



MARCH 2023 | No. 2

AFRICA ECONOMICS **POLICY NOTE**

OFFICE OF THE CHIEF ECONOMIST, AFRICA REGION

INDUSTRIALIZATION IN SUB-SAHARAN AFRICA: SEIZING OPPORTUNITIES IN GLOBAL VALUE CHAINS

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This policy note summarizes the key findings of the report—Industrialization in Sub-Saharan Africa: Seizing Opportunities in Global Value Chains¹ – and implications for policy. The study assesses the central role industrialization plays in structural change and sustained and inclusive growth in Sub-Saharan Africa by leveraging opportunities in manufacturing global value chains. The study was conducted against the backdrop of contemporary discourse on the viability of industrialization as a development strategy, in the wake of claims that such opportunities may be dwindling for African² countries due to emerging global trends in trade and GVCs, rise of labor-saving technologies such as automation, digital manufacturing, push for low carbon production, and potential reshoring in advanced economies.

Industrialization has been at the center of the social and economic transformation of developed and newly developing economies, and has historically been the driving force behind structural change. For Sub-Saharan Africa, however, there are widespread concerns on whether manufacturing can play a similar role in the region's social and economic development. Despite this narrative, industrialization features prominently in the development strategies of many SSA countries and is an integral component of Agenda 2063 of the African Union. To the extent that there is renewed interest in industrialization across the continent, and certain countries have had some success in manufacturing-driven structural change, the central question is not whether countries in SSA should pursue industrialization as a potential path to sustainable growth. Rather, the focus should be on identifying policy priorities to support country efforts in industrialization, as countries will pursue different varieties of industrialization.

The case for industrialization partly rests on the fact that manufacturing has strong links and spillover effects with other key sectors such as agriculture and services. In addition, manufacturing produces tradable goods that support economies of scale and scope. The scale and quality of job growth in manufacturing, therefore, can be driven as much by the growth of exports as by the expansion of domestic demand. Manufacturing is also

a conduit for international technology transfer and local knowledge spillovers. Seizing opportunities within international production networks and competing across value chains in local, regional, and global markets is central for the scale and speed of industrialization.

KEY FINDINGS AND IMPLICATIONS FOR POLICY

There is still a window for manufacturing driven structural change; Productivity growth is central to this drive.

The evidence does not strongly support the predominant narrative that manufacturing activities in Africa have hit a maximum threshold as the main driver of economic growth, and would have only a declining role. The share of manufacturing employment stayed on a steady upward trend over the period 1970–2015 with the level of income. This trend is likely to continue and can accelerate with the right policy environment³. However, the evidence on the share of manufacturing value added does not follow the observed trend in manufacturing employment shares. The contribution of manufacturing value added to gross domestic product (GDP) remains weak, showing a flat or declining trend. The evidence for an inverted U-shaped relationship – a sign of prema-

ture deindustrialization – weakens when high-exporting countries are excluded. The decline in the value-added share of manufacturing and the increase in the employment share of manufacturing has contributed to stagnation and sometimes a decline in manufacturing labor productivity. Rising employment contribution in the wake of stagnant or falling productivity is an outcome of the relatively large employment contribution of low productivity smaller firms and the limited employment contribution of the highly productive larger firms.

In SSA, much of the growth in job creation and manufacturing productivity derives from reallocation and entry and exit of firms. In Côte d'Ivoire and Ethiopia, for example, a large share of the observed productivity growth in manufacturing was due to the reallocation of market shares from less productive establishments to more productive ones. Within-firm productivity growth performance, on the other hand, has been lackluster. The resource reallocation that comes with structural change can accelerate growth and generate gainful employment opportunities. However, structural change can be growth reducing, as was observed in the region's predominant shift towards low-productivity service sectors especially during the period 1990-99. Recent years (2000 onwards) has seen reversal of this trend with structural change contributing substantially to productivity growth. Misallocations across as well as within sectors and industries are substantial in many SSA economies. Policies to address the key sources of misallocations including entry barriers, market power associated with state owned enterprises (SOEs) and state-affiliated firms, and other structural change limiting regulations are essential to raise aggregate productivity. There is also significant potential to increase within-firm productivity through strategic policies that would leverage participation of firms in international trade, FDI

and draw from the benefits of agglomeration economies closer to cities and emerging industrial parks.

