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Africa's Pulse

APRIL 2019 | VOLUME 19

AN ANALYSIS OF ISSUES SHAPING AFRICA'S ECONOMIC FUTURE

WORLD BANK GROUP

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Executive Summary

- Economic growth in Sub-Saharan Africa is estimated to have decelerated from 2.5 percent in 2017 to 2.3 percent in 2018, below the rate of growth of the population for the fourth consecutive year, and 0.4 percentage point lower than projected in the October 2018 issue of *Africa's Pulse*. This slowdown was more pronounced in the first half of 2018 and reflected weaker exports from the region's large oil exporters (Nigeria and Angola), due to falling oil production amid higher but volatile international crude oil prices. A deeper contraction in Sudanese economic activity, and a slowdown among non-resource-intensive countries, also played a role.
- Recent data point to a moderate strengthening of growth in the region. Growth is projected to pick up to 2.8 percent in 2019 and 3.3 percent in 2020. This gradual recovery is supported, on the demand side, by exports and private consumption and, on the supply side, by a rebound in agricultural production and an increase in mining production and services in some countries. The 2019 and 2020 growth forecasts are still 0.5 and 0.3 percentage points, respectively, lower than predicted in the October issue of *Africa's Pulse*. This downward revision reflects slower growth in Nigeria and Angola, due to challenges in the oil sector, and subdued investment growth in South Africa, due to low business confidence.
- The external environment facing Sub-Saharan Africa continues to be challenging, as economic activity in advanced economies and emerging markets and developing economies (EMDEs) continues to decelerate, global industrial production declines, and global uncertainty related to trade disputes between the United States and China remains high. Although most industrial commodity prices recovered in the first three months of 2019, following sharp declines in late 2018, and the prices of metals and agricultural commodities are expected to stabilize, the oil market outlook remains highly uncertain and dependent on whether the production cuts among the Organization of the Petroleum Exporting Countries and its partners will be extended. Financing conditions have eased for EMDEs, as the U.S. Federal Reserve paused its policy rate increases.
- To make their economies more resilient to risks in a challenging external environment, African countries need to strengthen domestic conditions. These conditions have weakened and contributed to the mediocre growth performance—especially among the region's largest economies. For instance, macroeconomic policy frameworks remain a concern, as some countries have not yet reconstituted an adequate fiscal space, have a costlier and riskier debt profile, and still register large current account deficits and double-digit inflation rates. Low business confidence, partly driven by the slow pace of structural reforms, is holding back investment growth in some countries, as is the case of South Africa. Regulatory uncertainties are adversely affecting the oil sector in Angola and Nigeria.
- Significant heterogeneity persists in the region. Among resource-intensive countries, economic activity accelerated in some metals exporters, thanks to an increase in mining production amid improving commodity prices and a rebound in agricultural production and public infrastructure investment (the Democratic Republic of Congo, Guinea, Niger). Growth in other metals exporters remains subdued, as high inflation and high debt levels weigh on investor sentiment (Liberia and Zambia). The recovery in the Central African Economic and Monetary Community subregion has continued, although it remains fragile, as fiscal consolidation efforts were relaxed in some countries.

Among non-resource-intensive countries, growth remains robust but decelerated in several economies in 2018, due to a wide array of factors, including foreign exchange shortages (Ethiopia), slow credit growth to the private sector (Tanzania), falling output in the cash crop sector (Côte d'Ivoire), and macroeconomic instability (Sudan).

- External and domestic risks to the regional growth outlook are tilted to the downside. On the external front, the main downside risks are a sharper than expected growth slowdown in the United States, the euro area, and China; a sudden decline in commodity prices; and the escalation of trade tensions between major economies. Domestic risks include weaker fiscal consolidation, greater frequency of extreme weather events, and heightened security issues—especially in countries with fragility contexts.
- Addressing the challenges posed by fragility in Sub-Saharan Africa is crucial to eradicate extreme poverty and boost shared prosperity. More than half of the world's fragile countries are in the region. In 2017, 299 million people lived in countries with fragile situations in Sub-Saharan Africa (about 28 percent of the total population), and economic activity in these countries amounted to US$289 billion (nearly 17 percent of the region's gross domestic product). Fragility conditions are weighing on economic growth in the region. Fragile states held back growth in the region by 0.52 percentage point per year during 2015–18. Hence, the drivers of fragility may pull down economic growth by 2.6 percentage points over a five-year period.
- Fragility is a multidimensional and complex problem. Fragile situations include countries and territories where policies and institutions are weak and not functioning well enough to secure peace and stability and deliver basic services, such as security, health, and education. Fragile contexts include places where climate change is fueling conflict between communities and places at war within or across their borders. Conflict is no longer confined to communities, ethnic lines, or national borders, and it can potentially affect a larger number of people. Africa's borders are typically porous and almost impossible to control, due to weak state institutions, small armies, and poorly funded police forces.
- Tackling the factors that cause fragility is essential to economic recovery for many countries in Sub-Saharan Africa. The successful transitions out of fragility in the region have been characterized by stronger institutions, enhanced policy environments, and improved services delivery. These efforts led to stronger growth and a more attractive climate for private investors (Ethiopia and Rwanda). However, as the drivers and nature of fragility evolve, the approach to overcome it becomes more complex. It increasingly requires collective solutions. Regional and sub-regional institutions and/or arrangements are needed to address peace and security challenges as well as economic spillovers that go beyond national borders.
- The special topic of this issue of *Africa's Pulse* argues that the digital economy can unlock new

pathways for inclusive growth, innovation, job creation, service delivery, and poverty reduction in Africa. The continent has made great strides in mobile connectivity; however, it still lags the rest of the world in access to broadband. Only 27 percent of Africa's population has access to the internet, few citizens have digital IDs, businesses are slowly adopting digital technologies, and only few governments are investing strategically in developing digital infrastructure, services, skills, and entrepreneurship.

- The digital transformation of Africa would foster economic growth and reduce poverty. It has the potential to create more jobs, encourage entrepreneurship among the youth, increase farmers' productivity, bring more women into the labor force, and create markets. Reaching the Digital Economy Moonshot Initiative targets would raise growth per capita by 1.5 percentage points per year and reduce the poverty headcount by 0.7 percentage point per year. The potential growth benefits and poverty reduction effects are larger in Sub-Saharan Africa, and especially among fragile countries. When complemented with appropriate human capital investments, these effects could more than double.
- Access to broadband is critical but not sufficient to materialize these digital dividends. The digital economy also requires a strong analog foundation, consisting of regulations that create a vibrant business climate and let firms leverage digital technologies to compete and innovate; skills that allow workers, entrepreneurs, and government officials to seize opportunities in the digital world; and accountable institutions that use the internet to empower citizens.

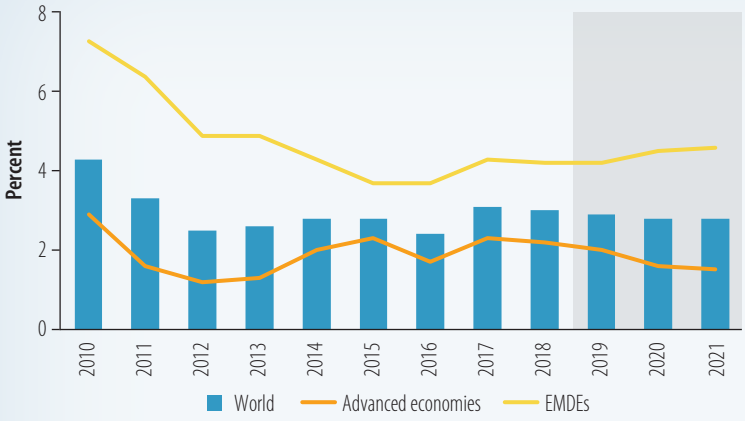
Section 1: Recent Trends and Developments

1.1 GLOBAL TRENDS

The External Environment for Sub-Saharan Africa Remains Challenging, Despite Recent Improvements

Global growth has continued to moderate, amid soft trade and manufacturing activity, reflecting slowdowns in advanced economies as well as emerging markets and developing economies (EMDEs) (figure 1.1A). Growth in the United States has been robust, bolstered by procyclical fiscal stimulus and accommodative monetary policy. However, incoming data point to a deceleration in 2019Q1, as retail sales have been weak, while the post-crisis record U.S. trade deficit suggests that net exports will be a drag on growth. Euro area growth slowed in 2018, with Germany decelerating rapidly at the end of the year and Italy entering recession. The euro area is on pace to decelerate further in 2019. Industrial production has contracted to its lowest level since 2012, and the manufacturing Purchasing Managers' Index (PMI) dipped to a six-year low, with notable weaknesses in Germany and France. In light of weaker-than-expected activity data, central banks in the United States, the United Kingdom, France, and Germany have revised their growth forecasts for 2019 downwards. In China, recent data pointed to a weakening economy, with slowing industrial activity. The authorities committed to moderately expansionary fiscal policy and to prevent a continued buildup of leverage. Major EMDEs, including Brazil, India, Mexico, and the Russian Federation, slowed significantly in the last quarter of 2018, pointing to slowing momentum into 2019.

FIGURE 1.1A: Global Growth

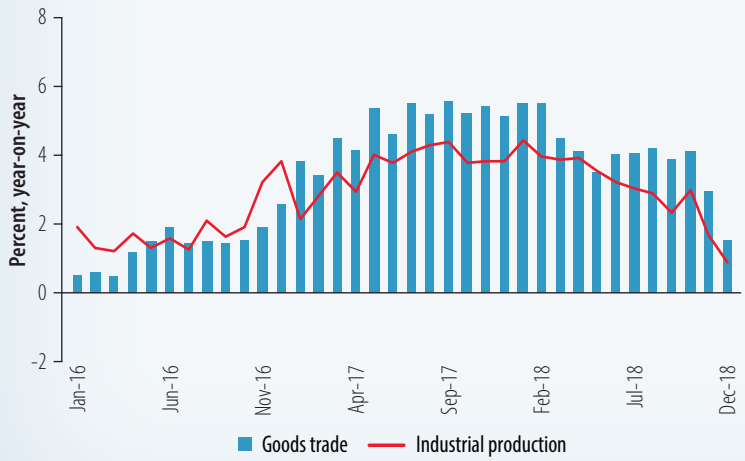


Global growth has continued to decelerate, reflecting slowdowns in advanced economies and EMDEs.

Source: World Bank.

Note: In panel A, the shaded area indicates forecasts; data for 2018 are estimates; and aggregate growth rates were calculated using constant 2010 U.S. dollar gross domestic product weights. EMDEs = emerging markets and developing economies.

FIGURE 1.1B: Industrial Production and Goods Trade



Global trade and industrial production have slowed further.

Source: CPB Bureau for Economic Policy Analysis; Haver Analytics; World Bank.

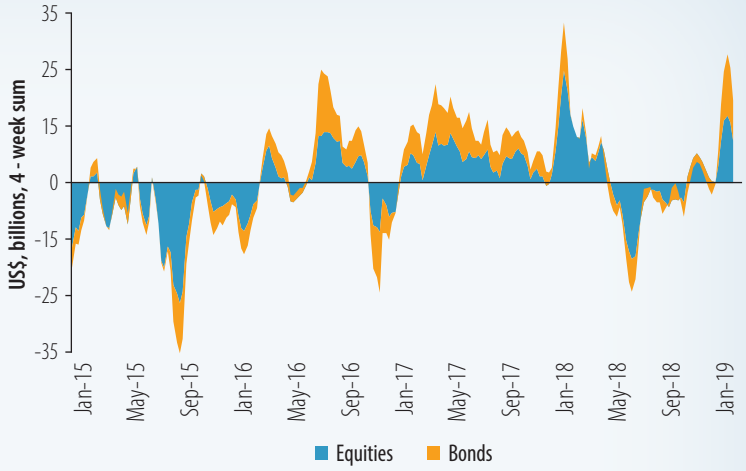
Note: Last observations are December 2018.

Global trade has slowed further. Global goods trade has been stagnating, and the pace of global industrial production growth declined by more than two-thirds over the course of 2018 (figure 1.1B). Several measures of global sentiment have fallen to their lowest levels in years. Policy uncertainty remains elevated, partly due to the prospect of further increases in tariffs, but it has abated in recent months on expectations of a positive conclusion to trade negotiations between the United States and China.

Global financial conditions have improved. Global financial conditions tightened throughout most of 2018, as central banks in many countries raised their policy rates in response to rising inflation. Conditions improved slightly in early 2019, with global equity markets recovering after bottoming out in late December. The recent rally was driven by major central banks' dovish tilt in response to softening growth prospects, including the U.S. Federal Reserve, the European Central Bank, the Bank of England, the Reserve Bank of India, and the People's Bank of China. Shifting market expectations about U.S. and euro area monetary policy contributed to U.S. long-term yields falling back to 2.6 percent at the start of 2019, down from a seven-year peak of 3.2 percent in 2018.

Financial conditions in EMDEs have eased and capital inflows recovered in early 2019.

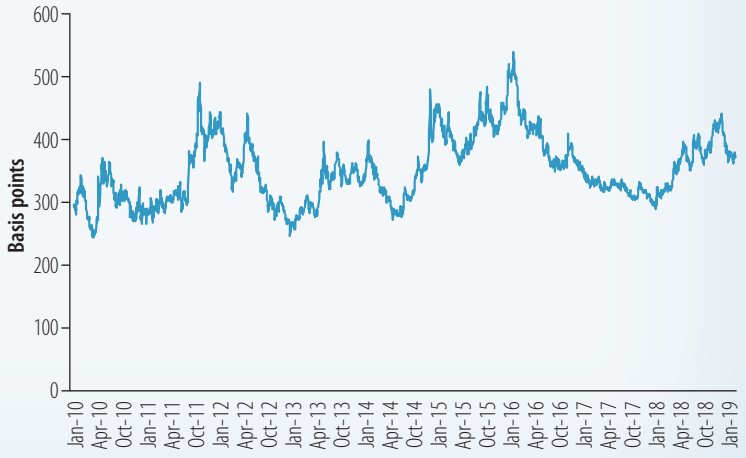
FIGURE 1.1C: Equity and Bond Portfolio Flows



Sources: J.P. Morgan; World Bank.
Note: Latest observation is February 20, 2019.

