represent a substantial source of fiscal revenues for many

countries in the region, and policies to lower tariffs need to be accompanied by continued efforts to increase revenue mobilization from other sources.

- At the regional level, deepening existing customs unions with further economic integration would help, as the examples of the EAC and WAEMU illustrate in column 3 of Table 1: all else equal, cross-border exchanges within the EAC are found to be five times larger than average regional trade flows within sub-Saharan Africa; in the WAEMU, they are about three times larger. But having a single currency by itself is not enough, as evidenced in the Central African Economic and Monetary Community (CEMAC), where intracurrency union trade flows are not found to be significantly higher than regional flows outside the currency union.

5   Global Value Chains

Beyond the pure expansion of trade, an additional dimension of globalization over the past two decades has been the emergence of global value chains (GVCs). In an increasingly integrated world economy fueled by technological progress, cheaper transportation and communication costs, and policy reforms in support of trade, production processes have been more dispersed across the globe. This has given rise to systems of supply chains in which value is added at each stage before crossing the border to be passed on to the next stage—GVCs. This process has allowed countries to better exploit their comparative advantages, by giving them the opportunity to join a production chain without having to provide all the other upstream capabilities, and has been particularly at play in South and East Asia around Japan and China and in Eastern Europe around Germany (IMF 2013, 2014b, 2015b; Chapter 3 of IMF 2014a).

For countries with a limited existing manufacturing or service export basis and a large pool of labor such as in those in sub-Saharan Africa, this development can provide a golden opportunity. By specializing on a specific segment of a production chain, each participating country can generate a portion of the goods' or services' value added—while producing the whole product from scratch would never have been within reach in an increasingly competitive world—even if that means that a lower share of the value added of exports is captured locally. While certain preconditions such as sufficient levels of capacity, quality, and efficiency are required to join GVCs (Baldwin 2011; WTO 2014), these threshold levels can be exceeded over time through technology and knowledge transfers from other countries—most often in the form of foreign direct investment (FDI). Furthermore, knowledge transfers from other producers in the value chain, and, eventually, upgrading to higher value-added segments of the production chain can support productivity and income growth. Asian countries have championed this model, initially contributing to the most labor-intensive activities in the production process and gradually moving into more sophisticated portions of the value chain.

To measure a country's extent of international integration in GVCs, it is necessary to know the sources and destinations of the value added embodied in the products. A budding literature on trade in value added has emerged that relies on data using intercountry input-output (IO) tables. Until very recently, the coverage on sub-Saharan African countries in IO tables was sparse. We use here the newly created Eora database, which provides global multiregion IO tables, to derive value-added trade for 189 countries from 1990 to 2012 (Lenzen and others 2012; Lenzen and others 2013). The main advantage of using the Eora database is the depth of its coverage, in terms of countries (189), industries (about 16,000), and years (23 years); it is

virtually unmatched by any existing database. It covers 42 out of the 45 countries in sub-Saharan Africa. While this extended coverage makes the database invaluable for the analysis conducted here, it should be remembered, however, that some missing data in the IO tables are filled through optimization procedures using existing national and global statistics: this means that our results should not be taken as exact and precise measures, although we believe the gist of the results to be robust.