Predominant Heterogeneity in Industrialization Experience

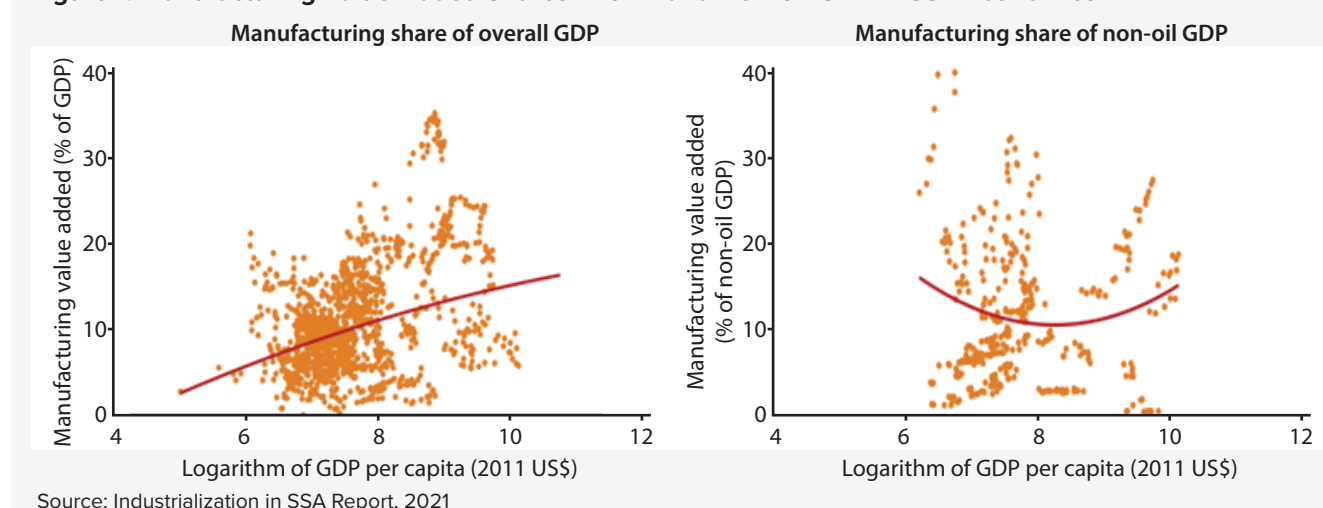
Regional Heterogeneity

The single story of premature deindustrialization is not a defining feature of the industrialization experience in the region given the wide heterogeneity across countries. Only 5 of 41 countries studied in SSA show evidence consistent with an inverted U-shape in real manufacturing value added. The manufacturing value-added share is flat for West and Central Africa whereas it rises with the level of income in East Africa, suggesting that industrialization is alive and well in many countries. Although Southern Africa has deindustrialized, this phenomenon is not occurring at lower levels of per capita income. Even in South Africa, which is driving the Southern Africa results, the inflection point has arisen at a level of income that is aspirational for many other African countries.

Resource Endowment

Trends and patterns of industrialization are strikingly heterogeneous across resource groups. Different trajectories emerge when the evolution of manufacturing value added is expressed in terms of overall GDP and a disaggregated component of GDP, non-oil GDP (Figure 1). This distinction is important, given that the challenges to industrialization are likely to vary between resource-rich economies, especially oil exporters, and non-resource rich economies. When industrialization is measured by the share of manufacturing value added in non-oil GDP, manufacturing value added as a share of GDP has been rising in non-oil economies. When expressed as a share

Figure 1. Manufacturing Value-Added Shares in GDP and Non-Oil GDP in SSA Economies



of overall GDP, there is a weak semblance of an inverted U-shaped relationship between manufacturing value added and the level of income, indicating that, even as a share of GDP, manufacturing value added has increased steadily in non-oil economies. The narrative of premature deindustrialization is debunked even more strongly in the case of non-oil economies.

Recent industrialization experience projects optimism in a some countries

More recently, growth-promoting structural change has been noteworthy in a few SSA economies with nascent manufacturing sectors, especially in Burkina Faso, Cameroon, Ethiopia, Ghana, Malawi, Nigeria, Rwanda, Senegal, and Tanzania. An evaluation of the trends in alternative indicators of industrialization—including the absolute size of manufacturing value added, share of manufacturing exports, and absolute size of manufacturing employment—shows that the region is indeed industrializing. SSA experienced an increase of 148 percent in manufacturing employment, from a total of 8.6 million in 1990 to 21.3 million in 2018.⁴ Hence, manufacturing jobs have been increasing, adding millions of jobs to the sector.

SSA countries have had a variety of experiences, and clear evidence of premature deindustrialization in the region, overall, is lacking. Yet many countries have not undergone the kind of successful structural transformation associated with sustained economic growth and job creation large enough to have a significant impact on poverty reduction. The significant difference in industrialization trends documented across countries suggests that while the prospects for successful job creation and a structural transformation through manufacturing remain viable in the region, they are bound to differ significantly—along several dimensions including country size, resource endowment, current industrial base, and comparative advantage. These factors necessitate a rethinking of industrial strategies in country-specific contexts and the current environment of changing technologies and shifting globalization patterns.

The Size-Age-Employment-Productivity relationship in manufacturing

Size: Small-sized firms generated much of the recent job growth in manufacturing. Most of these firms are informal, produce for the domestic market, and experience very small or no productivity growth. On the other hand, larger manufacturing firms exhibit superior productivity performance but do not expand employment much. The poor employment outcome of larger manufacturing firms in the region is attributed to the use of capital-intensive techniques associated with global trends in technology.⁵

Efforts to boost industrialization in the region should address the challenge of how to increase the productivity of small low-productivity firms and how to encourage large firms to create more jobs both directly and indirectly through linkages to other firms.

Age: New entrants and young firms have been the main drivers of job growth in manufacturing in SSA. Job growth is lowest among old or continuing establishments. In Ethiopia, for instance, there has been a growing concentration of manufacturing jobs in younger establishments, and this pattern is evident, sector-wide. This pattern which began about 2009 was so strong that by 2016 job growth was fastest among younger firms. And, there was no observed job growth among establishment groups that were older than 20 years. Similar evidence is reported in developing countries such as South Africa, Côte d'Ivoire, and Vietnam.⁶

Caution is required here not to take the wrong policy implication from the Size-Age-Employment-Productivity dynamics observed in the sector. The policy takeaway, often widely advocated, is to support small firms even at the cost of larger firms due to the favorable employment gains. However, that may be the wrong policy implication. Larger firms often account for a larger share of exports and hence economic growth, though they are slow to raise employment. In addition, large firms could also contribute to faster employment growth with scale, as they expand and take advantage of the inelastic global demand, once a country identifies and expands industries that it has comparative advantage in. Hence, policies directed at fostering productivity in smaller firms while supporting larger firms to expand and benefit from economies of scale in global trade are essential. Rarely do we see evidence of a country registering meaningful industrialization without large, often super-sized firms producing for export. This should be complemented with policies that lower entry barriers, ease labor market rigidities, and reduce other market distortions to promote the rise and growth of new firms.

Competitive unit labor costs, not just low wages are key to attract manufacturing FDI

Rapid productivity growth will be critical for sustaining the job growth in manufacturing over the long term. Evidence of rising unit labor costs⁷ – average cost of labor per unit of output produced—cannot, however, be generalized to all individual countries and is unlikely to be a constraint for manufacturing job creation. There is heterogeneity in unit labor costs across countries in the region. Countries such as Cameroon, Mauritius, Namibia, and South Africa show higher levels of unit labor costs, due to the rapidly rising costs of labor. In coun-

tries including Burundi, Cote d'Ivoire, Kenya, Tanzania, Uganda, and Ethiopia, relative unit labor cost (RULC) is lower than in other developing countries such as China (the manufacturing powerhouse), despite rising wages⁸. Many countries still provide attractive bargains for low-wage manufacturing, even after accounting for current levels of productivity.