Global sovereign bond spreads narrowed.

FIGURE 1.1D: Emerging Market Sovereign Bond Spreads



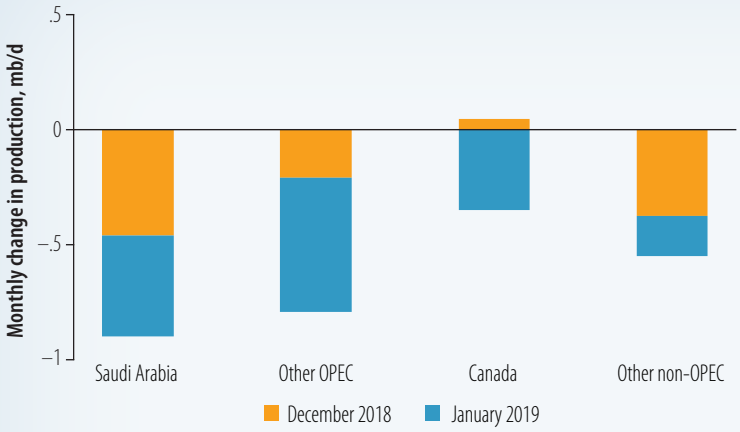
Source: Bloomberg.
Note: Latest observation is February 20, 2019.

Financial conditions in EMDEs have eased. Many EMDEs faced deteriorating market sentiment in 2018, but capital inflows recovered at the start of 2019, boosted in part by declining advanced-economy yields (figure 1.1C). After yields on EMDE debt issued on international bond markets rose about 150 basis points in 2018—the third largest annual increase in the past two decades—sovereign bond spreads reversed and narrowed somewhat (figure 1.1D). EMDE bond issuance remained strong in March, as many corporate borrowers took advantage of more favorable market conditions to tap international debt markets.

Commodity markets are broadly stable. After falling sharply in the fourth quarter of 2018, oil prices have been rising since the beginning of the

year, supported by production cuts by Saudi Arabia and other members of the Organization of the Petroleum Exporting Countries (OPEC), as well as by non-OPEC partners (figure 1.1E). The imposition of sanctions by the United States on the República Bolivariana de Venezuela contributed to a further deterioration in oil supply. The oil market outlook remains highly uncertain and dependent on policy decisions, particularly whether the production cuts among OPEC and its partners will be extended into the second half of 2019. The prices of metals and agricultural commodities fell in the second half of 2018, following the imposition of new U.S. tariffs on imports from China, and have been slowly drifting back up in 2019 on expectations that ongoing negotiations between China and the United States may avert more dramatic increases in tariffs. Supply shortfalls and declining inventories in most metals markets added to the recovery in prices (figure1.1F).

FIGURE 1.1E: Change in Oil Production

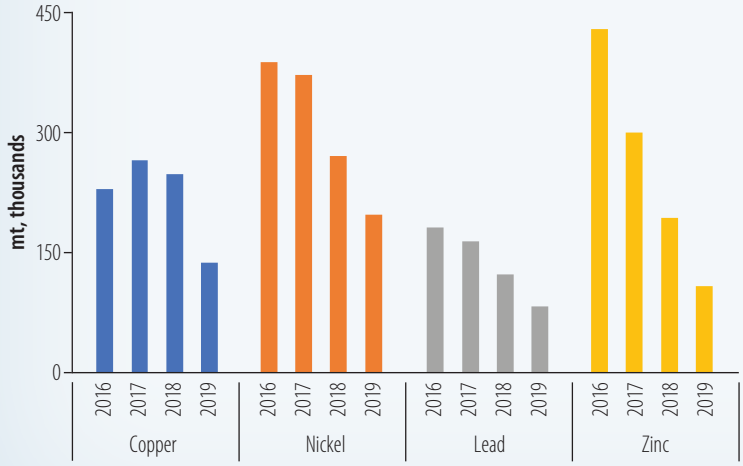


Sources: International Energy Agency; World Bank.

Note: bbl = barrels; mb/d = million barrels per day; mt = metric tons; OPEC = Organization of the Petroleum Exporting Countries.

Oil production cuts and falling inventories in metals markets helped push up oil and metals prices at the start of 2019.

FIGURE 1.1F: Inventories at London Metals Exchange Warehouses



Source: Bloomberg, London Metals Exchange.

Note: Last observation in 2019 is February 28, 2019.

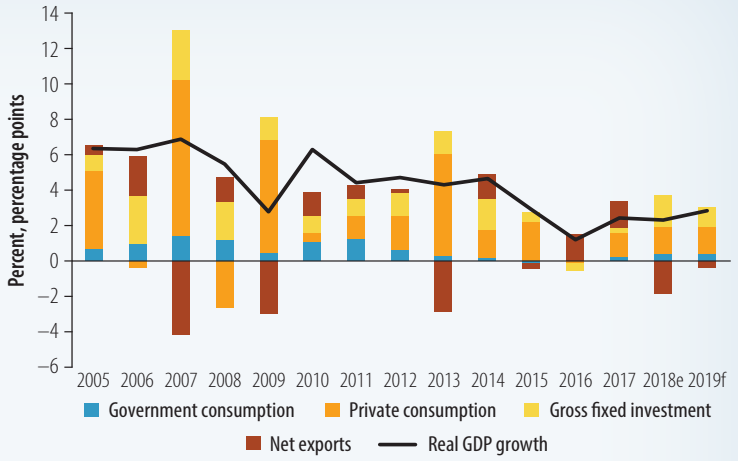
1.2 RECENT DEVELOPMENTS IN SUB-SAHARAN AFRICA

Growth Regained Modest Momentum Following a Slowdown

Growth in 2018 in Sub-Saharan Africa is estimated at 2.3 percent, 0.4 percentage point lower than in the October *Africa's Pulse,* down from 2.5 percent in 2017. The slowdown was notably pronounced in the first half of the year, driven by a sharp decline in net exports (figure 1.2A). This reflected weaker exports among the region's large oil exporters due to stagnant oil production despite higher oil prices. A deep recession in Sudan, underpinned by severe macroeconomic imbalances, and a broad softening in economic activity among non-resource-intensive countries, amid rising debt vulnerabilities, were additional factors contributing to the slowdown.

In Sub-Saharan Africa, growth slowed to 2.3 percent in 2018, partly driven by a sharp decline in net exports.

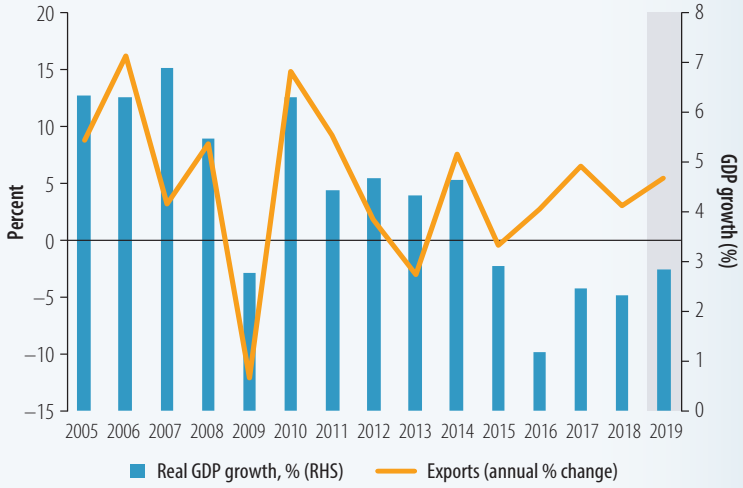
FIGURE 1.2A: Contributions to Real GDP growth, Percentage Points



Source: World Bank.

An increase in exports in some countries is contributing to the growth rebound in the region.

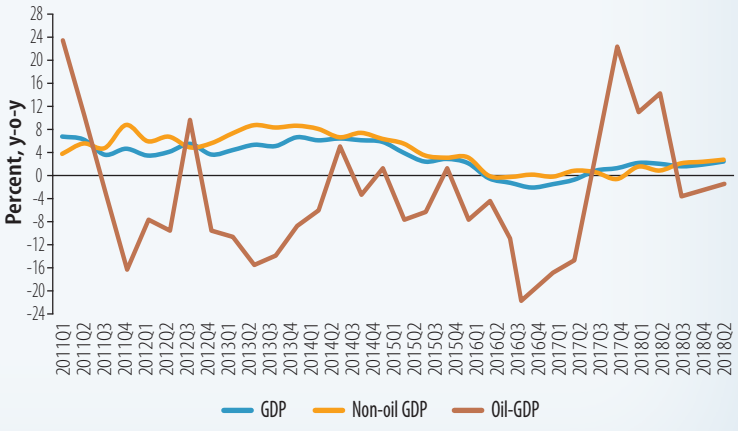
FIGURE 1.2B: Real Export and GDP Growth



Source: World Bank.

In Nigeria, growth picked up in the last quarter of 2018, driven by services and agriculture sectors.

FIGURE 1.2C: Nigeria: GDP Growth



Sources: Haver Analytics; National Bureau of Statistics, Nigeria.

Growth strengthened moderately in the second half of 2018, supported, on the demand side, by a modest rebound in exports and resilient private consumption and, on the supply side, by rising agricultural production, helped by favorable weather conditions, and an expansion in services industries (figure 1.2B).

In Nigeria, growth increased from 1.8 percent (year-over-year) in 2018Q3 to 2.4 percent (year-over-year) in 2018Q4, with services and agriculture as key drivers (figure 1.2C). Output growth in the fourth quarter led to a rise in real gross domestic product (GDP) of 1.9 percent in 2018. South Africa exited recession in 2018Q3, as growth accelerated moderately in key sectors. While the recovery continued into 2018Q4, growth edged down, as fixed investment fell sharply (figure 1.2D). For 2018 as a whole, GDP grew by 0.8 percent, down from 1.4 percent in 2017. Meanwhile, Angola—the region's third largest economy—remained in recession, with growth falling sharply as oil production stayed weak due to maturing oil fields (figure 1.2E).

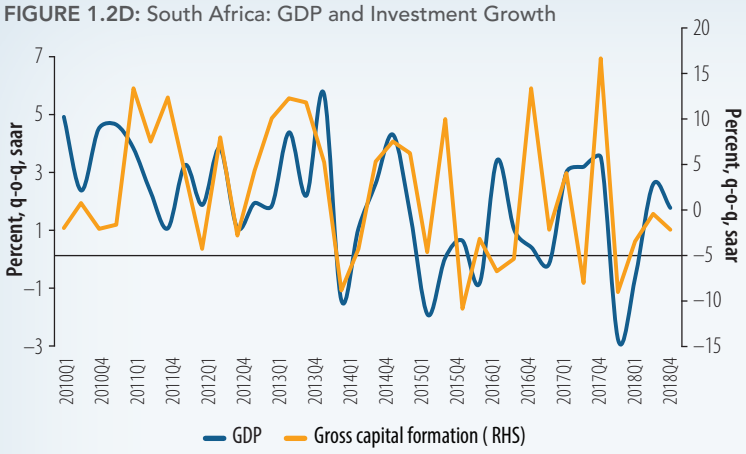
In the rest of the region, significant cross-country heterogeneity in growth performance persisted. Among resource-intensive countries, growth picked up in some metals exporters (the Democratic Republic of

Congo, Guinea, Niger), as an increase in mining production, encouraged by improving metals prices, boosted activity along with a rebound in agricultural production and public investment in infrastructure. In others (Liberia, Zambia), growth remained subdued, as high inflation and elevated debt levels continued to weigh on investor sentiment. In the Central African Economic and Monetary Community (CEMAC), the recovery continued, but remained fragile, as consolidation efforts to reduce fiscal and external imbalances slowed in some countries.

Among non-resource-intensive countries, solid economic growth was recorded in 2018Q3 in Ghana, Kenya, Rwanda, Uganda, Tanzania, and several economies in the West African Economic and Monetary Union (WAEMU), including Benin and Côte d'Ivoire (figure 1.2F). On the supply side, the robust growth reflected favorable weather conditions that boosted agriculture and electricity production (Kenya, Rwanda, Uganda), pro-business reforms (Côte d'Ivoire, Kenya, Togo), continued expansion in cotton production (Benin, Togo), and momentum in the expansion of manufacturing and services (Ghana, Rwanda). On the demand side, infrastructure investment and private consumption supported the pickup in growth. However, although it remains robust, growth softened noticeably in several economies (Côte

FIGURE 1.2D: South Africa: GDP and Investment Growth

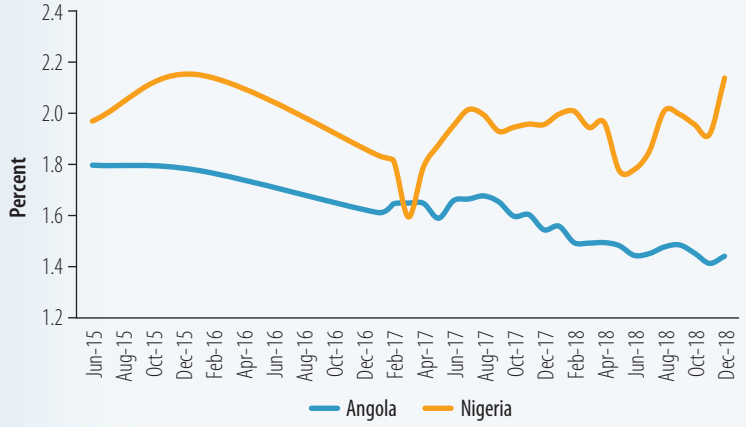
South Africa exited recession in 2018Q3, but growth edged down in 2018Q4, due to a decline in fixed investment.