The literature traditionally decomposes exports into three distinct components, which are used to measure GVC participation[8]:
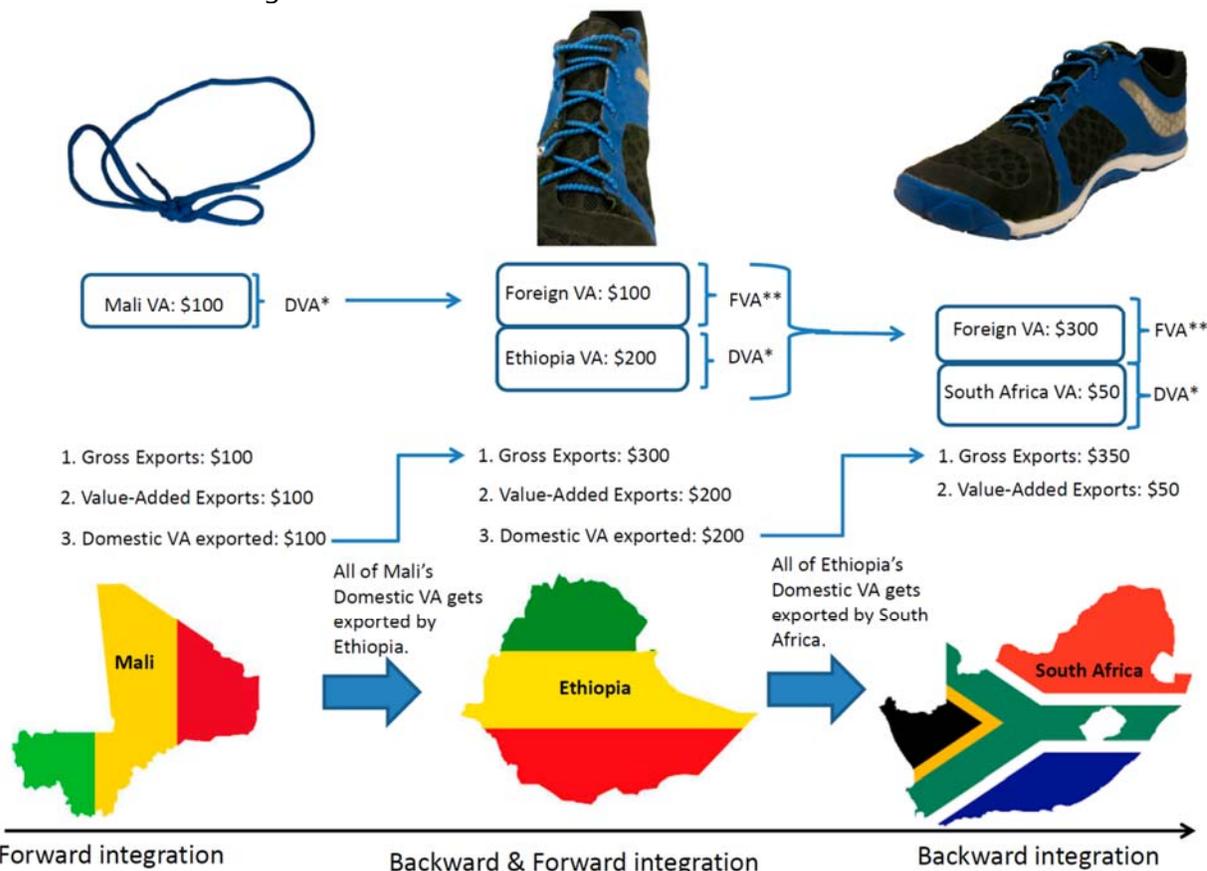
- Foreign value added (FVA) that has been imported from foreign suppliers upstream in the GVC. This share is referred to as backward integration, and reflects the extent to which a country is integrated relatively downstream of the value chain.

- Domestic value added (DVA) of products consumed directly in the country where it is exported.

- DVA of products that enter themselves into the production of other countries' exports. This share is referred to as *forward integration*, and reflects the extent to which a country is integrated relatively upstream of the value chain.

The sum of the last two components corresponds to the DVA, and contributes toward its GDP. The sum of FVA and DVA results in the total value of gross exports. Figure 13 provides an illustrative example of a hypothetical value chain production of a shoe dispersed in different countries.

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[8] For the numerical calculations, we follow the mathematical calculations as described in UNCTAD 2014, pp. 26–9.

Figure 13. Value-Added Trade and Global Value Chains – An illustrative Example

In this fictitious example involving three countries, from the viewpoint of Ethiopia, its backward integration is represented by the value of its foreign inputs: the $100 value of shoelaces that were completely produced in Mali. Meanwhile, Ethiopia's forward integration is the domestic value added that is exported to South Africa, and then further exported by South Africa–namely Ethiopia's domestic value added of $200 that is incorporated into South Africa's final shoe exports. South African exports, in turn, are composed of $300 previously imported and $50 of domestic value added generated in South Africa.

Mali VA: $100 } DVA* →

Foreign VA: $100 } FVA**
Ethiopia VA: $200 } DVA*

Foreign VA: $300 - FVA**
South Africa VA: $50 - DVA*

1. Gross Exports: $100
2. Value-Added Exports: $100
3. Domestic VA exported: $100

1. Gross Exports: $300
2. Value-Added Exports: $200
3. Domestic VA exported: $200

1. Gross Exports: $350
2. Value-Added Exports: $50

Mali

All of Mali's Domestic VA gets exported by Ethiopia.