Considerable heterogeneity also abounds at the industry level. Across the region, industries that are most competitive in terms of RULCs are resourced-based and less knowledge-intensive manufacturing industries, namely, non-metallic mineral products, food and beverages, leather products and footwear, and wood products. The region is less competitive in high skill-intensive and technology-driven industries such as computing machinery, TV, and communication equipment due to their higher RULC. These high skill-intensive industries have seen improvement in their competitiveness over time, however, showing that, within the overall manufacturing sector, there has been improvement in competitiveness in high value-added industries⁹. Findings both from the firm Age-Size-Employment-Productivity studies and on the dynamics of RULCs underscore the central policy imperative to boost productivity, both within-the-firm and across industries and sectors by reducing resource misallocation, facilitating the reallocation of resources from low to high productivity sectors and industries, and supporting existing firms.

Higher GVC participation provides opportunities for Industrialization

Africa's participation in manufacturing GVCs¹⁰ is greater than 40 percent, 2 percent less than the World and East Asian average, and about 7 percent higher than

the South Asian and Latin America average (Figure 2). Between 1990 and 2015, participation in GVC in the region increased by 8 percentage points, from 34 to 42 percent, while it increased by about 7 percentage points in both East and South Asia and 4 percentage points in Latin America. This points to a stronger organization of the region's trade along value chains. Participation however has been uneven across industries, firms, tasks, and resource rich and resource poor country groups.

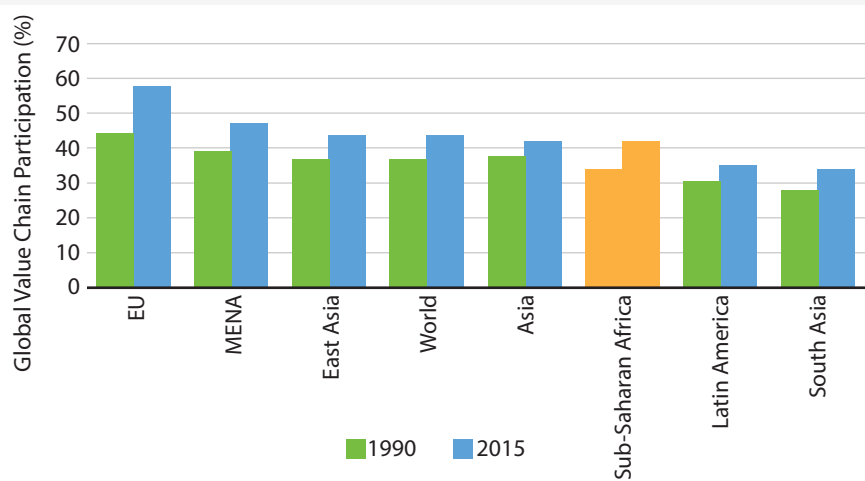
Africa's high integration in GVC is in tasks that are predominantly labor-intensive and natural resource-intensive. Short-term strategies should target resource-based industrialization by exploiting current comparative advantages and transition into high value-added tasks and industries in the medium to long-term.

Tasks: Africa's integration into manufacturing GVC is more pronounced in forward participation, dominated by activities in low-skilled tasks and exports of primary products and basic inputs such as extraction and the export of raw materials—crude oil, natural gas, minerals, and in the light manufacturing industries, such as food and beverages and textiles and apparel (Figure 3). This suggests the need for strategies to move up their positions in the respective value chains as well as upgrading into higher value added and knowledge intensive industries in the value chain for better value capture and industrialization opportunities while creating the environment for manufacturing activities that facilitate more backward linkages.

Resource endowment: The substantially higher GVC linkage rates in the resource-rich country groups, consists of two groups, namely, oil exporters, and non-oil

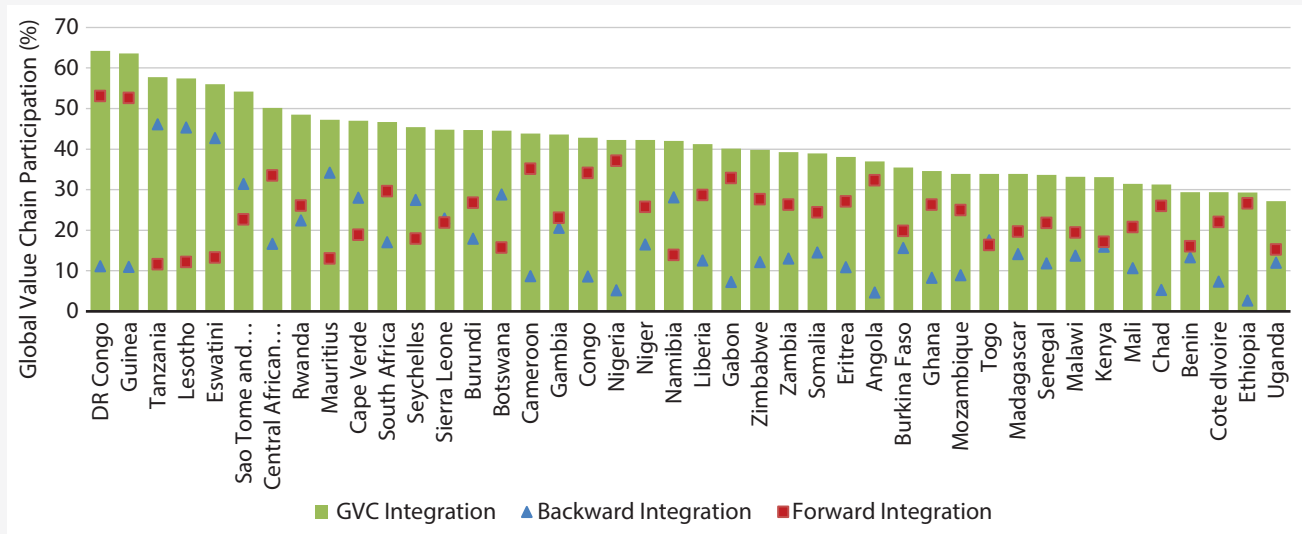
(non-oil minerals and metals) exporters, and is driven by commodity exports. Manufacturing GVC participation rate of oil exporters was 59 percent, 14 percentage points higher than the participation rate of the group of minerals and metals exporters and 22 percentage points higher than the participation rate of the non-resource-rich group. These are high rates even when compared with the average for the benchmark group of countries (Bangladesh, Cambodia, Indonesia, Vietnam) (Figure 4). Linkage rates have, however, declined steeply in recent years in oil-exporting and non-re-