Sources: Haver Analytics; Statistics South Africa.

FIGURE 1.2E: Oil Production: Nigeria and Angola, Million Barrels

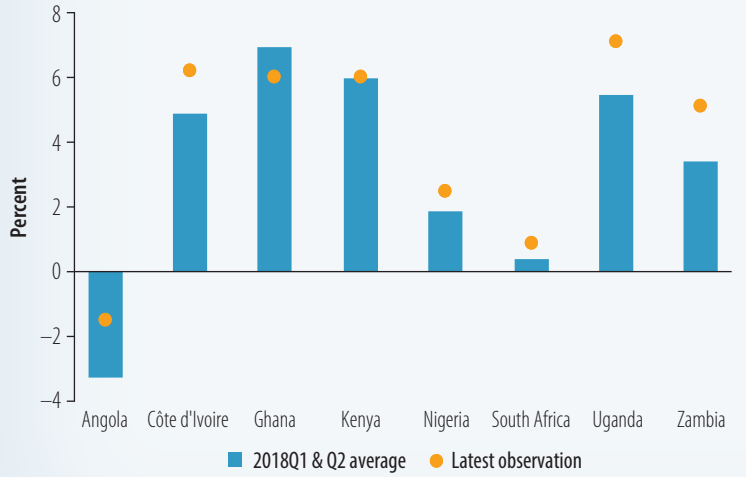
In Angola, low oil production weighed on economic activity.



Sources: Nigeria National Petroleum Corporation; US Energy Information Administration website.
Note: Angola, numbers for oil production, includes crude oil plus condensates. The data are from OPEC direct and secondary sources. Nigeria's production figures include estimates for November and December.

FIGURE 1.2F: Quarterly GDP Growth in Selected Countries

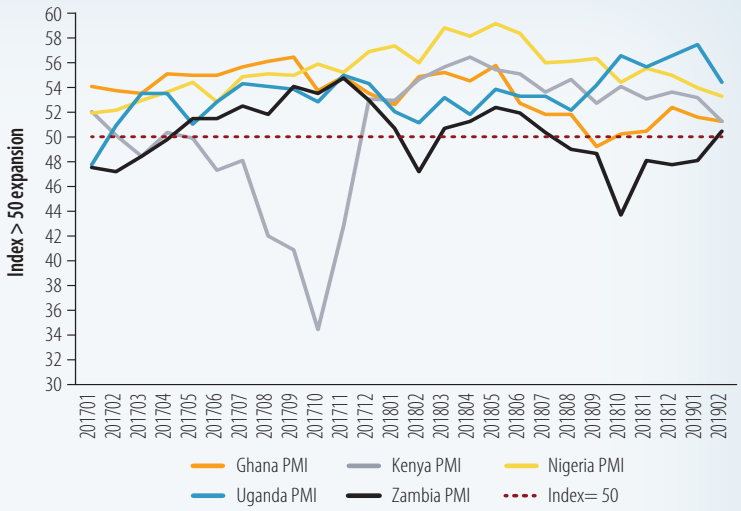
Elsewhere in the region, growth continued at a solid pace in some countries.



Sources: Haver Analytics; Statistics South Africa; Central Bank of Nigeria.
Note: The latest observation is 2018Q3, except South Africa and Nigeria, for which it is 2018Q4. GDP = gross domestic product; q-o-q = quarter on quarter; saar = seasonally adjusted annual rate; y-o-y = year-over-year

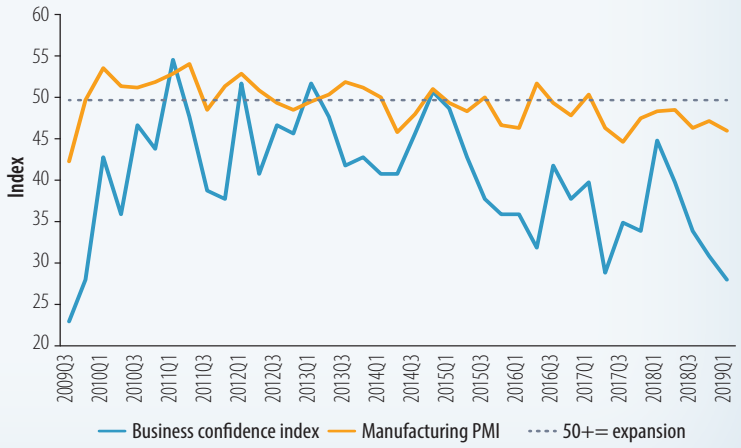
Business activity remained subdued across countries at the start of 2019.

FIGURE 1.3A: Composite PMI



In South Africa, business confidence fell further with activity data pointing to weak growth momentum in 2019Q1.

FIGURE 1.3B: South Africa: Business Confidence index And Manufacturing PMI



Sources: Haver Analytics; RMB/Bureau for Research Economics, South Africa.
Note: PMI = Purchasing Managers' Index.

d'Ivoire, Ethiopia, Sudan, Tanzania), reflecting a range of factors including foreign exchange shortages (Ethiopia), low credit growth to the private sector (Tanzania), and lower output in the cash crop sector (Côte d'Ivoire). In Sudan, consumption and investment continued to contract, amid strong currency depreciation and high inflation induced by rapid monetary expansion.

Incoming data suggest that regional growth has continued at a moderate pace at the start of 2019, partly reflecting weak economic conditions in Nigeria, South Africa, and Angola. On the demand side, PMI readings softened in the first quarter of 2019 across several countries (Ghana, Kenya, Nigeria, Uganda, and Zambia) (figure 1.3A), pointing to a slowdown in the pace of expansion of private sector activity. In Nigeria, although the manufacturing and non-manufacturing PMIs remained above the neutral 50-point mark—which denotes expansion—they fell further in February, due to weaker rises in output and new sales orders across firms. Household consumption in Nigeria has remained subdued, while multiple exchange rates, foreign exchange restrictions, low private sector credit growth, and infrastructure constraints have continued to weigh on private investment. In South Africa, retail sales rose slightly in January, after contracting in December. The manufacturing PMI fell sharply in February, driven by a sharp decrease in business activity and new sales orders. In Kenya, growth of new sales orders dipped in February, pointing to weaker domestic demand at the start of the year.

Supply-side factors are adding to the modest growth momentum in 2019Q1. Regulatory uncertainty and maturing oil fields continue to limit investments, production, and exports in the large oil-exporting countries (Nigeria, Angola). In addition, in Nigeria, agricultural production continues to suffer the effects of conflicts and climate change. In South Africa, manufacturing production was flat in the first quarter, while mining output contracted, amid power cuts imposed by Eskom—the utility company—following shutdowns at several key generators. Against the backdrop of broad-based weakness in economic activity, business confidence in South Africa fell

further in the first quarter of 2019 (figure 1.3B). Elsewhere, a tropical cyclone--Cyclone Idai--caused widespread devastation in Mozambique, Malawi, and Zimbabwe. In addition to the loss of human lives, the cyclone inflicted extensive damage to infrastructure, ports, and agriculture, disrupting economic activity and trade across the subregion.

Commodity prices improved at the start of the year, but remained below their peak in 2018 (box 1.1). Following sharp declines, crude oil prices recovered to an average of US$61 a barrel in the first quarter of 2019, supported by production cuts among OPEC and its non-OPEC partners, but uncertainty about whether the production cuts will continue remains. Metals prices edged up slightly, as sentiment improved on easing trade tensions between China and the United States. Metals prices are expected to remain stable in 2019, partly owing to low inventory levels, helping to support an increase in mining production among metals exporters.

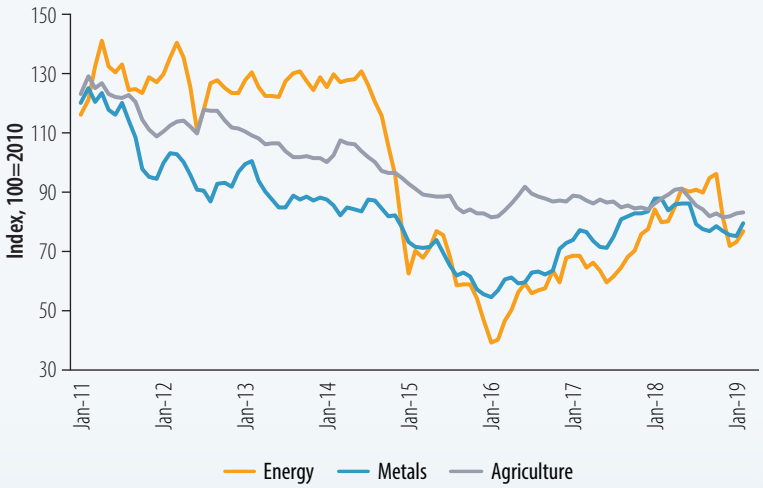
BOX 1.1: Recent Commodity Market Developments

The prices of most industrial commodities recovered in the first quarter of 2019, following sharp declines in 2018. Agricultural prices were broadly stable. In general, weaker demand prospects have been outweighed by lower supply.

Crude oil prices averaged $61/bbl during the first quarter of 2019, supported by production cuts among OPEC and its non-OPEC partners. Saudi Arabia contributed the most to the fall in supply, reducing output by around one million barrels per day (mb/d) relative to its November level. In contrast, production in the United States continued to grow and the country maintained its position as the largest oil producer in the world. In the República Bolivariana de Venezuela, the imposition of sanctions by the United States contributed to a further fall in oil output, which dropped to 1.1 mb/d in February 2019, down from an average of 2 mb/d in 2017. The oil market outlook remains highly uncertain and dependent on policy decisions, particularly whether the production cuts among OPEC and its partners will be extended into the second half of 2019. However, the supply cuts have also resulted in an abundance of spare production capacity, which reduces the likelihood of price spikes in the near term (figure B1.1A).

Metals prices edged up in the first quarter of 2019, reflecting improved market sentiment about easing U.S.–China trade tensions. Supply shortfalls and declining inventories in most metals markets—particularly copper, nickel, lead, and zinc—added to the recovery in prices. Iron ore prices were boosted at the start of the year by the Vale mining disaster in Brazil, which led to the temporary closure of mines. Despite weaker demand prospects, metals prices are

FIGURE B1.1A: Commodity Price Indexes, Monthly



Source: World Bank.
Note: Last observation is February 2019.

Commodity prices recovered in the first quarter of 2019, but remained below their peak in 2018.

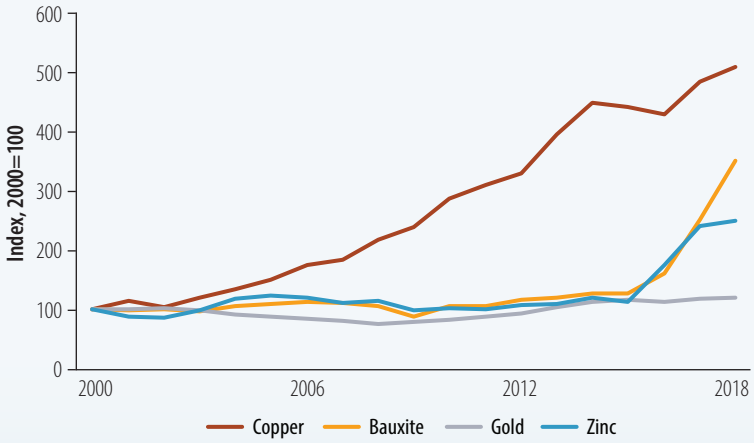
BOX 1.1
Continued

anticipated to stabilize in 2019 due to modest supply growth and low inventory levels. Against this backdrop, African ore production has increased (figure B1.1B)

Agricultural prices were stable, on average, in the first quarter of 2019 amid high stock levels and favorable crop conditions. Global production of the three key grains (maize, rice, and wheat) increased for the sixth consecutive season. Furthermore, stocks-to-use ratios—an approximate measure of supply relative to demand—remain at high levels. Wheat, which experienced a price spike due to weather-induced supply shortfall, is on track for a normal crop next season. Trade tensions, which induced some price volatility in general as well as price increases in soybeans, have eased recently. Lastly, the El Niño underway is unlikely to have an impact on global agricultural markets, although it appears to have induced dry conditions in some regions, including Southern Africa and Australia. Agricultural prices are expected to remain broadly flat over the next two years.

Ore production has increased in the region, amid improving metals prices.

FIGURE B1.1B: African Ore Production



Source: World Bank.

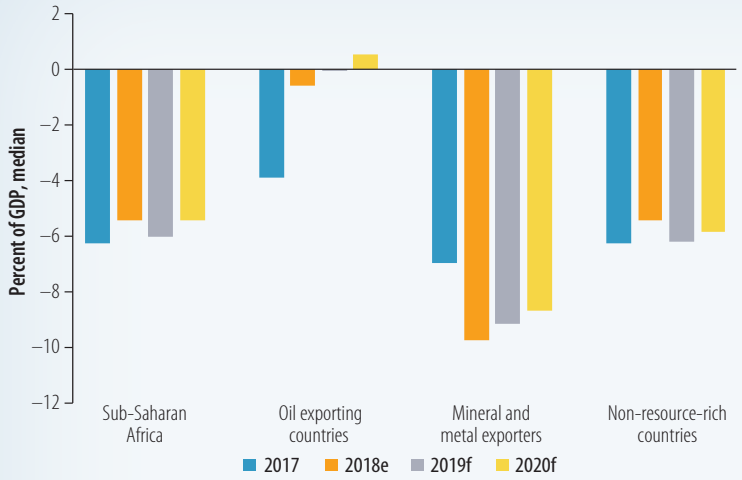
Current Account Deficits Are Rising

The median current account deficit for the region is expected to rise from an estimated 5.4 percent of GDP in 2018 to 6.1 percent in 2019, with significant differences across countries (figure 1.4A). The current account deficit is expected to fall in oil-exporting countries as well as in metals exporters but widen in non-resource-intensive countries. Among oil exporters, the current account balance will swing into surplus in the Republic of Congo, while Nigeria's current account surplus will rise, mainly reflecting stagnant non-fuel imports due to weak economic activity. In Angola, the current account surplus is projected to narrow in 2019 as a pick up in imports contributes to a lower trade balance. In metals exporters, the current account deficit is projected to ease but remain elevated, as stronger growth boosts import demand in some countries, partially offsetting improvements in metals prices. In non-resource-intensive countries, an increase in capital goods imports for investment projects will push the current account deficit higher.