Ethiopia

All of Ethiopia's Domestic VA gets exported by South Africa.

South Africa

Forward integration   Backward & Forward integration   Backward integration

*DVA is domestic value added into exports
**FVA is foreign value added into exports

Source: IMF staff.
Note: DVA is domestic value added in exports; FVA is foreign value added in exports.

The integration into GVCs has indeed gone hand in hand with a pickup in income levels. In particular, we focus on the measure of backward integration; that is, the FVA that is imported for further processing into exports. By this measure, rising backward integration has been associated with rising income over time for developing and emerging economies (Figure 14a). In pursuing a strategy of development anchored around integration in one intermediary link of the value chains, many countries have managed to lift their income levels as they gradually acquired new capabilities, and have benefited from knowledge spillovers and, eventually, from opportunities to diversify production and upgrade quality (UNCTAD 2013). In addition,

enhanced participation in GVCs has also been associated with more inclusive growth, especially when the sectors targeted are labor-intensive and employ relatively lower-skilled workers.[9]

Figure 14a. Depth of Integration in Global Value Chains and Real GDP per Capita, Average 1991–95 and 2008–12 (full country sample)
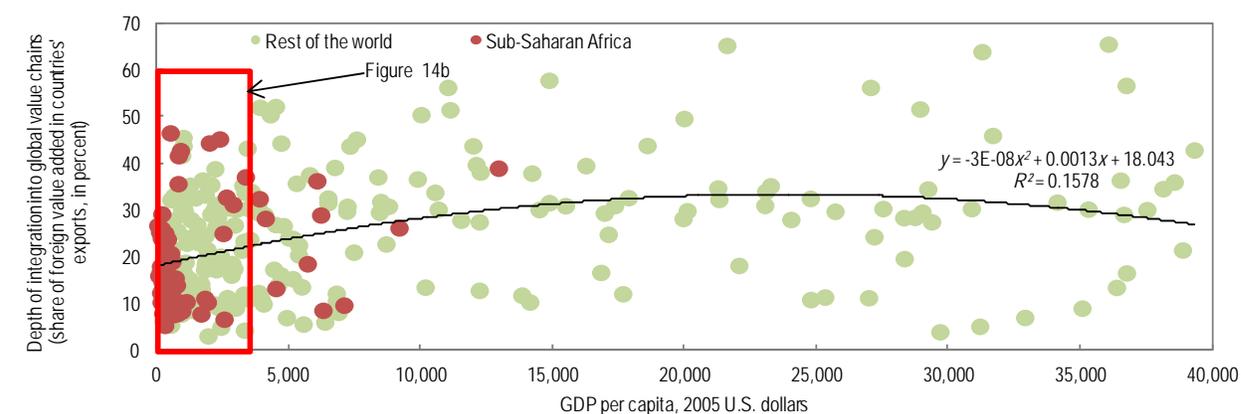
$$y = -3\text{E-}08x^2 + 0.0013x + 18.043$$
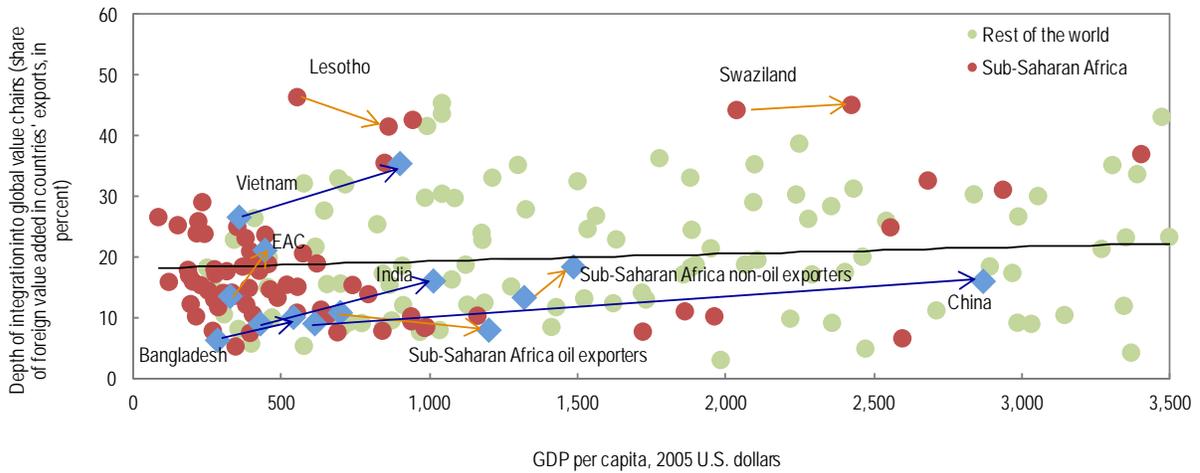$$R^2 = 0.1578$$