Figure 2. SSA's GVC integration compared to the world, 1990-2015



Source: Staff calculation based on UNCTAD-Eora GVC Database

Figure 3. SSA's GVC integration patterns, 2015



Source: Staff calculation based on UNCTAD-Eora GVC Database.

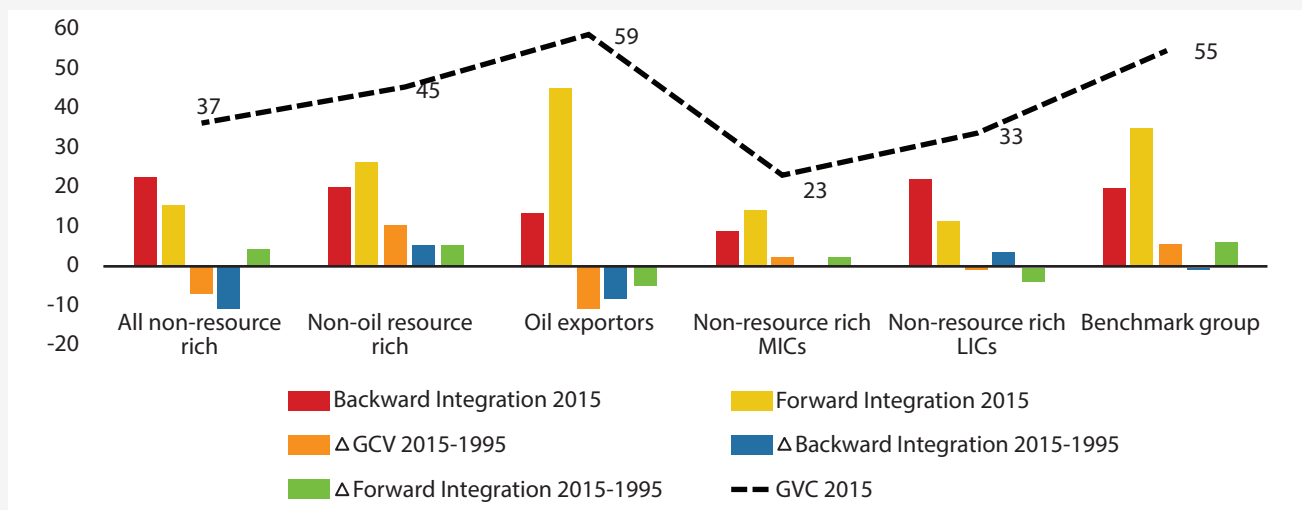
source rich country groups while it has risen sharply in the group of non-oil resource rich (minerals and metals exporters). The observed pattern suggests a stronger integration of the minerals and metals exporting countries in the region in manufacturing GVC in recent years. The existing comparative advantage in GVC participation is predominant in forward integration, providing guidance for policy to deepen such links, strengthening and upgrade them along the value chains using selective local content rules, and conditioning resource seeking FDIs on simplified technology and skills transfer.

market economies should form an integral part of policy configurations to boost industrialization through GVC

Within the African region, trade integration has been weak. Intra-regional GVC activities and value-added trade activity cumulatively accounted for an average of less than 2 percent of total manufacturing output value (Figure 5). However, there are some promising prospects for building intra-regional value chains. Distance, trade agreements, and proximity to countries that have a strong industrial base play key roles in these prospects.

Expanding market access to advanced and emerging

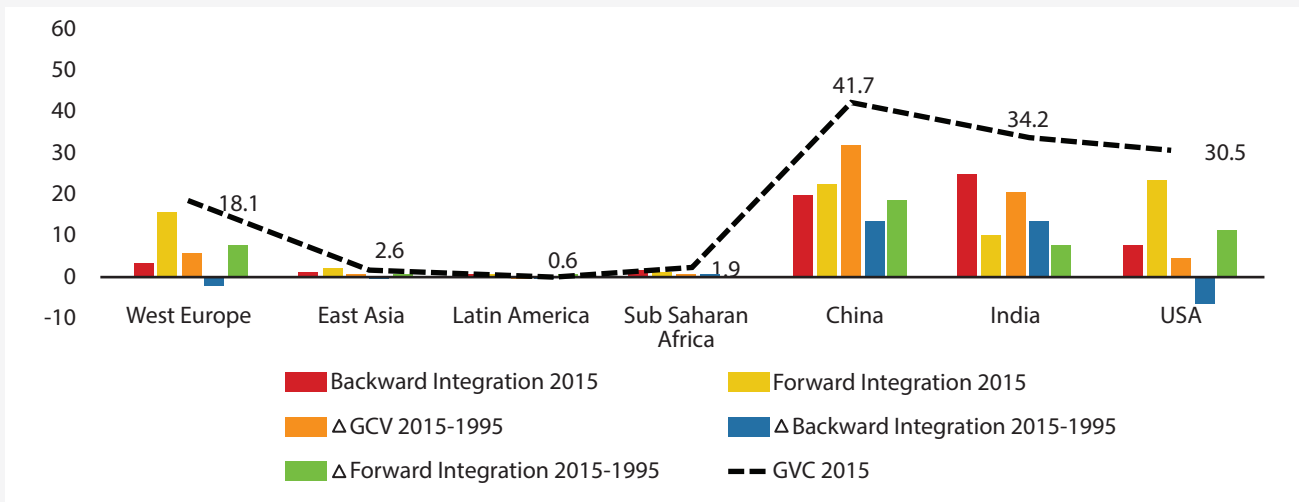
Figure 4. Links to manufacturing GVC, by resource group



Source: Staff calculation based on UNCTAD-Eora GVC Database.