Portfolio investment flows, foreign direct investment (FDI), and concessional financial flows are expected to help finance the current account deficits. In 2018, countries in the region issued more than US$17 billion in international bonds, but bond issuance activity slowed notably in the second half of the year. The dovish tilt of the U.S. Federal Reserve, together with expectations of Chinese stimulus and a U.S.–China trade deal, have pushed capital inflows back into EMDEs,

including in Sub-Saharan Africa, following a sharp contraction at the end of 2018. After peaking in early January, sovereign bond spreads in the region have declined, although they remain elevated in some countries, including Mozambique and Zambia, due to investor concerns about high debt levels. Eurobond issuance is slowly picking up, with Benin carrying out its maiden issuance and Ghana returning to the market in the first quarter (figure 1.4B). The bond issuances were oversubscribed, including for Ghana's 31-year maturity tranche—the longest in the region—pointing to strong investors' demand for high-yielding debt that is likely to encourage other countries to return to the Eurobond market. Meanwhile, FDI inflows have remained subdued, reflecting the modest recovery in commodity prices. Against this backdrop, budget support from multilateral institutions, including the World Bank Group, to back the implementation of structural reforms, would be an important source of capital inflows for the region, especially for low-income countries with limited access to international capital markets, helping them build up reserves toward prudent levels.

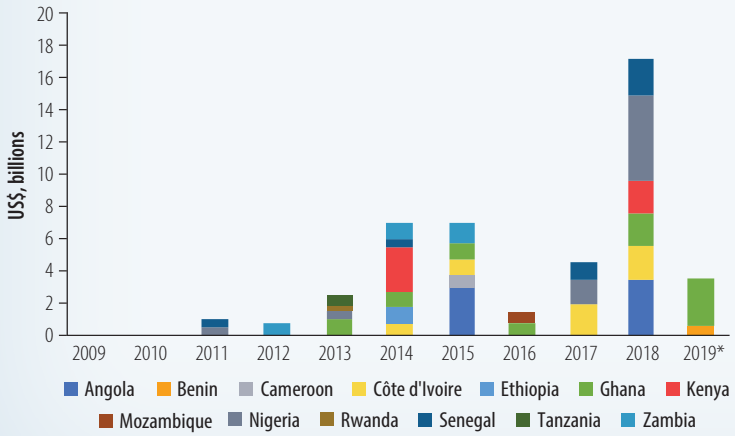
FIGURE 1.4A: Current Account Balance



Source: World Bank staff estimates.
Note: GDP = gross domestic product.

The median current account deficit for the region is expected to widen in 2019, despite narrowing among oil-exporting countries.

FIGURE 1.4B: International Bond Issuances



Source: Bloomberg.

Eurobond issuance is picking up in the region, and is expected to help finance the current account deficit in some countries.

Reserve Coverage Remains Short of Appropriate Levels in Many Countries

Gross reserves stabilized at relatively high levels at the end of 2018 in the large economies. Reserves represented about seven months of imports of goods and services in Nigeria, and about six months of imports in Angola. However, despite some improvements, due to higher commodity prices in some cases, gross reserves represented less than three months of imports of goods and services in many countries. In the Democratic Republic of Congo, reserve coverage improved to just one month of imports, helped by stable metals prices. In Zambia, reserves fell sharply, due to drawdowns to finance rising external debt service. In the CEMAC subregion,

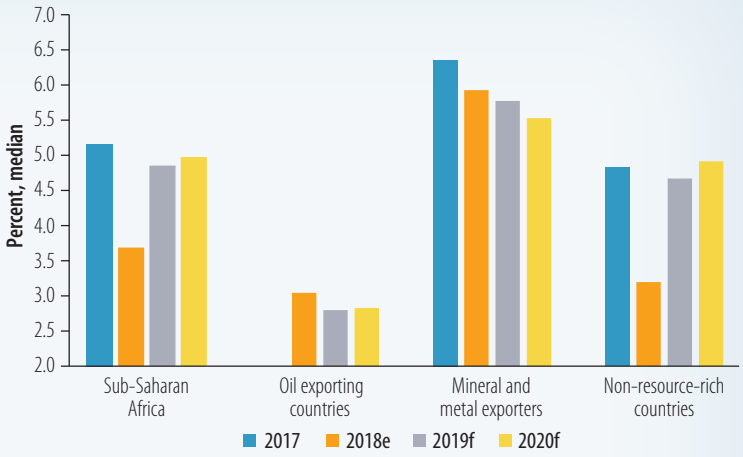
external reserves fell short of 2018 targets despite higher oil prices, as fiscal adjustment faltered in some countries. In WAEMU, reserves are estimated to have reached 4.1 months of imports of goods and services at end-2018, thanks to Eurobond issuances by Côte d'Ivoire and Senegal. In other non-resource-intensive countries (Uganda and Tanzania), reserves fell as the current account deficit widened. In most countries, rebuilding reserve buffers to appropriate levels will require adequate fiscal consolidation and measures to improve external competitiveness.

Inflation Pressures Remain High in Some Countries

The median inflation rate is projected to rise moderately, from an estimated 3.8 percent in 2018 to 4.9 percent in 2019 (figure 1.4C), with six countries facing double-digit inflation rates (Angola, Liberia, Nigeria, Sierra Leone, Sudan, Zimbabwe)—unchanged from the previous year. However, the aggregate figures mask notable variations across economies, with inflation pressures expected to ease in oil-exporting countries and metals exporters but rise in non-resource-intensive countries. Greater currency stability and slowing food price inflation due to improved agricultural production underpin the decline in inflation in oil-exporting countries. Nevertheless, inflation remains elevated in Angola and Nigeria, at around 18 percent and 11 percent (year-over-year), respectively. Although inflation is moderating among metals exporters, it is expected to remain elevated, owing to strong currency depreciations in some countries (Liberia, Sierra Leone, and Zambia) (figure 1.4D), as current account deficits remain high. Inflation is projected to rise sharply to high double-digits in Liberia, driven in part by rapid monetary expansion. In non-

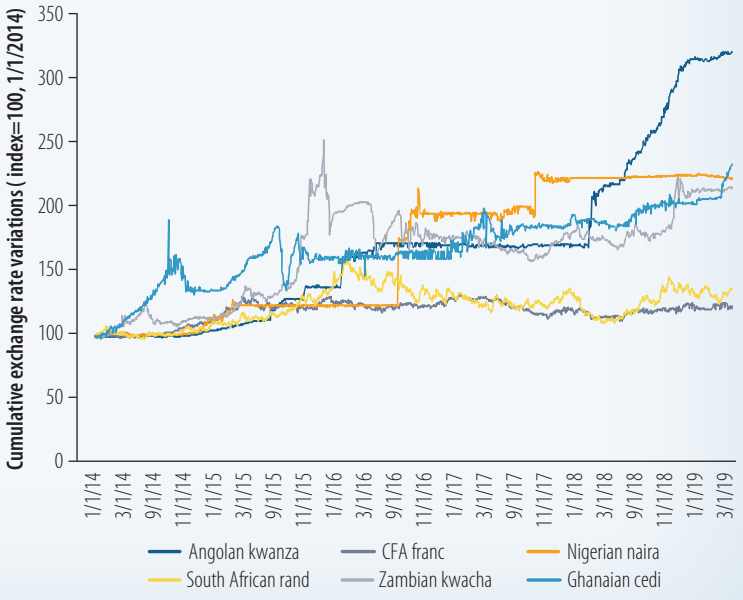
Inflation pressures persist among metals exporters and non-resource-intensive countries, reflecting large currency depreciations in some cases.

FIGURE 1.4C: Inflation, by Country Group



Source: World Bank staff estimates.

FIGURE 1.4D: Exchange Rate



Source: Bloomberg.

resource-intensive countries, the increase in inflation mainly reflects deteriorating conditions in Sudan and Zimbabwe.

Central banks have responded to changes in consumer price inflation. In 2018, monetary policy eased across the region. As inflation moderated, several central banks cut interest rates. Reflecting the continued decline in inflation pressures, Angola's central bank cut interest rates further at the start of 2019. After keeping it unchanged for more than two years, the Central Bank of Nigeria cut its policy rate by 50 basis points in March, in an attempt to boost domestic demand, although inflation remained above the Central Bank of Nigeria's 6–9 percent target range. Among non-resource-intensive countries, the Bank of Ghana continued its easing cycle, lowering its main policy rate by 100 basis points, as inflation fell to 9 percent (year-over-year). The pressures on the domestic currency that emerged following the interest rate cut have abated, helped by Ghana's latest Eurobond issuance. In metals-exporting countries, central banks have so far left interest rates unchanged. Notably, the South African Reserve Bank has kept its benchmark repo rate unchanged, after raising it by 25 basis points in November 2018, although inflation has since declined to below the midpoint of the 3–6 percent target range.

Fiscal Consolidation Has Continued but The Quality of Fiscal Adjustment Has Been Inadequate

The median fiscal deficit is projected to decline from 3.8 percent of GDP in 2018 to 3 percent in 2019 (figure 1.4E). Fiscal balances are expected to improve in oil exporters and non-resource-intensive countries but deteriorate in metals-exporting countries. In oil exporters, the fiscal surplus is set to rise further, underpinned by continued fiscal consolidation efforts in Angola and oil producers in the CEMAC subregion. However, in Nigeria, the fiscal deficit is expected to persist, due to limited progress in raising non-oil revenues. Among non-resource-intensive countries, the median fiscal deficit is projected to narrow, in part as tax reforms and greater control over the wage bill help the fiscal deficits in WAEMU countries converge toward the target of 3 percent. In metals-exporting countries, the median fiscal deficit is expected to rise, as they continue to struggle to increase domestic revenues and control public spending. In South Africa, for example, the fiscal deficit is projected to widen from 4.0 percent of GDP to 4.2 percent, higher than the deficit projected in the October 2018 Medium-Term Budget Policy Statement, due to measures to support struggling state-owned enterprises, including Eskom.

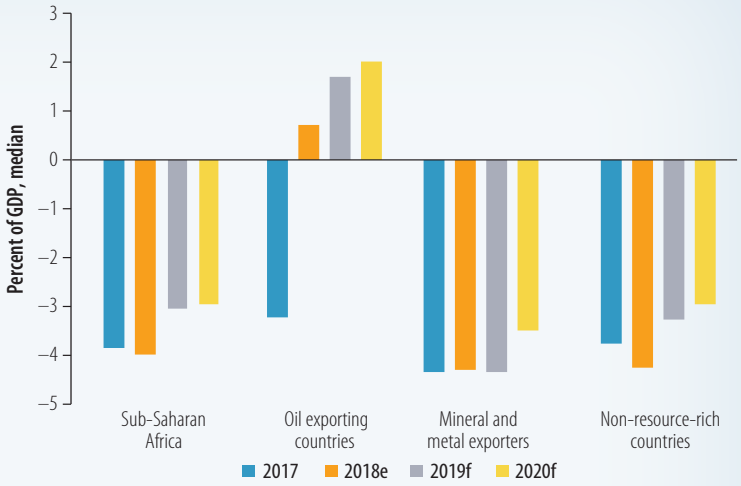
In many instances, the quality of fiscal adjustment has been inadequate. In some countries, fiscal consolidation has continued to emphasize slower execution of non-wage recurrent spending, cuts in domestically financed capital expenditures, and slower disbursements of externally financed public investment projects to accommodate higher wage bills. In others, incomplete fuel price adjustments have contributed to additional government arrears. Across the region, progress in strengthening revenue mobilization has remained slow and uneven, reflected in the limited use of consumption-based taxes, such as value-added tax in some countries, while tax exemptions remain in place.

Debt Vulnerabilities Remain High

Reflecting the ongoing fiscal consolidation, the median government debt level is expected to ease slightly, from 54.4 percent of GDP in 2018 to 53 percent in 2019 (figure 1.4F). Government

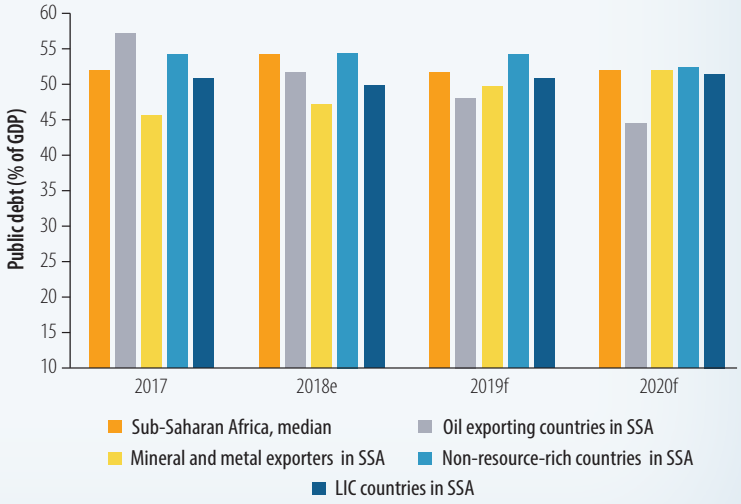
Fiscal balances are improving among oil exporters; but deteriorating among metals exporters.

FIGURE 1.4E: Fiscal Balance



Government debt levels remain elevated across the region.