Sources: World Bank, World Development Indicators; Eora database; and IMF staff calculations.

Where do sub-Saharan African countries stand in that landscape? Using the Eora multi-regional input-output database mentioned earlier, we can provide here a first-time assessment of the region's positioning in GVC.

Sub-Saharan African countries still generally find themselves at the start of their integration process into GVCs, having also relatively lower income levels than other regions in the world (Figure 14b). At 15 percent of exports, the share of foreign value added embedded in the production of exports is low even compared with the 20 percent average observed in developing and emerging market economies. More worrisome is that the depth of its integration has barely increased since the mid-1990s, unlike in other income groups—signaling that the region has yet to join this global momentum and take advantage of it to lift productivity and create jobs (Figure 15). Corroborating that finding, neither the complexity of sub-Saharan African exports—measured as the diversity of products (Hausmann and others 2011)—nor the quality of exported goods—derived from price differences within specific product categories (Henn, Papageorgiou, and Spatafora 2013)—have been improving over the past two decades. In addition, compared with all other regions in the world, sub-Saharan African exports tend to enter at the very beginning of GVCs (in the form of forward integration), as a higher share of its exports enter as inputs for other countries' exports, reflecting the still-predominant role of commodities in many countries' exports in the region.

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[9] For instance, Maertens, Colen, and Swinnen (2011) find a positive effect of integration into agricultural GVCs on poverty reduction as it provides a source of formal and paid employment to largely informally employed agricultural workers who have low levels of education.

Figure 14b. Depth of Integration in Global Value Chains and Real GDP per Capita, Average 1991–95 and 2008–12 (subset of countries with 2005 GDP per capita below 3,500 U.S. dollars)

GDP per capita, 2005 U.S. dollars

Sources: World Bank, World Development Indicators; Eora database; and IMF staff calculations.

**Figure 15. Global Value Chains Participation, Average 1991–95 and 2008–12**
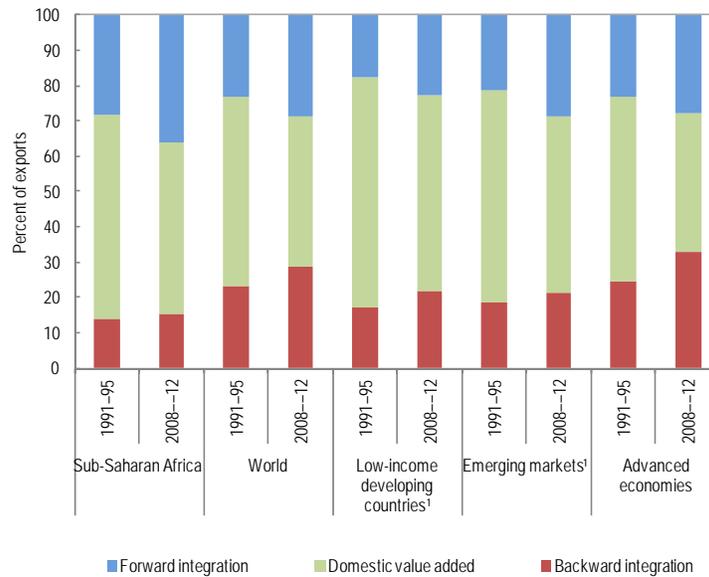
Sources: Eora database; and IMF staff calculations.
[1]Excluding sub-Saharan African countries.