Note: GVC = global value chain; LICs = low-income countries; MICs = middle-income countries

Figure 5. Links to manufacturing GVC with partner countries, 2015



Source: Staff calculation based on UNCTAD-Eora GVC Database
 Note: GVC = global value chains

For instance, countries in the Southern Africa Development Community (SADC), and close to South Africa have strong manufacturing GVC linkages, sourcing substantial amounts of foreign value added from South Africa.

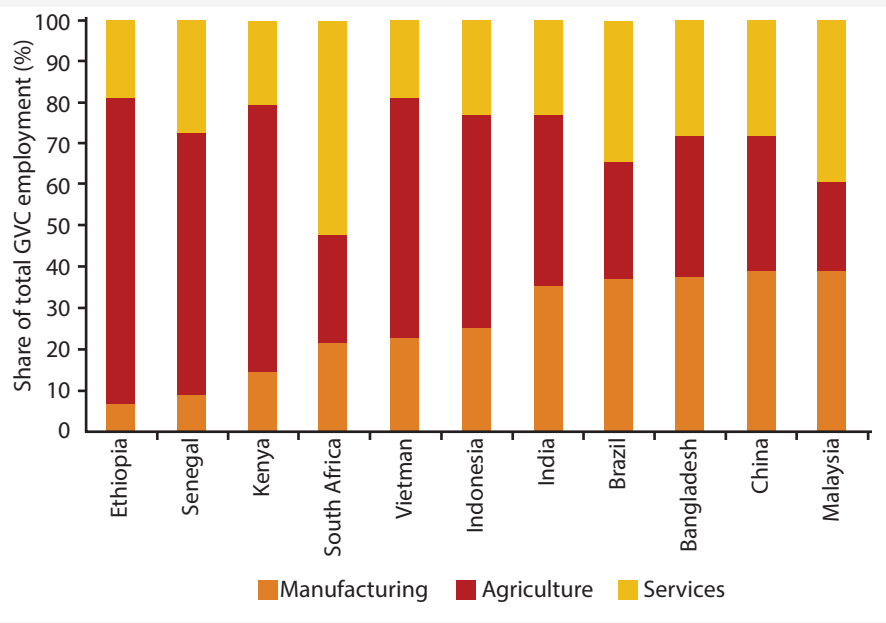
Outside Africa, the EU, China, India, and the US have generally been SSA's strongest partners in manufacturing GVC trade. Overall GVC trade with these key trading partners increased during the period 1995-2015. However, the region's backward integration with the EU and the US with regard to sourcing intermediate goods has declined while it has risen with China and India (Figure 5), suggesting an important shift in global trade and the need to re-orient SSA's trade and industrialization strategies toward Asia while improving the utilization of preferential trade agreements with the US and EU.

Jobs and productivity growth requires further GVC integration

Source of job growth in manufacturing GVC: The manufacturing sector of all countries, including those in Africa, have benefited from the expanding GVC participation to grow jobs. Growing global demand has been the key source of job

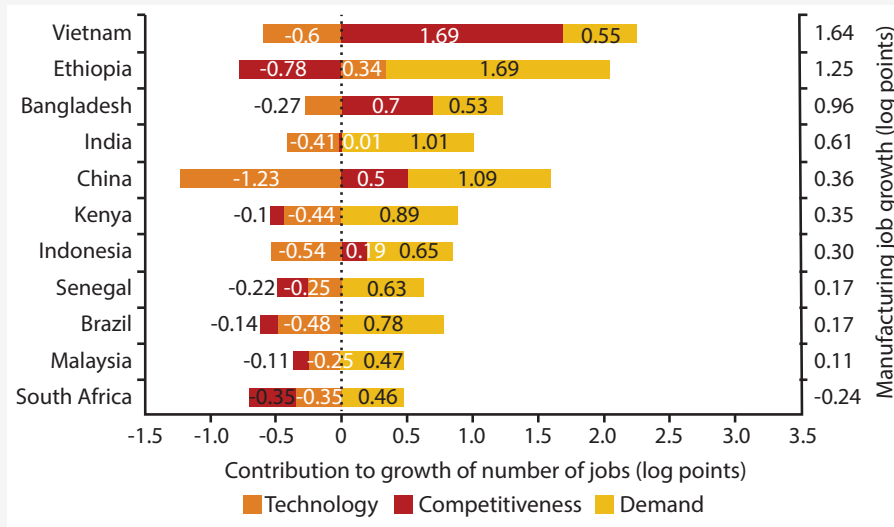
growth in manufacturing GVC but has been weakened by loss of competitiveness and use of labor-saving technologies in the organization of manufacturing GVC. In South Africa, a total of 629,000 manufacturing GVC jobs were created in 2014. This represents 40 percent of the share of total GVC jobs created that year. In the same year, Senegal and Ethiopia recorded 24,000 and 150,000 manufacturing GVC jobs, from 3,000 and 150,000 manufacturing GVC jobs in 2000, respectively (Figure 6). Despite impressive GVC job gains, the aver-

Figure 6. Number of workers in GVC by sector of employment, 2014



Source: Staff based on Pahl et al., 2019

Figure 7. Drivers of manufacturing GVC job growth, 2000–2014



Source: Staff based on Pahl et al., 2019

mediate and final manufacturing products to create more GVC jobs. In this strategy, fast-growing end markets for manufacturing products such as the EU are as crucial as domestic home demand. In Ethiopia, about 59 percent of manufacturing GVC value added ended up in products consumed at home while about 13 percent, 4.2 percent and 4.7 percent ended up in the EU, US, and Chinese markets, respectively. Similar trends are observed in other SSA and comparator developing countries. The establishment of the continental free trade area provides a new market avenue to expand GVC and GVC related manufacturing jobs.

age share of formal manufacturing GVC jobs created among countries in SSA (15 percent) is lower when compared with other developing countries, such as Bangladesh, Brazil, China, India, and Malaysia where the share of formal manufacturing GVC jobs is above 35 percent.