FIGURE 1.4F: Government Debt



Source: World Bank staff estimates.
Note: GDP = gross domestic product; LICs = low-income countries; SSA = Sub-Saharan Africa.

debt levels are projected to decline among oil exporters, remain broadly steady in non-resource-intensive countries, and rise among metals exporters. The decline in government debt levels in oil-exporting countries stems from the tightening of fiscal policies in CEMAC countries, which, along with support from regional institutions, is gradually reducing the non-oil primary deficit. In 2018, most CEMAC countries were classified as at high risk of debt distress, pointing to the need for continued fiscal adjustment. Although Nigeria's debt-to-GDP ratio is relatively low, it has increased steadily, and interest payments absorb a high share of federal government revenue. In Angola, after peaking at 85 percent of GDP in 2018, mainly due to exchange rate depreciation, government debt is expected to decline over the medium term but remain elevated.

Among non-resource-intensive countries, the government debt level is expected to decline marginally, despite some progress in fiscal consolidation. This modest improvement partly reflects a sharp increase in public debt levels in Sudan, due to large currency depreciations, and in Mozambique, where expenditure pressures are pushing the primary deficit higher. Among metals exporters, government debt is expected to be higher in 2019, as some countries—including Guinea, Namibia, and Zambia—increase borrowing to finance public investments. Zambia is at high risk of debt distress, as expenditure overruns and currency depreciations have led to a rapid increase in public debt.

Public and publicly guaranteed external debt has remained elevated. The median public and publicly guaranteed external debt level increased by some 9 percentage points of GDP, from its low level in 2012, to 27 percent of GDP in 2017. Most significantly, its composition has changed considerably, shifting from mainly concessional debt from bilateral and multilateral lenders toward much greater reliance on non-Paris Club bilateral lenders and commercial creditors

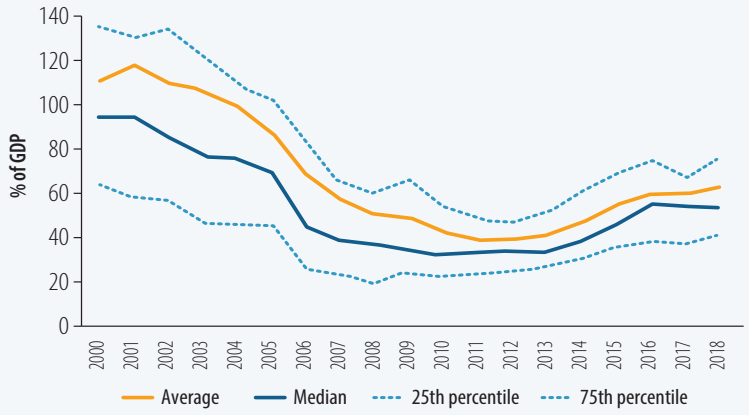
(box 1.2). This shift in the composition of government debt toward more expensive non-concessional financing has increased vulnerabilities across the region. At present, nearly half of the International Development Association (IDA) countries in Sub-Saharan Africa assessed under the Debt Sustainability Framework for Low-Income Countries are at high risk of external debt distress or in debt distress.

BOX 1.2: Recent Developments in Public Debt in Sub-Saharan Africa

The increase in debt levels together with the shift of public and publicly guaranteed external debt toward more market-based instruments and more expensive and riskier sources of financing have increased debt vulnerabilities substantially in the region.

Median public debt levels in Sub-Saharan Africa had decreased from a peak median of more than 90 percent of gross domestic product (GDP) in the early 2000s to a median of 24 percent of GDP in 2012, owing to debt relief under the Heavily Indebted Poor Country and Multilateral Debt Relief initiatives. However, after 2013, public debt rose across the region. By 2018, median public debt in Sub-Saharan Africa reached about 53 percent of GDP, with slower debt increases over the past two years (figure B1.2A). The evolution of public and publicly guaranteed external debt mirrored that of total public debt in the region. After decreasing to a median of 18 percent of GDP in 2012, external debt increased rapidly, with the median reaching 27 percent of GDP at the end of 2017. The key drivers of government debt have been persistent and sizable fiscal deficits, due to falling revenue and expenditure overruns. Exchange rate depreciations (Zambia), negative growth (Chad, the Republic of Congo), and the reporting of previously undisclosed debt (the Republic of Congo, Mozambique) also contributed to the deterioration in the debt-to-GDP ratios.

FIGURE B1.2A: Evolution of Public Debt in Sub-Saharan Africa

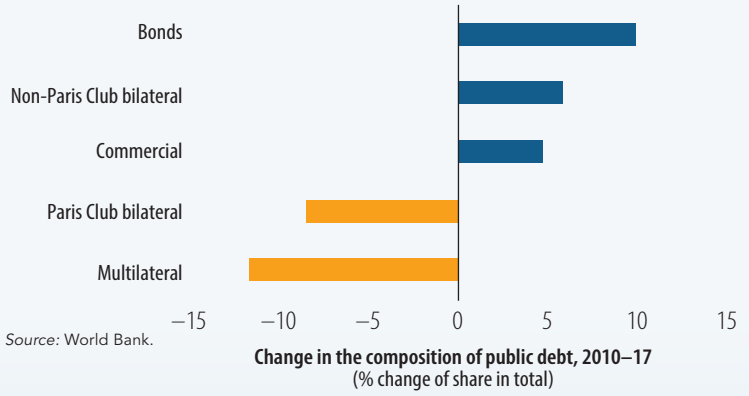


Source: World Bank.

By 2018, median public debt in Sub-Saharan Africa reached about 53 percent of GDP, with slower increases over the past two years.

In addition to its rising level, the composition of external debt has changed away from traditional sources of financing toward more market-based debt and new external creditors (figure B1.2B). The share of foreign currency bonds in total external debt increased by 10 percent, while the shares of debt owed to commercial and non-Paris Club creditors have

FIGURE B1.2B: Composition of External Debt



Source: World Bank.

The composition of external debt has shifted from traditional sources of financing toward more market-based debt and new external creditors.

BOX 1.2
Continued

risen by 5 percent since 2010. Meanwhile, the shares of financing from multilateral institutions and Paris Club creditors have decreased significantly.

In Sub-Saharan Africa, 2018 marked a record year for international bond issuances. Between 2013 and 2017, countries in the region (excluding upper middle-income countries) issued on average a total of US$4.5 billion per year, with an average issuance size of US$1billion. In 2018, bond issuances totaled more than US$17 billion, with the average issuance rising to nearly US$3 billion. In addition to the increase in issuance volumes, several countries (Côte d'Ivoire, Kenya, Nigeria) were able to extend maturities to 30 years.

The increase in debt levels together with the shift of external debt toward more market-based instruments and more expensive and riskier sources of finance have increased debt vulnerabilities substantially. As of end-2018, nearly half of the countries in Sub-Saharan African covered under the Low-Income Country Debt Sustainability Framework were at high risk of debt distress or in debt distress, more than double the number in 2013. In addition, safety margins have decreased in several countries rated as at moderate risk of debt distress.

1.3 OUTLOOK

The Growth Outlook Remains Modest

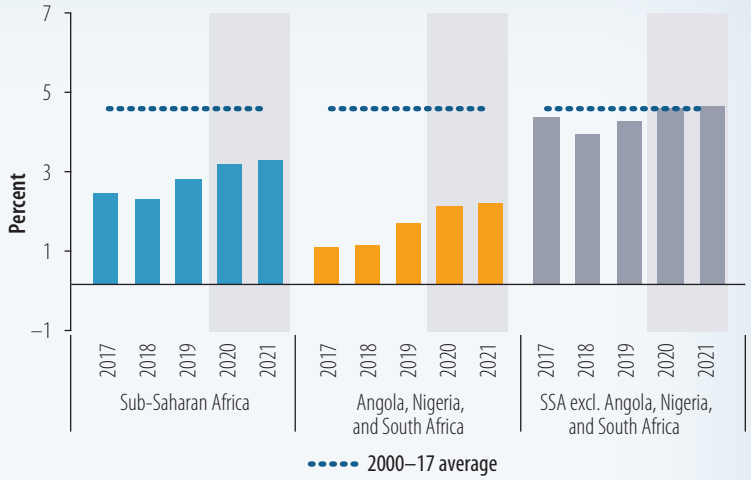
Growth in Sub-Saharan Africa is forecast to recover to 2.8 percent in 2019 from the slowdown to 2.3 percent in 2018 and rise to 3.3 percent in 2020. This upturn is supported, on the demand side, by exports and private consumption and, on the supply side, by a rebound in agriculture, an increase in mining production, and steady growth in the services sector in some countries. These forecasts are 0.5 and 0.3 percentage points lower than last October's forecasts, respectively, reflecting slower growth in Nigeria and Angola, due to challenges in the oil sector, and subdued investment growth in South Africa, due to low business confidence (figure 1.5A). Regional growth is expected to improve slightly to 3.4 percent in 2021 as activity strengthens in the region's three largest economies. The external environment for the region remains challenging, as global growth continues to decelerate, and global uncertainty related to trade disputes between the United States and China remains high. Although commodity prices improved in the first quarter of 2019 they are below their peak in 2018 and the oil market outlook remains highly uncertain (figure 1.5B).

Despite the rebound, growth in the region will remain well below its long-term average. Per capita growth—projected to rise from -0.3 percent in 2018 to 0.7 percent in 2021—will be too low to achieve poverty reduction goals (figure 1.5C), particularly among oil-exporting countries and metals exporters (figure 1.5D). However, there is significant heterogeneity in growth performances, with over one-third of the countries expected to grow at more than 5 percent in 2019–21.

- Growth in Nigeria is projected to rise from 1.9 percent in 2018 to 2.1 percent in 2019 (0.1 percentage point lower than last October's forecast). This modest expansion reflects stagnant oil production, as regulatory uncertainty limits investment in the oil sector, while non-oil economic activity is held back by high inflation, policy distortions, and infrastructure constraints. Growth is projected to rise slightly to 2.2 percent in 2020 and reach 2.4 percent in 2021, as improving financing conditions help boost investment.
- In Angola, growth will rebound more gradually than previously anticipated, rising from -1.7 percent in 2018 to 1.0 percent in 2019 and 2.9 percent in 2020. These forecasts are 1.7 and 0.8 percentage points lower, respectively, than last October's forecasts. Growth is expected to remain subdued in 2019, owing to a faster-than-expected decay in mature oil wells and lower production from marginal oil fields. A rebound in non-oil economic activity, supported by greater foreign exchange availability, a more flexible exchange rate, moderating infation, and measures to improve the business environment, is expected to underpin moderately higher growth in 2020-21.
- Growth in South Africa is forecast to recover from 0.8 percent in 2018 to 1.3 percent in 2019 and rise to 1.7 percent in 2020 and 1.8 percent in 2021, unchanged from October. This gradual pickup in growth reflects expectations that consumer spending will strengthen, spurred by low inflation, and long-delayed structural reforms will help revive investment, as business confidence rebounds.

Regional growth is projected to continue at a moderate pace and reach 3.3 percent in 2020.

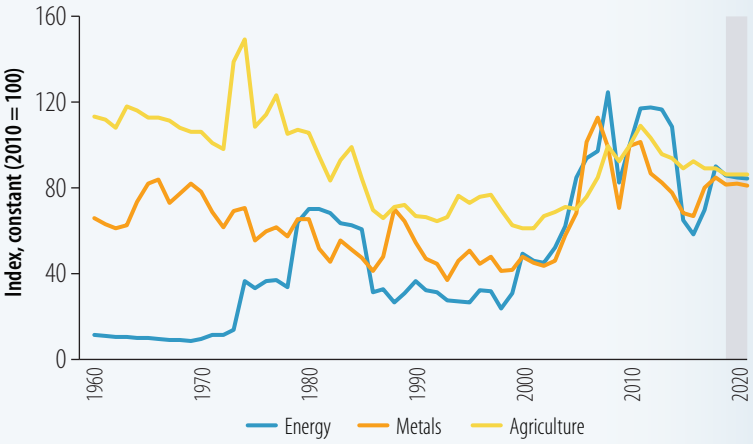
FIGURE 1.5A: GDP Growth Forecasts



Source: World Bank.

After a slight recovery in 2019, commodity prices are expected to stabilize in 2020.

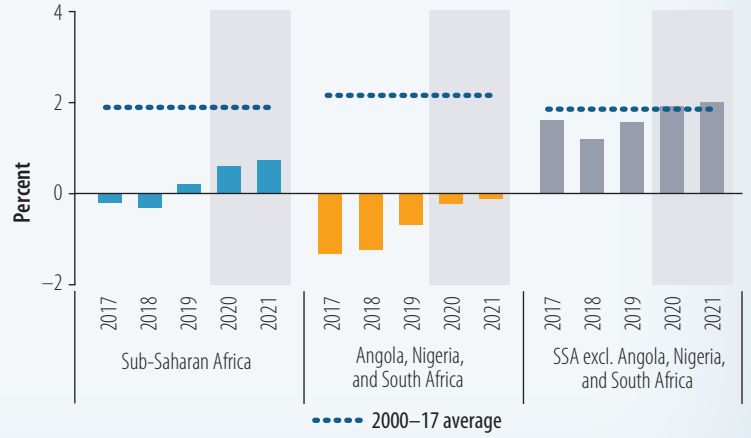
FIGURE 1.5B: Commodity Price Forecasts



Source: World Bank (GEP 2019 update).

Growth in the region—including in per capita terms—will remain well below its long-term average.

FIGURE 1.5C: GDP per Capita Growth Forecasts



Source: World Bank.

- Excluding Nigeria, South Africa, and Angola, growth in the rest of the region is projected to rise moderately, from 4.1 percent in 2018 to 4.4 percent in 2019 and firm to 4.8 percent in 2020. These forecasts are 0.9 and 0.5 percentage points lower than in October. The outlook for CEMAC countries has improved slightly, with oil production rebounding in several countries, and security conditions stabilizing in countries affected by conflict and violence; but continued fiscal consolidation will weigh on the pace of economic expansion. The outlook for metals exporters has also improved, with growth expected to strengthen in several countries, as mining production expands, supported by stable metals prices, and infrastructure investment helps boost non-mining economic activity (figure 1.5E).