There is, however, a significant degree of heterogeneity across sub-Saharan African countries, with some countries having fared much better than others (Figure 16):

Figure 16. Sub-Saharan Africa and Comparator Countries: Depth of Integration in Global Value Chains, Average 2008–12
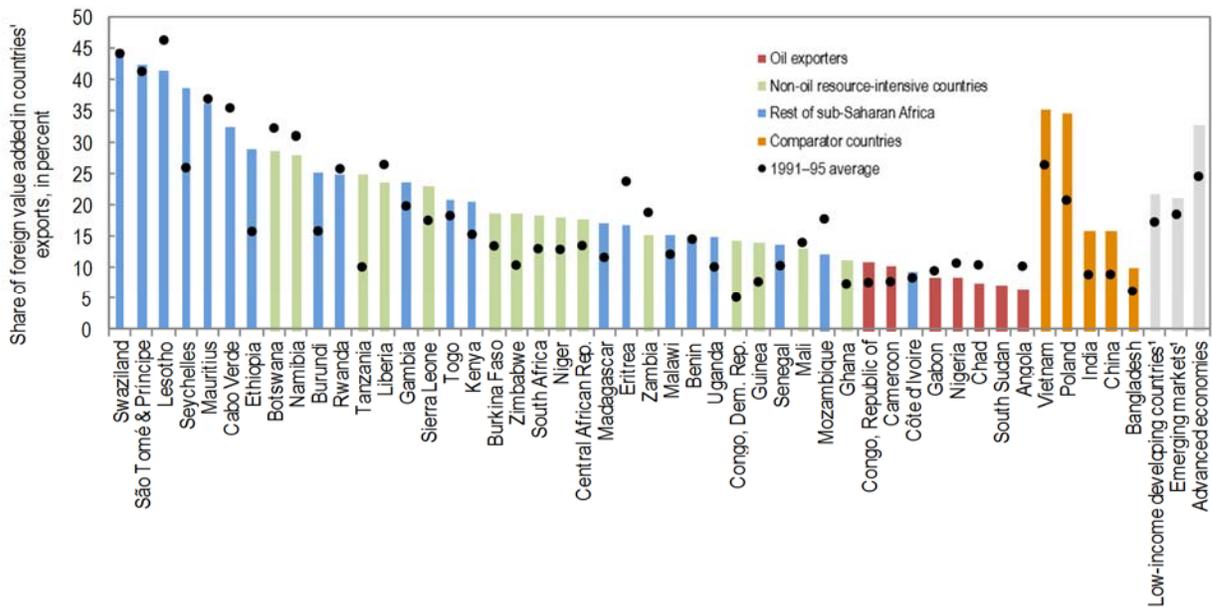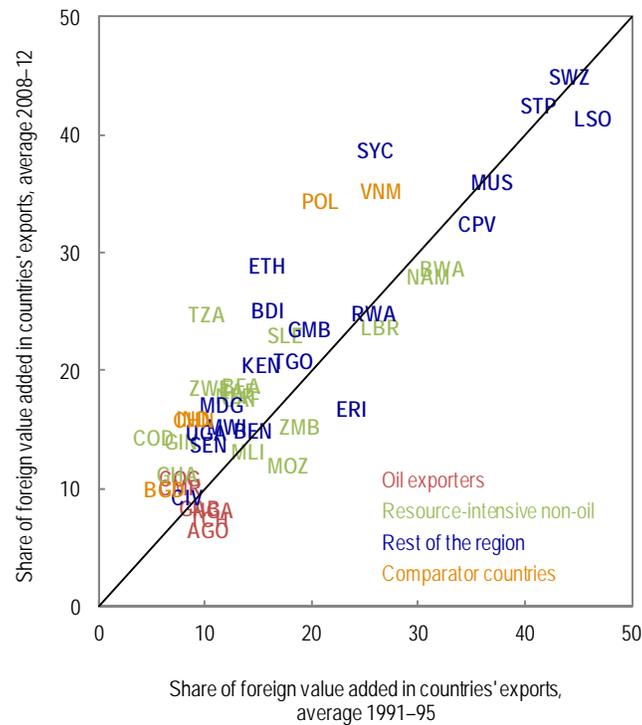

Sources: Eora database; and IMF staff calculations.

- Oil exporters are the least integrated in GVCs in terms of FVA content of their exports. With the exceptions of Cameroon and Congo, this share has even decreased, including in countries such as Angola and Nigeria, suggesting that diversification of trade away from natural resources has stagnated, if not gone backward, over the past 20 years in these countries.