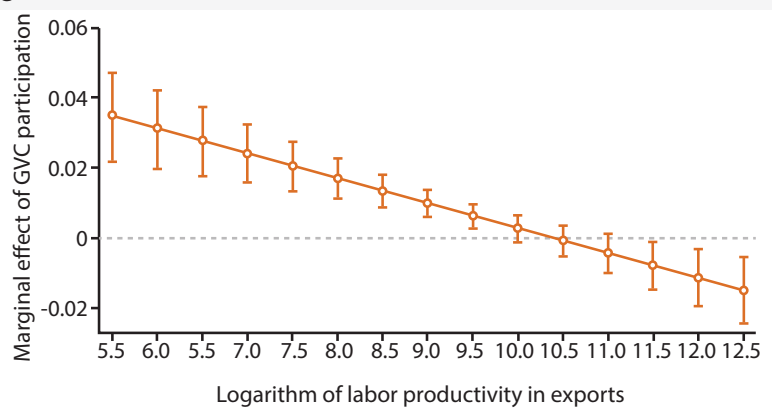
GVC jobs created in agriculture and services among SSA countries were even higher. GVC jobs in the agriculture sector were responsible for about 2.5 million jobs in Ethiopia, 1.3 million in Kenya, 171,000 in Senegal, and 781,000 in South Africa. These numbers accounted for more than 60 percent of total GVC jobs created in these countries in 2014. In the services sector, a total of about 586,000 (18 percent) GVC jobs were created in Ethiopia, 395,000 (20 percent) in Kenya, 55,000 (21 percent) in Senegal, and 1.3 million (45.6 percent) in South Africa.

Similar to comparator developing countries, the job growth in manufacturing GVC in SSA has been weakened by two proximate factors, namely; the loss of competitiveness and the decline in the labor inputs in the value chain, partly arising from the adoption and use of labor-saving technologies in the organization of GVC—particularly, amongst workers performing the routine task at the bottom of the value chain (Figure 7).¹¹

The finding underscores the urgent need for SSA to target entering and expanding activities in high-growth end markets and improve their share in serving those markets while increasing value added in inter-

Productivity growth: There is robust evidence on the productivity-enhancement effect of manufacturing GVC participation in SSA. Comparing productivity across two groups of countries based on their classification into low GVC participation (countries with linkage rate at the 25th percentile) and high GVC participation rates (countries with linkage rate at the 75th percentile) shows that, higher productivity is linked to higher GVC participation. A one percent increase in GVC participation is associated with a 0.8 percentage point increase in the growth rate of labor productivity if a chain increases its participation from the 25th to the 75th percentile. Productivity gains are much stronger for those countries that are further from the productivity frontier (Figure 8).

Figure 8. GVC participation and manufacturing labor productivity growth



Source: Staff based on Pahl and Timmer 2020.

EMERGING CHALLENGES AND OPPORTUNITIES

Covid-19 response provided opportunities to build manufacturing capabilities

Countries with stronger manufacturing sector before the pandemic weathered the crisis better (Figure 9). Structural factors played a key role including industry composition and existing industrial capabilities. Countries with specialization in labor-intensive manufacturing industries were more vulnerable to the shock and showed slow rates of recovery whereas countries with relatively stronger industrial capabilities and advanced digital systems were able to build resilience¹².

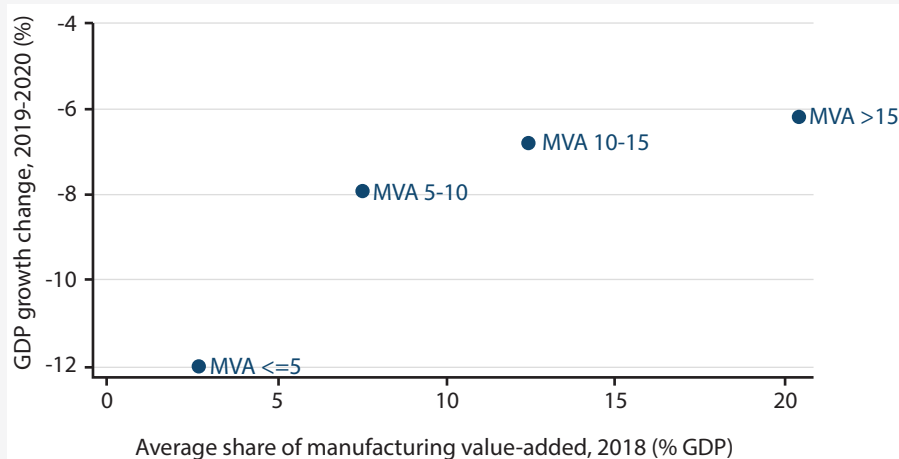
Firms with highly diversified supplied chains and upstream diversification experienced stronger and rapid recovery. At the firm level, the pandemic tested the resilience of supply chain structures. Firm dynamics, as well as nature of integration played a key role in the firm's response to the covid crisis. Average sales of firms in Kenya dropped by 56% in April 2020 relative to January 2020, even after taking into account seasonal fluctuations. Average sales of direct exporters, however, dropped by 39% and less so for firms with indirect linkages to import markets (20%) during the peak of the Covid crisis. Firms with a more diversified supplier and/or buyer fared better during the peak of the crisis. For instance, firms with a highly diversified domestic buyer base on average lost 4% less of their sales relative to

their less diversified peers while upstream diversification enabled a stronger recovery.¹³ The findings call for policies that support upgrading into higher value-added value chains as well as interventions that lower barriers to entry into GVCs and make it easier for firms to form broader value chain networks.

The covid-19 pandemic exposed SSA's weak pharmaceutical capabilities but investment in pharmaceutical manufacturing could drive industrial capabilities in the region.