- Among non-resource-intensive countries, activity is projected to pick up after slowing in 2018, supported by infrastructure investment, pro-business reforms, and stronger consumer spending. Growth in WAEMU and the East African Community will average 6 percent or more (figure 1.5F). Growth will stabilize but remain softer than in the recent past in several fast-growing economies, including Côte d'Ivoire, Ethiopia, and

Tanzania, reflecting maturing public investments, fiscal consolidation, and a difficult business environment in some countries.

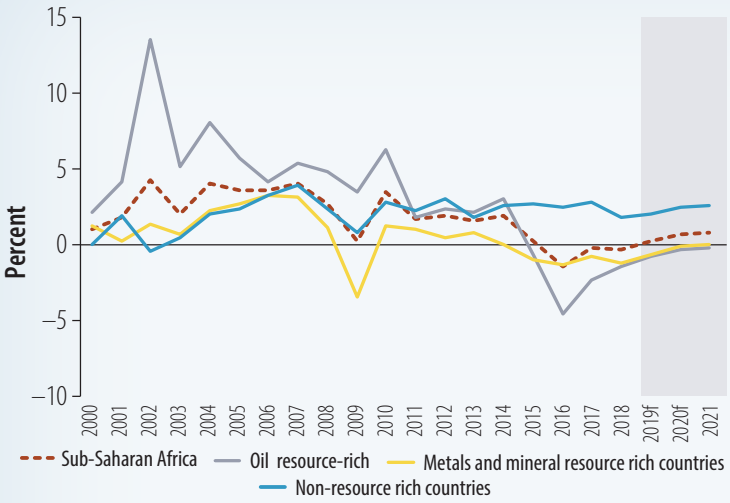
1.4 RISKS TO THE OUTLOOK

External Risks

Slowdowns in major economies. The continued deceleration in global growth and downside risks to the global outlook present a challenging external environment for countries in Sub-Saharan Africa. A sharper than expected slowdown in the United States, the euro area, and China—Sub-Saharan Africa's major trading partners—could have significant spillover effects for the region through trade, financial, commodity, and confidence channels. A faster than expected decline in commodity prices would place further pressure on fiscal and current account balances and the financial sector, sharply constraining investment. In the countries that are most dependent on oil and metals revenues, a sharp decline in commodity prices could derail efforts to restore fiscal and external sustainability.

Trade policy uncertainties. Global trade growth decelerated in 2018, reflecting the effects of weakening industrial activity and the possibility of increasingly protectionist trade policies, and is expected to lose further

FIGURE 1.5D: GDP Per Capita Growth, by Resource Group



Significant heterogeneity in growth performance persists, with growth remaining robust among non-resource-intensive countries, and improving gradually in metals exporters and oil-exporting countries.

FIGURE 1.5E: GDP Growth, by Resource Group

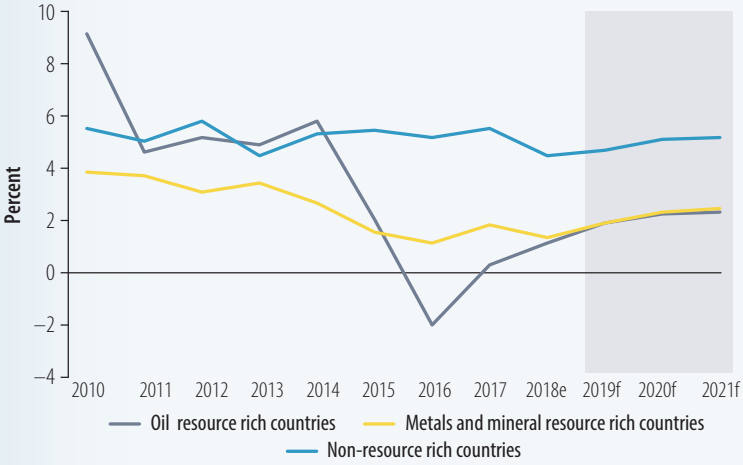
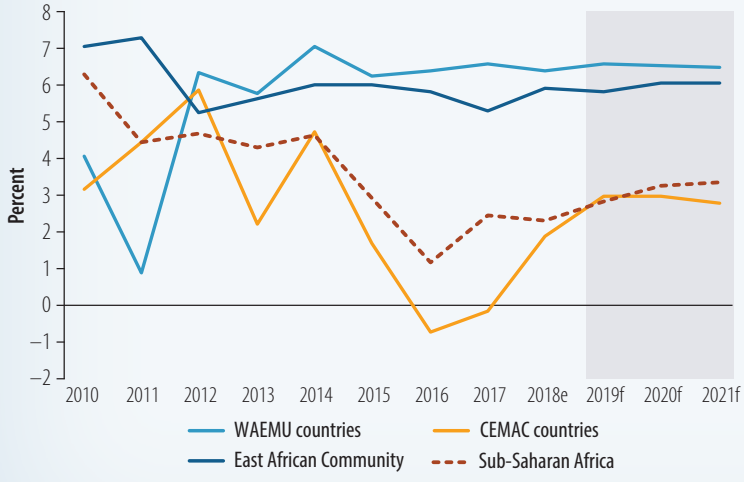


FIGURE 1.5F: GDP Growth, by Regional Group



WAEMU and East African Community countries are forecast to lead the region with growth at more than 5 percent annually in 2019-21.

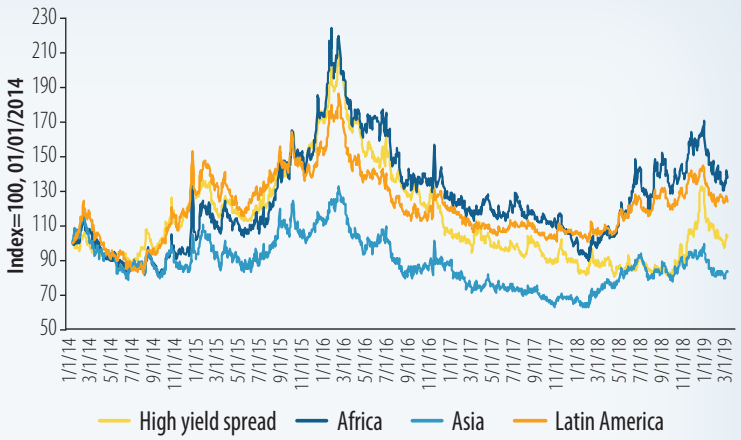
Source: World Bank.

Note: CEMAC = Central African Economic and Monetary Community; GDP = gross domestic product; SSA = Sub-Saharan Africa; WAEMU = West African Economic and Monetary Union.

momentum in 2019. An escalation in trade tensions could erode external demand. This would dampen export growth—a critical factor behind the ongoing rebound in economic activity in the region—and contribute to keeping the recovery subdued in many countries.

A tightening of financing conditions could result in higher-than-expected borrowing costs for countries in the region.

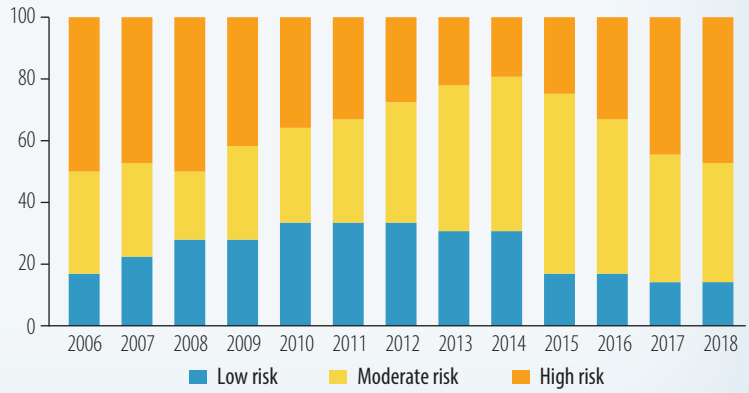
FIGURE 1.6A: EMBI Spreads



Source: Bloomberg.

Debt vulnerabilities are high in the region.

FIGURE 1.6B: Evolution of the risk of external debt distress in Sub-Saharan Africa
(% of total)



Source: World Bank/International Monetary Fund LIC DSA Database

Note: Covers board-approved disclosed and undisclosed risk ratings of 36 Sub-Saharan African countries until 2013, and 37 from 2014 on.

Tighter financing conditions. The ongoing pause in U.S. interest rate policy has helped ease financial conditions for EMDEs. However, disorderly financial market developments could emerge if global interest rates unexpectedly increase. As global financial conditions tighten, financial market disruptions could trigger sharp reductions in capital flows, higher financing costs, and rapid exchange rate depreciations in some countries (figure 1.6A). Sharper than anticipated currency depreciations would render the servicing of foreign currency–denominated debt more challenging in countries that have experienced a significant increase in debt levels (figure 1.6B).

Domestic Risks

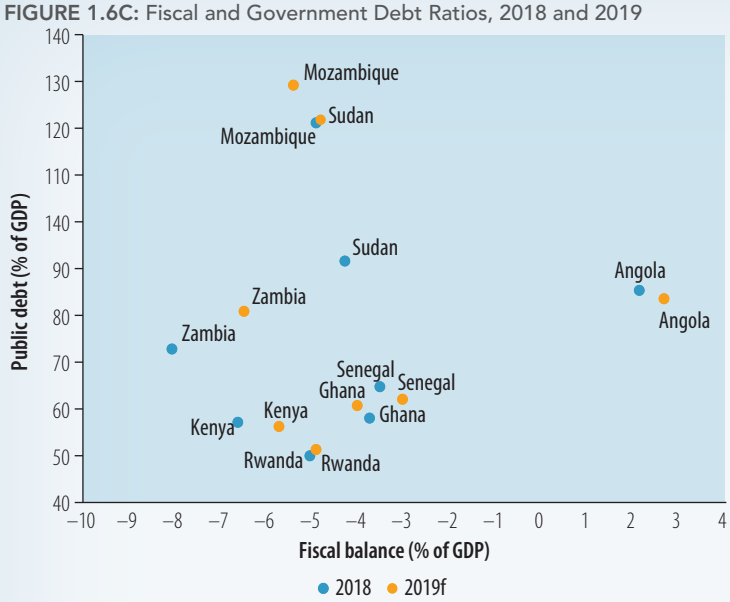
Weaker fiscal consolidation. Adequate fiscal consolidation is needed to restore fiscal and external sustainability across the region, especially among countries that have experienced significant increases in public debt levels (figure 1.6C). In countries holding elections this year, and where significant fiscal adjustments are required, political considerations could undermine commitments to continued tightening of fiscal policies. Fiscal frameworks could weaken and lead to the implementation of procyclical policies. Delays in implementing public financial management and tax administration reforms would jeopardize the objectives of increasing non-resource revenue collection, avoiding the emergence of additional government arrears, and bringing public debt to a declining path.

Deterioration in the security situation. The domestic security situation remains precarious in several countries and could be exacerbated by the challenging economic and social situation. Such a

deterioration would negatively affect economic activity and lead to increased military spending, as policy makers focus on security rather than economic reforms. The flow of displaced persons will likely increase, especially in Central Africa.

Recurrence of severe weather conditions. African countries are vulnerable to a variety of natural disasters, partly because of oversized exposure to such shocks (such as excess reliance on the agriculture sector) and partly because of limited fiscal space to respond quickly and effectively to these shocks. Fewer countries were affected by drought in 2018, likely contributing to the increase in agricultural production in the region (figure 1.6D). In addition to droughts, the occurrence of floods, landslides, and cyclones remains elevated and poses significant risks for countries in the region, as the recent experiences of Mozambique, Malawi, and Zimbabwe have demonstrated. Building resilience to such natural disasters requires careful long-term action plans. In addition to IDA financing, the World Bank provides support to affected countries through the Disaster Risk Financing and Insurance Program, which was established in 2010 to improve the financial resilience of governments, businesses, and households against natural disasters.

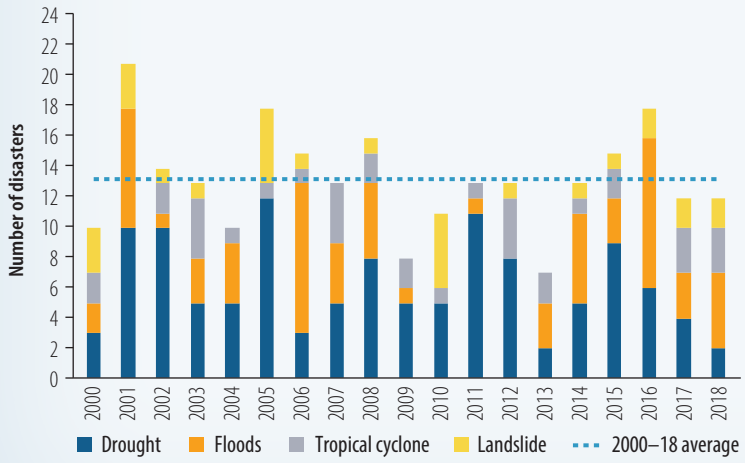
FIGURE 1.6C: Fiscal and Government Debt Ratios, 2018 and 2019



Source: World Bank.

Several countries are experiencing weaker fiscal consolidation and significant increases in public debt levels.

FIGURE 1.6D: Natural Disasters in Sub-Saharan Africa



Source: Guha-Sapir, Emergency Events Database, Centre for Research on the Epidemiology of Disasters, Universite Catholique de Louvain, Brussels, Belgium, www.emdat.be.

Natural disasters pose significant risks to countries in the region.