- However, in the rest of the region, a majority of countries (24 out of 35) have made progress, even if from a low starting point (Figure 17). The improvement is most widespread among non-oil-commodity exporters, with countries such as Burkina Faso, Central African Republic, Democratic Republic of the Congo, Ghana, Guinea, Niger, Sierra Leone, and Zimbabwe all registering progress. This shows that integration in value chains can happen even in countries where commodities play a role.

- Among the best performers, progress within the EAC has been particularly strong, with Kenya, Tanzania, and Uganda exhibiting solid progress—also a reflection of the benefits of the more general economic integration at play among these countries and their stated intention to further deepen their economic and monetary ties (IMF 2015c; Sutton 2012). Likewise, the SACU region exhibits relatively stronger depth of integration, both because its smaller members (Botswana, Lesotho, Namibia, Swaziland) were already quite integrated in the early 1990s and because South Africa did progress over the 1990–2010 period. Conversely, both the CEMAC and the WAEMU continue to exhibit low depth of integration. For the former, this has to do with the high reliance on oil exports for most of its members.

For the latter, this suggests that the relatively high level of interregional trade with the currency union does not reflect the emergence of a regional value chain, but rather trade on final goods and services, with the depth of integration particularly low for the two largest countries of the union—Côte d'Ivoire and Senegal.
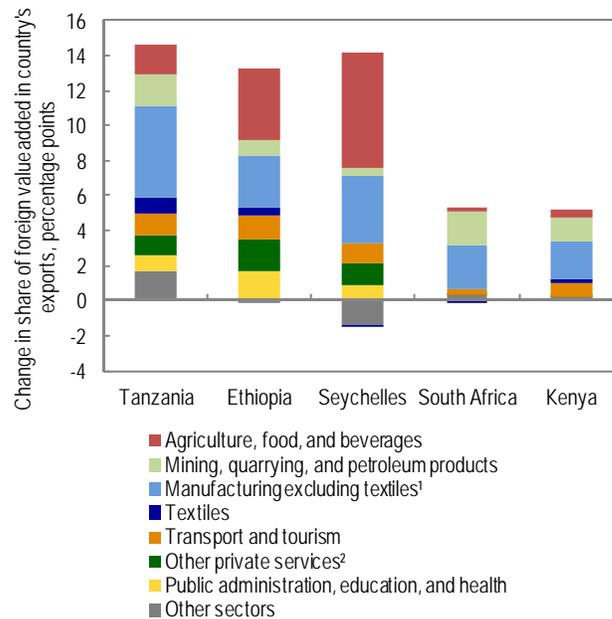
Figure 17. Depth of Integration in Global Value Chains, Average 1991–95 and 2008–12

Sources: Eora database; and IMF staff calculations.
Note: See Annex 3.2 f Country Groups for a list of countries in each group.

- Five countries in particular stand out, having seen the share of FVA in their exports increase by 5 percentage points or more in the past two decades: Ethiopia, Kenya, Seychelles, South Africa, and Tanzania (Figure 18). In these countries, the sectors that have benefited the most from the deepening of integration include agriculture and agro-business (especially in Ethiopia and Seychelles), and manufacturing (particularly in Tanzania), but also textiles, transport, and tourism, although to a lesser extent. These experiences bode well for the region: for one, the increase in depth of integration in some of these countries, at 10 percentage points or more, is of a similar magnitude to that experienced by countries such as Poland or Vietnam that are now success stories within large GVCs. The examples also highlight the sectors—agro-business, light manufacturing, tourism, and textile—in which sub-Saharan Africa has the potential to leverage its comparative advantages.

Figure 18. Sub-Saharan African Selected Countries: Decomposition of Change in Depth of Integration in Global Value Chains, Average 1991–95 to 2008–12

Y-axis: Change in share of foreign value added in country's exports, percentage points

Legend:
- Agriculture, food, and beverages
- Mining, quarrying, and petroleum products
- Manufacturing excluding textiles[1]
- Textiles
- Transport and tourism
- Other private services[2]
- Public administration, education, and health
- Other sectors

Sources: EORA database; and IMF staff calculations.
[1] Includes electrical and machinery, metal products, wood and paper, transport equipment, and other manufacturing.
[2] Includes construction, telecommunications, wholesale trade, maintenance and repair.