The pandemic has strengthened synergies between industrialization and public health. Domestic suppliers in countries with high industrial capabilities were able to jumpstart and increase the production of essential medical goods to address initial shortages of essential health goods. The important role of manufacturing in the fight against the pandemic makes a strong case for the need to back SSA's industrialization agenda. Africa imports about 94% of its pharmaceutical and medicinal needs from outside the continent at an annual cost of US\$16bn.¹⁴ The slow deployment of covid vaccines during the pandemic further exposed the region's vulnerability to over-reliance on the rest of the world for its pharmaceutical and medicinal needs. Initiatives such as the Pharmaceutical Manufacturing Plan for Africa, rolled out in 2005 by the African Union Development Agency; and the more recent initiatives from the African Medicines Agency and the African Vaccine Regulatory Forum; and the African CDC¹⁵ are expected to play a dual role, first, to promote pharmaceutical manufacturing and, second, play a strategic role to drive industrial capabilities in the region. However, this should be looked at in a broader context where the arguments for vaccine manufacturing should supersede any other precedent for other industries and manufacturing of other health related industrial activities.

Figure 9. Countries with stronger manufacturing systems weathered the crisis better



Source: Staff elaboration based on World Bank WDI

Note: MVA<=5 is all countries in the WDI database with manufacturing value-added less than 5 percent, MVA 5-10 is all countries in the WDI database with manufacturing value-added between 5-10 percent, MVA 10-15 is all countries in the WDI database with manufacturing value-added between 10-15 percent, MVA > 15 is all countries in the WDI database with manufacturing value-added greater than 15 percent.

Global geographic diversification of GVCs could boost Africa's industrialization prospects.

The combination of global trade-policy shocks and the enduring concerns from the pandemic and emerging geopolitical tensions have created uncertainty about the future of trade, resulting in a rethinking of GVCs, possibly leading to a shift in sourcing locations. This potential restructuring in GVC, biased towards resilience and hence diversification of GVCs

may reduce the risk of supply chain disruptions. Before the Covid crisis, manufacturing GVC was largely concentrated in East Asia, particularly China. Bangladesh and Vietnam continue to benefit from this shift and with the right policy and business environment, African countries could present a viable alternative to attract some of these investments. According to a 2019 survey that tracks U.S. sourcing executives' plans for textile and apparel manufacturing, the major factors that determine sourcing include¹⁶: (i.) speed to market; (ii.) production and sourcing cost, including labor cost and access to cheaper yarns and fabric produced locally; (iii.) flexibility and agility with respect to quickly adjusting the delivery, volume, and products based on requests; and (iv.) risks of factory, social, and environmental compliance. Policy reforms that address these key challenges could better position SSA countries as attractive destinations for firms seeking to relocate manufacturing in response to the crisis. SSA could leverage AfCFTA to maximize the gains from any such rebalancing in the global production network.

Within Africa, AfCFTA offers a rare opportunity to stimulate industrial development through developing stronger regional value chains (RVCs) and local production. The proposal to leverage AfCFTA to develop stronger RVCs is important for many reasons. First, gains from RVCs are less concentrated—firms entering such supply chains face fewer barriers and have better opportunities for higher value capture and upgrading. Developing stronger RVCs and local production is essential to cater to the rising domestic consumer demands from the region's rising middle class, especially in urban areas. RVCs are also expected to play a key role in driving a greater degree of specialization, more production, processing, and higher-value exports from the region. The Covid-19 pandemic has caused major disruptions to trade across the continent, including in critical goods such as medical supplies and food. By increasing regional trade, lowering trade costs, and streamlining border procedures, full implementation of AfCFTA would help SSA countries develop a stronger industrial base to increase their resiliency in the face of future economic shocks¹⁷.

The success of industrialization depends on managing the climate transition

The transition towards a greener economy is a global priority with significant implications on manufacturing production and trade in Africa. The region faces a disproportionate level of climate risks, despite contributing less than 4 percent in total global emissions. The productive capacity of SSA is tied to climate change due to the high degree of commodity dependence and eco-

nomically vulnerable to climate change. About 95 percent of agriculture in Africa is rain-fed. The large share of agriculture in the region's employment and GDP add to this vulnerability. In addition, changing consumer demand for more sustainable products in key export markets poses a challenge. Whether Africa can meet the challenge of mitigating climate change while simultaneously ensuring its industrial development is the challenge of our time. Nonetheless, it also provides opportunities for many African countries while it poses significant risks for countries that depend significantly on carbon intensive resources.

Concerns: The push for green manufacturing and mitigation and introduction of stringent environmental regulations in the value chain and preferential trade agreements¹⁸ could constrain Africa's industrialization prospects through value chains by limiting export opportunities, creating barriers to entry and stifling value chain rents. Exports from SSA are largely resource-based, often from extractive resources such as minerals and fossil fuel.¹⁹ Policies such as the European Union's (EU) carbon border adjustment measure (CBAM) could reverse the region's gains from such exports, which are carbon intensive. The transition to green manufacturing and value chains is also expensive, largely labor-saving and requires huge investment in capabilities to compete. Many African countries face a transition lag both in terms of the infrastructure and capabilities as well as the fiscal space to finance the transition. As it stands now, the decline in investment prospects on current sources of energy for industrialization including coal, gas and other fossil fuels will affect manufacturing activity negatively.