1.5 POLICIES FOR CREATING SUSTAINABLE AND INCLUSIVE GROWTH AND BUILDING RESILIENCE

Although regional growth is expected to rebound in 2019, it will have remained below 3 percent for three consecutive years. Growth is expected to rise to 3.3 percent in 2020 and reach 3.4 percent in 2021, as commodity prices stabilize. This suggests that, with the current policies

and growth rates, the region is unlikely to reach its objective of eradicating extreme poverty by 2030. The modest growth outlook that Sub-Saharan Africa continues to face highlights the urgent need for comprehensive policy actions to promote strong and more sustainable growth. In this regard, ambitious reform agendas that can strengthen macroeconomic policies, enable the digital transformation, and build resilience are needed, in addition to measures aimed at developing human capital (annex 1A).

Strengthening Macroeconomic Policies

With the external environment becoming challenging, policy makers need to implement policies to make their economies more resilient to short-term risks. Efforts are needed to strengthen fiscal, monetary, and prudential policy frameworks, particularly in countries that have experienced rapid increases in debt levels and are more exposed to currency, interest rate, or debt rollover risks. This includes reforming tax systems to strengthen domestic revenue mobilization, prioritizing spending on quality investments and poverty reduction, reinforcing fiscal frameworks to make them more conducive to effective countercyclical policies, and improving the management of public debt and contingent liabilities, including by bolstering institutions that support debt transparency. These measures have become more urgent in the region's low-income countries where debt vulnerabilities are high and rising.

Building Resilience to Fragility

Fragility, conflict, and violence (FCV) pose serious challenges to the region's prospects. In FCV countries, economic development strategies are likely to fail amid weak institutions, low state capacity, and a broken social contract. Promoting state legitimacy is key for preventing and exiting fragility. This includes building capacity, supporting the state, and strengthening state and local institutions. Regional initiatives can also help sustain peace across borders. Exiting fragility by building state capacity and promoting intraregional trade is the focus of section 2.

- *Building state capacity.* Core government functions need to be supported in ways that build efficiency and trust in the state. If governments are to provide security and rule of law and regulate and/or deliver public goods, they must be equipped with the capacity to plan, allocate resources, oversee the delivery of those services efficiently, and raise revenue through transparent and equitable taxation. To this end, rebuilding the state's capacity to conduct fiscal and monetary policy is a precondition for effective government service delivery, private sector development, and resilience to shocks. In this context, helping countries escape the fragility trap requires that: (a) development actors engage for the long term in FCV contexts; (b) the prioritization and sequencing of reforms adequately reflect the iterative approach needed in FCV settings; (c) country ownership is strengthened; (d) windows of opportunity are fully seized; and (e) services are effectively and inclusively delivered.

- *Increasing intraregional trade.* Projects can be deployed at the regional level to address fragility. Fostering cross-border trade between nations in the Great Lakes region can play a crucial role in sustaining peace and security in Central Africa. This approach has helped build peaceful links between Burundi, the Democratic Republic of Congo, Rwanda, Tanzania, and Uganda after years of unrest and instability. Poor infrastructure and high trade facilitation costs often

hinder cross-border trade—and this cost is particularly high among firms in countries with FCV situations. The Great Lakes Trade Facilitation Program, under implementation since early 2016, aims to foster trade across borders by raising the capacity for commerce and lowering the costs faced by traders—particularly, small-scale and female traders—at selected border crossings and port locations in the region. Improving border crossing includes the simplification of rules, zero tolerance for violence, better infrastructure and physical conditions for officials and traders at the border, and support for traders' associations for better representation of poor, small traders.

Harnessing the Digital Revolution

Digital technologies offer a chance to unlock new pathways for rapid economic growth, innovation, job creation, and access to services in Africa. Yet, access to the internet remains unattainable for most people in the region; businesses are slowly adopting digital technologies to foster productivity; and few governments are investing strategically in developing digital infrastructure, services, skills, and entrepreneurship. Closing the digital divide relative to other developing and advanced countries is needed for Sub-Saharan Africa to take advantage of the opportunities that information and communications technologies are providing. African governments also need to put in place a robust legal and regulatory framework that fosters competition. Radical technological change and adoption are needed to eradicate extreme poverty by 2030. In this context, the region needs to continue making efforts toward fully embracing the Fourth Industrial Revolution. How the digital revolution can be harnessed for sustainable and inclusive growth in Sub-Saharan Africa, the special focus of this issue of Africa's Pulse, is discussed in section 3. Key issues include the following:

- Closing the digital divide. Africa's digital revolution is not just a matter of connectivity and access. It is about implementing policies that support the adoption, diffusion, and use of digital technology—including measures that support high-quality and competitively priced internet rollouts. Education, skills, and labor market policies may help secure the availability of skills in the labor market to support the adoption and use of digital technologies. Education and training systems need to keep up with the rapid pace of innovation. Business-relevant education and training programs should enhance workers' reallocation across tasks, as technological opportunities expand or change, and workers' mobility across firms and industries.

- *Creating a competitive digital economy.* Narrowing the gaps in the digital economy also requires complementary policies and assets. Countries need regulations that foster connectivity and competition, digital skills that are technology-augmenting, labor and product market policies that facilitate labor reallocation as technological opportunities emerge, and policies and institutions that enforce cybersecurity. Competition can help reduce prices and expand usage. The digital economy needs to be inclusive and reduce the divide in gender, income, and rural areas. Regulations are essential to create an environment that fosters the innovative and bold use of technology.

ANNEX 1A: FACTORS BEHIND ECONOMIC RESILIENCE IN SUB-SAHARAN AFRICA

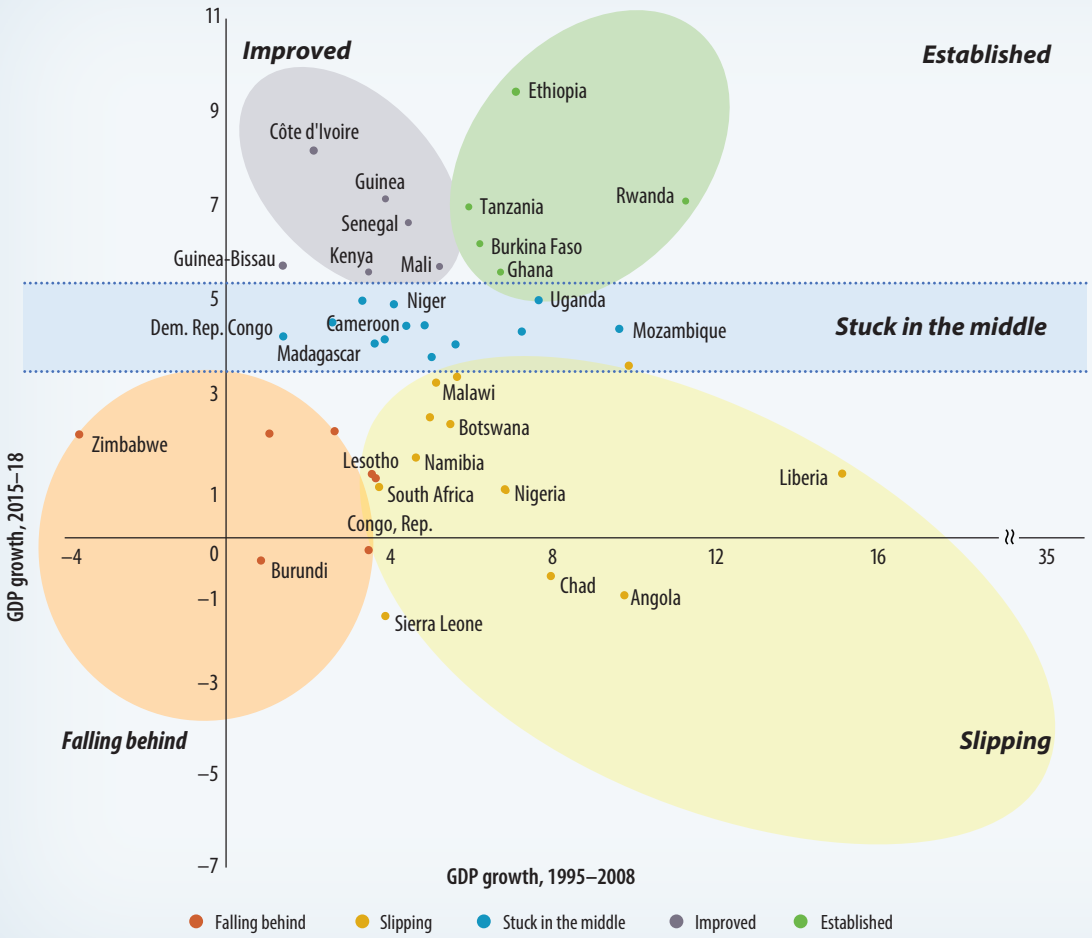
This annex documents the stylized facts on the macroeconomic and financial features that lead to growth resilience across Sub-Saharan African countries, so-called taxonomy of growth resilience. This taxonomy, which was introduced in *Africa's Pulse,* volume 14, describes different groups of growth performers in the region according to the speed and persistence of gross domestic product (GDP) growth (World Bank 2016a). It provides the big picture of recent macroeconomic performance in Sub-Saharan Africa. Adverse external shocks and poor economic management took a toll on African livelihoods during 2015–18; consequently, the resilience of growth trajectories has been put to the test across Sub-Saharan African countries. The main message is that achieving sustained and resilient growth in the region requires improving institutional quality (especially the rule of law), boosting productivity in the agriculture sector, and reducing the risk profile of public debt.

The findings show that there is economic convergence in real GDP per capita—as the countries with smaller income per capita are growing at the fastest pace. The fastest growing countries in the region still rely heavily on agriculture—a low-productivity sector that requires technological modernization to boost its productivity. Therefore, resource misallocation in agriculture would explain lower aggregate productivity in the region. Institutional quality is weak in all the country groups, especially in the areas of political stability, government effectiveness, and the rule of law—particularly among the worst performers. Debt accumulation is threatening the sustainability of public debt, as an increasing share is owed to private creditors and denominated in foreign currency. Developing domestic financial markets is necessary to attract domestic and financial investors to bring in more capital inflows. Creating local currency bond markets would help in diversifying the composition of debt and managing currency risks. So far, all the countries in the region show a dismal record on institutional quality; therefore, it is important to strengthen domestic institutions not only to support robust macroeconomic policy frameworks but also to foster domestic and foreign investment.

Domestic growth performance serves as a threshold to implement the taxonomy of resilient growth—as outlined in the October 2016 and April 2017 issues of *Africa's Pulse* (World Bank 2016a, 2017b). The taxonomy compares the average annual GDP growth rates during 1995–2008 and 2015–18 against predetermined thresholds. These thresholds correspond to the bottom and top terciles of the annual average growth rates across 44 Sub-Saharan African countries between 1995 and 2008 (that is, 3.5 and 5.4 percent, respectively). The taxonomy of growth resilience, accordingly, categorizes growth performance into five groups: (a) falling behind, (b) slipping, (c) stuck in the middle, (d) improved, and (e) established (figure 1A.1). These five groups are then reclassified into three groups. If a country's economic performance declined from 1995–2008 to 2015–18, the country is categorized in the bottom tercile, which includes "falling behind" and "slipping." If a country's growth rate remained invariant over time, between 3.5 and 5.4 percent in both periods, it is categorized in the middle tercile (or "stuck in the middle"). If a country's economic performance improved from 1995–2008 to 2015–18, with growth of more than 5.4 percent per year, the country is categorized in the top tercile, which includes the "improved" and "established" groups.

FIGURE 1A.1: Taxonomy of Growth Performance in Sub-Saharan Africa

The largest three economies in the region are in the bottom tercile of growth performance.



Source: World Bank staff calculation based on the WDI database.

The top tercile comprises 11 countries: Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Guinea, Guinea-Bissau, Kenya, Mali, Rwanda, Senegal, and Tanzania. These countries account for nearly 33 percent of the region's population and produce 20 percent of the region's total GDP. The average economic growth in the top tercile exceeds the threshold of 5.4 percent. The group's strong rate of economic growth is due to greater aggregate demand (more private consumption and better public investment), higher commodity exports, and larger agricultural output. Indeed, some of the countries in this group are more strictly "established" growth performers (Burkina Faso, Ethiopia, Rwanda, and Tanzania). They are not resource abundant; their (median) annual growth rate was about 7 percent per year in 2015–18; and their (population-weighted) average GDP per capita is US$807.

The middle tercile includes 14 countries: Benin, the Central African Republic, Cameroon, the Democratic Republic of Congo, Cabo Verde, The Gambia, Madagascar, Mozambique, Mauritius, Niger, Sudan, São Tomé and Príncipe, Togo, and Uganda. This group of countries accounts for nearly 30 percent of the region's population (which is similar to the population in the top tercile) and produces 17 percent of the region's total GDP. Countries in this group failed to reach a rate of

GDP growth of 5.4 percent in 2015–18. The (population-weighted) average GDP per capita of this group is US$955, which is greater than that of the top tercile.

The bottom tercile consists of 19 countries: Angola, Burundi, Botswana, the Republic of Congo, the Comoros, Gabon, Equatorial Guinea, Liberia, Lesotho, Mauritania, Malawi, Namibia, Nigeria, Sierra Leone, Eswatini, Chad, South Africa, Zambia, and Zimbabwe. These countries did not show any progress in their economic performance from 1995–2008 to 2015–18. For instance, their median economic growth rate decelerated, from 5.4 percent per year in 1995–2008 to 1.2 percent per year in 2015–18. The population in this group accounts for 33 percent of the region's total population (similar to the top and middle terciles) and produces almost 60 percent of the region's total GDP (which is much greater than the top and middle terciles). This group includes the three largest countries in the region—Nigeria, South Africa, and Angola—and comprises many commodity exporters. The bottom tercile's average GDP per capita is about US$2,696.

What macroeconomic and financial correlates are behind the different growth performances of the top, middle, and bottom terciles in Sub-Saharan Africa? Why do the resource abundant countries show poor economic performance, while non–resource rich countries outperform them? What kinds of problems are the middle tercile countries facing? What would be the possible solutions? Is better economic management important? Is the poor performance of the bottom and middle countries a problem of poor economic fundamentals or bad luck?