- However, to leverage these comparative advantages, the business environment (infrastructure, rule of law, cost and wage competitiveness, and so on) needs to be right. On that front, more still needs to be done, judging from the broader trend decline in industrialization in the region documented in other studies (Rodrik 2015; Figure 19). It should be noted, though, that opportunities to participate in GVCs are not limited to manufacturing. Just as the production of goods has been broken down into different stages, services are increasingly being disaggregated and traded as separate tasks to create service value chains—as championed by India, for example.

Figure 19. Share of Manufacturing Value Added
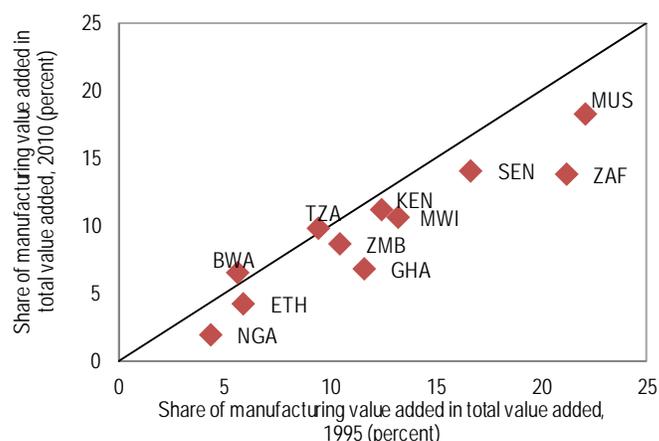
Sources: Groningen Growth and Development Center database (Timmer, de Vries, and de Vries 2014); and IMF staff calculations.
Note: The figure depicts the share of manufacturing value added as a percent of the economy's total value added in 1995 on the x axis and that in 2010 on the y axis. The majority of the countries experienced decreases in teh share of manufacutring value added between the two years, depicted by the location underneath the 45-degree line, thus, inducating output deindustrialization (Rodrik 2015).

The upshot is that the region still has an enormous potential to integrate into GVCs. By leveraging this potential, a better insertion in GVCs may help foster structural transformation, export diversification, and the possibility to absorb technology and skills from abroad. These benefits are especially important for countries with relatively small domestic markets, such as many in sub-Saharan Africa; in addition, the enabling of strong job creation would also allow countries to harness the dividends of the upcoming demographic transition (see IMF 2015c).[10]

An additional question would be which country or region could serve as an anchor for sub-Saharan Africa's integration into GVCs. Some larger and more advanced economies within the region, most notably South Africa, could be candidates. Alternatively, given growing ties with China and India, including through FDI, these emerging markets could see increasing value in

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[10] It is worth stressing that integration in GVCs in itself is not a guarantee of higher income, as countries participating in portions of the GVCs with low value added run the risk of being permanently confined to these segments. However, scaling up in the GVC—that is, increasing the share of FVA in one country's exports—is indeed associated with better chances to accelerate structural transformation. The insertion into GVCs can also enhance positive spillovers into the domestic economy through backward linkages, if domestic sectors are competitive enough to contribute into the value chain. For instance, in vertical backward linkages that integrate local suppliers into production processes of global value chain firms, these domestic suppliers can benefit from knowledge and technology spillovers (Javorcik and Spatareanu 2008).

outsourcing some of their economic activities to sub-Saharan Africa, especially as rising wages in the Asian countries could make the region more cost-competitive.

In that context, an econometric analysis investigates the policy measures likely to support a stronger insertion for the region into GVCs. We mimic the gravity equation in the previous section in terms of the control variables, but instead of bilateral trade, we use backward integration as the dependent variable:

$$\ln \text{FVA}_{it} = \beta_1 + \beta_2 X_{t-1} + \gamma_i + \theta_t + \varepsilon_{it},$$

where FVA_{it} is the share of FVA in country i's exports in year t, and where X_{t-1} are control variables. For the latter, we use GDP per capita as well as the same term in squared term to capture the negative portion of the relationship. For policy variables, we include domestic credit provided by the financial sector as share of GDP, spending on education as share of GDP, quality of infrastructure, the weighted average of tariff rates applied to all products in a given country and year, and, last, a measure on the rule of law. All variables, with the exception of index variables, are in logs to eliminate potential outliers, and they are lagged by one year to avoid simultaneity bias. Moreover, we control for time, θ_t, and country, γ_i, fixed effects. As a robustness check, we also run a separate regression using the subsample of countries and years with only $22,000 GDP per capita, thus capturing only the portion in which backward integration and income levels are positively related, as evidenced in Table 3. The variables show similar magnitudes and levels of statistical significance.