Opportunities and pathways

The greening of manufacturing provides an opportunity for SSA to invest in climate smart manufacturing and diversify away from commodity dependence for upgrading opportunities in GVC. This offers promising opportunities to improve competitiveness, efficiency, and higher value-added which are all preconditions for successful value chain integration. In the short term, policy should focus on specialization in green industrial sectors based on existing comparative advantages and pre-existing capabilities in those sectors, scale such efforts and gradually shift to new productive and innovative green industries in the long term. Complementary policies are needed to alter the consumption patterns of consumers and provide incentives to firms to introduce low-carbon innovations and improve resource efficiency in their production processes to an extent that aligns with the goals of the green industrial policy. The implementation, success, or otherwise of such policy effort hinges significantly on the country's context in terms of initial production structures, pre-existing capabilities, comparative advantage, and development needs.²⁰

The global greening of economies also creates opportunities to adopt new technologies, which may give rise to new opportunities to turn natural wealth into capital²¹. The Congo Basin in Central Africa is a global hotspot for biodiversity covering about 70 percent of Africa's forest. Although gradually depleting in recent years, the region could translate this natural resource wealth into "revenue streams, locally, national and globally"²². Hydrogen, an alternative new energy source is expected to transform industrial production and supply chains. Currently, many Africa countries including, oil resource rich countries are almost entirely dependent on imported fuel and diesel. Hydrogen could be the path to energy independence. It can be used to generate electricity using fuel cell to power homes, vehicles and other energy dependent processes. Africa is well positioned to lead the global transition to hydrogen energy. Several African countries in the Northern and Southern Tropics have huge solar and wind resources. The Congo and Nile have a large untapped hydropower potential and countries such as Angola, Algeria and Nigeria have the world's largest gas reserves while the world's largest green ammonia plant is currently under construction in South Africa²³. Angola is on the verge of becoming a supplier of hydrogen to Germany and South Africa has experimented with running remote villages on hydrogen generators and some mining companies are considering exploring its use. Other countries such as Namibia, Mauritania have also developed roadmaps to develop their hydrogen potential²⁴. If properly managed, Africa could develop a future of energy that is both renewable and profitable. Huge international infrastructure pipeline investments – for example through repurposing current pipelines for transporting natural gas is needed to unlock the potential and launch Africa's hydrogen trade to power homes, businesses, vehicles and green industrial development in the region.

CONCLUSION

The prospects for industrialization in African countries depend on their capacity to participate and upgrade in manufacturing GVCs and are bound to vary across countries based on resource endowments, geography, and current levels of industrialization. Building that capacity, however, requires an appropriate industrial policy package that combines trade policies, policies to build selective production and technological capabilities, and an active prioritization of selected manufacturing industries. The mere availability of cheap labor and free trade won't make the development of a globally competitive manufacturing sector inevitable. Industrialization requires strategic coordination between private and public sector investments, that could only be achieved with deliberate policy coordination. Extensive investments in

infrastructure, human capital, and institution building are essential. However, given financing and capacity constraints there is a need for selective and complementary investments focused on supporting the development of high growth industries along the comparative advantage of economies in the region.

The overall policy framework can be characterized by four pillars: Integrate, Compete, Upgrade, and Enable. The integrate and upgrade pillars capture policies that promote GVC participation as well as overall integration into regional and global economies through trade and investment with a continuous process of upgrading into higher value added activities, industries and sectors. Industrial policy must shift from the traditional stance aimed at developing entire industries domestically to one that focuses on continuously moving into higher-value-added tasks associated with existing comparative advantages. Success in GVCs requires easy and cheap access to imports of essential intermediate inputs. Therefore, industrial policy should address the challenges associated with the cost of importing intermediate goods, which could impede competitiveness. Conditions for FDI and trade should incorporate mechanisms to transfer technologies and improve the lots of domestic firms to link with multinationals and exporting firms. Success to export markets is crucial, either through increased utilization of existing agreements with traditional export markets such as the US and the EU; or expanding and diversifying export markets to fast rising Asia. Deepening of regional trade within Africa is essential to develop economies of scale both in production and size of markets in order to raise participation in GVCs and attract large scale FDIs.

The compete pillar is the set of policies aimed at reducing market distortions to facilitate the entry, survival, and growth of new establishments, and comprises reforms of state owned enterprises (SOEs) and credit markets, and improvement of the investment climate. Policies should aim to reduce the costs of entry by easing regulatory barriers to entry and minimizing the distortions in allocation associated with state-owned and state-affiliated incumbent firms. All kinds of firm support should be incumbent on time-fixed returns either in terms of export or other indicators of success.

The enable pillar is the set of policies that support and promote investment in enabling sectors, including digital infrastructure, energy, finance, transportation and logistics, and skills development. These sectors are cross-cutting in nature and capable of improving productive and absorptive capacities in agriculture and services, strengthening their links with manufacturing, and supporting inclusive and better job creation. For example,

workers skills bundle plays a critical role in countries' industrial specialization and integration into GVCs. Thus, coordinating and aligning industrial and trade policies with education and skills enhancement programs is key to taking advantage of existing comparative advantag-

es and continuously upgrade into higher value added industries and sectors. Complementary investments should also be geared towards supporting the rise and growth of selected industries, and not indiscriminately.

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ENDNOTES

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³ Kruse, H., Mensah, E., Sen, K and de Vries, G. 2022. A manufacturing (re)naissance? Industrialization in the developed world. *IMF Economic Review*.

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⁶ Moretto, D., M. Weber, and R. Aterido. 2018. Pathways to better jobs in IDA countries: Findings from jobs diagnostics. Washington, DC. World Bank.

⁷ Unit labor cost is the average cost of labor per unit of output produced. It simultaneously accounts for changes in wages and productivity as a key source of competitive advantage in labor-intensive manufacturing.

⁸ Naidoo, K and Ndikumana, L. 2020. Unit labor costs and manufacturing sector performance in Africa. University of Massachusetts Amherst. Economics Department Working Paper Series.

⁹ Ibid, Naidoo, K and Ndikumana, L. 2020.

¹⁰ The GVC participation index is made up of two components. First, the share of foreign value-added used in a country's export (backward GVC participation) and second, the share of a country's domestic value-added that enters as inputs in the exports of other countries (forward GVC participation). The sum of the two components gives the aggregate GVC participation index. The index ranges between 0-1, with higher values indicating higher GVC participation.

¹¹ This refers to the loss of income shares generated from the global demand for global manufacturers.

¹² [UNIDO Industrial Development Report: The Future of Industrialization in a Post-Pandemic World](#). 2022. United Nations Industrial Development Organization (UNIDO).

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