We conduct the estimation on an unbalanced panel for 185 countries and over the period 2007–11. After controlling for the level of development and the size of the economy (as smaller countries tend to be more internationally integrated, all else equal), deeper integration in GVCs—as measured by a higher share of FVA in one country's exports—is found to be associated with improved indicators of human capital and availability, while it is hampered by higher tariff levels and difficult business environments (Table 3). More specifically, a reduction in tariff rates across sub-Saharan Africa toward the average prevailing in non-sub-Saharan African countries could increase the share of FVA in exports by about 3 percentage points, an increase in access to credit by 2 percentage points, and an increase in education spending and rule of law to levels seen elsewhere in the world by another 1 percentage point each. While such changes would likely occur over time, together they would bring the depth of integration of the region to levels currently seen in other low-income and emerging markets. This suggests that actions on these policy levers would go a long way to positioning the region well to participate in GVCs.

Table 3. Panel Regression of Backward Integration and Policy Variables

Dependent Variable: Backward Integration as Share of Total Exports

	(1) Entire Sample	(2) Capita < $22,000
Real GDP per capita (lag1)	0.326**	-0.085*
	(0.161)	(0.047)
Real GDP per capita^2 (lag1)	-0.029**	
	(0.011)	
GDP (lag1)	-0.060***	-0.059***
	(0.017)	(0.020)
Domestic credit to private sector (percent of GDP) (lag1)	0.082*	0.080
	(0.043)	(0.054)
Education (percent of GDP) (lag1)	0.413***	0.349***
	(0.081)	(0.082)
Rule of law (lag1)	0.287***	0.328***
	(0.063)	(0.063)
Quality of infrastructure (lag1)	0.047	0.063
	(0.041)	(0.048)
Tariff_weighted (lag1)	-0.296***	-0.254***
	(0.037)	(0.041)
Constant	-2.672***	-1.216***
	(0.636)	(0.380)
Number of observations	385	236
Time fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
R-Squared	0.39	0.57

Source: Eora database; World Bank, *World Development Indicators*; Global Competitiveness Index; and IMF staff calculations.

Note: All variables are in natural log, except for rule of law and quality of infrastructure; the independent variables are lagged by one year. Robust standard errors in parentheses; * indicate significance at 10 percent, ** at 5 percent, and *** at 1 percent.

6 Conclusion

Sub-Saharan Africa has experienced a formidable expansion of its trade flows over the past 20 years, helping propel its growth engine. Strong demand for commodities has undeniably played a role in supporting the increase in trade, in particular with emerging markets, but it is far from the entire story, as even non-oil commodity exporters have managed to diversify their export structure and start to integrate in value chains.

Nonetheless, the current global environment—a slowing China, anemic growth in Europe, faltering commodity prices, and the risks of global financial volatility as some advanced economies normalize monetary policy conditions—will be more challenging than in the recent past. This environment, however, provides a unique opportunity to refocus policies on economic diversification and on fostering structural transformation. Further and better integration into global trade can provide such an opportunity. Despite the strong growth in trade flows, sub-Saharan Africa still trades below its potential, in terms of both total flows and positioning in GVCs. Some countries have started to leverage their comparative advantages, either in agriculture and agro-business or, in some cases, in manufacturing. Yet, more broadly, much more could be done to arrest the gradual deindustrialization in the region.

Addressing the barriers to trade could therefore unlock untapped productivity gains, bringing with it more jobs, higher income levels, more diversified economies, and eventually more sustainable growth. Supporting the development of regional trade flows would also better shelter the region from exogenous external shocks. The need to improve infrastructure is one of the most important impediments to trade flows. But lower tariffs, better access to credit for the private sector, and a more conducive business climate are all found to support more intense trade flows and better insertion into GVCs, as do efforts to improve education outcomes. Those are levers on which the authorities have control and have started to work. The efforts should be sustained and even accelerated to leverage the region's remarkable assets, including sound macroeconomic policies, improving economic institutions, and a young and growing workforce.

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