The taxonomy is used to help identify the factors that are correlated with success or failure in economic growth performance in Sub-Saharan Africa, with emphasis on macroeconomic and financial variables. Therefore, the following analysis relates economic growth to macroeconomic performance in the region. The analysis involves a series of macroeconomic variables for 44 Sub-Saharan African countries from 1995 to 2018. The correlates of growth for this analysis include the following:

a. Convergence, as proxied by the level of income per capita of the countries in each tercile
b. Structural transformation, as captured by sectoral value-added share and sectoral employment share
c. Capital flows (aggregate value and composition)
d. Level and composition of public sector indebtedness, as captured by: (i) the general government gross debt and its currency composition, and (ii) the outstanding external public debt (and its composition, by creditor)[1]
e. Governance indicators, namely, government effectiveness, regulatory quality, control of corruption, voice and accountability, political stability, and absence of violence and rule of law.[2]

1 The data on external public debt and its composition are obtained from the World Bank's World Development Indicators. The data on general government gross debt are from the International Monetary Fund's World Economic Outlook.

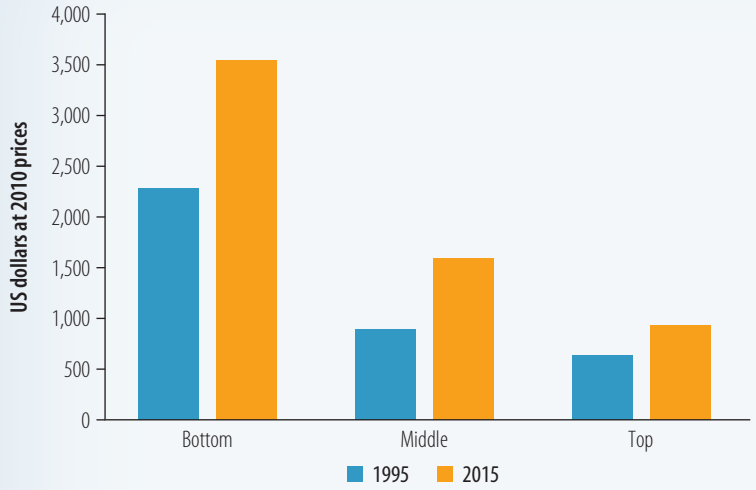
2 The World Bank Governance Indicators are from Kaufman, Kraay, and Mastruzzi (2009). The Governance Indicators take values from -2.5 to 2.5, where higher values indicate better governance. These indicators capture various dimensions of governance, including government effectiveness and regulatory quality (measuring "the capacity of the government to effectively formulate and implement sound policies"); voice and accountability, political stability, and absence of violence/terrorism (measuring "the process by which governments are selected, monitored, and replaced"); and rule of law and control of corruption (describing "the respect of citizens and the state for the institutions that govern economic and social interactions among them").

Convergence

There is evidence of convergence in Sub-Saharan Africa: countries with lower levels of GDP per capita (that is, countries in the top tercile) show a tendency to grow at faster rates than countries with greater GDP per capita. Specifically, the countries with the best growth performance in 2015–18 (the top tercile) show the smallest real GDP per capita, with an unweighted average of US$639 in 1995 and US$932 in 2015 (in constant 2010 prices) (figure 1A.2). They are followed by the middle tercile, with an average real GDP per capita of US$883 in 1995 and US$1,580 in 2015. Finally, the bottom tercile countries display the largest real GDP per capita (with group averages of US$2,272 in 1995 and US$3,533 in 2015). The stability in the Solow-Swan model predicts that poor and rich countries will converge toward their steady state (Barro and Sala-i-Martin 1995). Failing to converge to the income levels of the world economy would leave Sub-Saharan African countries behind and stuck in poverty or middle-income traps, indicating that policies have failed to boost productivity.

FIGURE 1A.2: Real Income per Capita across Terciles of Growth Performance in Sub-Saharan Africa
(constant US$, 2010 prices)

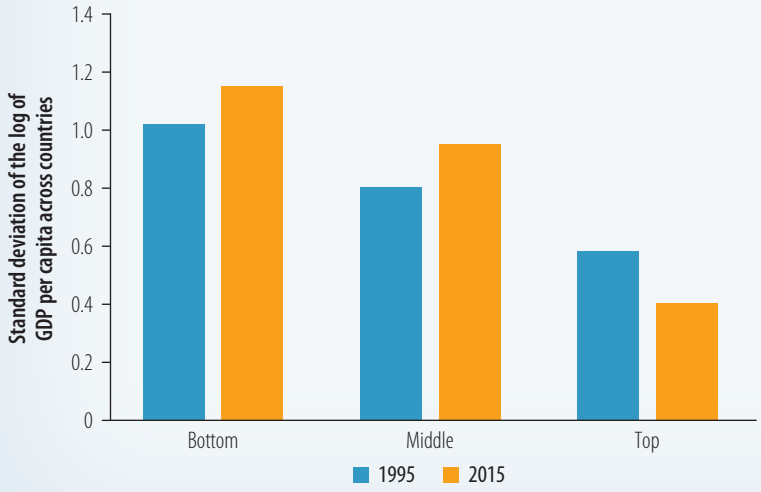
Bottom tercile countries have the largest income per capita.



Source: World Development Indicators, World Bank.

FIGURE 1A.3: Income per Capita Dispersion across Terciles of Growth Performance in Sub-Saharan Africa
(standard deviation of the log of GDP per capita across countries)

Income per capita became less volatile in the top tercile and more volatile in the middle and bottom terciles.



Source: World Development Indicators, World Bank.

Additionally, the standard deviation of real GDP per capita is computed for the growth performance terciles. It shows that real income per capita is more volatile in the bottom tercile than in the middle and top terciles (figure 1A.3). Therefore, there is a greater dispersion of income per capita in the group of the worst growth performers (bottom tercile), while there is lower dispersion among the best performers (top tercile). This reflects a greater heterogeneity of income per capita levels in the bottom tercile compared with the top tercile.

Structural Transformation

One of the main factors behind the overall low aggregate productivity in Sub-Saharan Africa is the weak productivity in the agriculture sector. Delays in the technological modernization of this sector and poor institutions governing land allocation have produced misallocation of resources. In general, better productivity growth fosters economic growth in the long run. According to Duarte and Restuccia (2010) and Herrendorf, Rogerson, and Valentinyi (2014), the transformation process is characterized by (a) declining labor (or hours worked) in agriculture over time, (b) rising share of labor (or hours worked) in services, and (c) increasing share of labor in manufacturing at an early stage, and then decreasing at a later stage, therefore, the share of labor (or hours worked) in manufacturing is hump-shaped. Developing countries could manage to lift their economies from a lower-income level and reach upper-middle-income and high-income levels by diversifying their sectors from agriculture and traditional sectors toward modern sectors in their development paths (see also World Bank 2018). Consequently, a sustained path of economic growth is characterized by the reallocation of labor from agriculture to modern economic activity, such as manufacturing, information technology–related services, and knowledge-based modern services.

Table 1A.1 shows that the average value-added share in agriculture is the smallest in the bottom tercile (17.6 percent in 2015–18), while it is the largest in the top tercile (28.8 percent in 2015–18). Although the value-added share in agriculture declined for all the terciles (bottom, middle, and top) from 1995–2008 to 2015–18, the largest drop took place in the bottom and middle terciles (with an average decline of about 4 percentage points), while the smallest drop happened in the top tercile (with an average drop of 3.1 percentage points). The pace of decline in the agricultural value-added share has been the fastest for the bottom tercile (-6.4 percentage points) and slowest for the top tercile (-2.1 percentage points).

TABLE 1A.1: Structural Transformation in Sub-Saharan Africa across the Growth Performance Terciles
(average shares, unweighted)

	Bottom		Middle		Top	
	1995-08	2015-18	1995-08	2015-18	1995-08	2015-18
Value-added shares (%)						
Agriculture	21.5	17.6	26.9	22.9	31.9	28.8
Industry	31.4	27.8	20.0	19.0	19.4	21.5
Services	42.2	49.0	47.5	48.9	41.8	43.2
Employment shares (%)						
Agriculture	56.8	51.3	60.2	55.4	65.5	56.6
Industry	12.2	13.2	12.5	12.4	8.9	11.9
Services	31.0	35.5	27.3	32.2	25.5	31.5

Source: World Development Indicators, World Bank.

The average industry value-added share increased by 2 percentage points in the top tercile (from 19.4 percent in 1995–2008 to 21.4 percent in 2015–18), while it declined, on average, 1 percentage point in the middle tercile and 3.7 percentage points in the bottom tercile. For all the terciles of growth performance, the reduction in the value-added share of agriculture was compensated, at least partly, by an increase in the average value-added share in services—especially among countries in the bottom tercile, where the average increase of this share was 6.9 percentage points (as opposed to an increase of 1.4 percentage points in the middle and bottom terciles). Additionally, services in the bottom tercile accounted for half of economic activity in 2015–18 (regardless of whether we use the mean or median for the period). These averages may not account for the heterogeneity in the evolution of value-added shares across countries in the region. For instance, the largest increase in the value-added share of the services sector was achieved by Equatorial Guinea (26.1 percentage points) and Liberia (26 percentage points), and both countries are in the bottom tercile. Sectoral economic activity in Equatorial Guinea, a petroleum and natural gas producer, is mostly accounted for by industry (almost 55 percent of GDP) and services (about 40 percent of GDP).

The process of structural transformation occurs at different paces and different moments across countries. This transformation in Sub-Saharan Africa is not only slow but also lags that of other developing regions. Many countries in Sub-Saharan Africa have large shares of employment in agriculture, compared with the shares in industrial countries (see the October 2018 issue of Africa's Pulse). Table 1A.1 shows that agricultural employment shares decline across all terciles in the region from 1995–2008 to 2015–18, and workers shift primarily to services and, to a lesser extent, the industry sector. The highest average employment share in agriculture is still displayed by the top tercile (with an average share of 56.6 percent in 2015–18); however, the top tercile has experienced the largest decline in this share (from 65.5 percent in 1995–2008). The average employment shares in agriculture in the middle and bottom terciles are still large in 2015–18 (55.4 and 51.3 percent, respectively), and their paces of reduction from 1995–2008 to 2015–18 are slower (4.8 and 5.5 percentage points, respectively) compared with the top tercile.

The decline in the agricultural employment share in the top tercile from 1995–2008 to 2015–18 is met by an increase in the services employment share (5.9 percentage points) and, to a lesser extent, the industrial employment share (3 percentage points). For the bottom tercile, the lower share of workers in agriculture is compensated by an increase in the share of workers in the industry and services sectors (with average increases of 1 and 4.5 percentage points, respectively). In the middle tercile countries, the lower shares of employment in agriculture and industry are met by an increase in the employment share in services (4.9 percentage points).

Capital Inflows

Gross capital inflows as a percentage of GDP have increased from 2005–08 to 2015–18 in Sub-Saharan Africa. The median ratio of gross total capital flows to GDP in the top tercile have increased from 2.3 percent in 2005–08 to 7.4 percent in 2015–18 (table 1A.2). The largest increase in foreign capital penetration takes place among the middle tercile countries, where gross inflows rose from 3.9 percent of GDP in 2005–08 to 9.7 percent in 2015–08 (an increase of almost 6 percentage points). The lowest increase in gross inflows (about 3.3 percentage points) occur

TABLE 1A.2: Gross Capital Flows into Sub-Saharan Africa across Growth Performance Terciles
(percent of GDP)

	Bottom		Middle		Top	
	2005-08	2015-18	2005-08	2015-18	2005-08	2015-18
I. Averages						
Gross Inflows	6.7	7.3	4.7	24.2	2.7	9.6
FDI	5.5	7.1	6.1	14.3	2.5	4.0
Porfolio Investment	0.3	0.6	0.3	0.4	0.1	1.0
Other Investment	0.7	2.3	-1.9	8.4	0.1	4.5
II. Medians						
Gross Inflows	4.5	7.7	3.9	9.7	2.3	7.4
FDI	3.8	3.3	3.6	4.5	2.0	2.9
Porfolio Investment	0.0	0.0	0.1	0.0	0.0	0.1
Other Investment	0.4	1.7	-0.6	3.2	0.1	2.9

Source: Balance of Payments Statistics version 6.0, International Monetary Fund.
Note: FDI = foreign direct investment.

among the bottom tercile countries (where inflows amounted to 7.7 percent of GDP in 2015–18).[3] Developing domestic financial markets would help boost capital flows into Sub-Saharan Africa.

When looking at the composition of gross inflows, foreign direct investment (FDI) and other investment inflows (OI) have significantly improved, while there has been little increase in portfolio investment (PI) inflows (less than 1 percent) in all the terciles. The small increase in PI inflows might be attributed to the limited depth of domestic financial markets in Sub-Saharan Africa. Gross FDI inflows grow from 6.1 percent of GDP in 2005–08 to 14.3 percent of GDP in 2015–18 among countries in the middle tercile (an increase of 8.2 percentage points).[4] The increase in gross FDI inflows was, on average, more modest for the top and bottom terciles (they grew 1.5 and 1.6 percentage points, respectively).

The two largest economies in the region, Nigeria and South Africa, have experienced a decline in FDI from 2005–08 to 2015–18 and an increase in non-FDI inflows. In Nigeria, gross FDI inflows have decreased from 2.5 percent of GDP in 2005–08 to 0.7 percent of GDP in 2015–18, while PI and OI increased as a percentage of GDP. The rise in PI (from 0.8 percent of GDP in 2005–08 to 1.2 percent of GDP in 2015–18) can be attributed to the government tapping international bond markets. OI in Nigeria rose from -4.1 percent of GDP in 2005–08 to 0.3 percent of GDP in 2015–08. By contrast, South Africa has a larger share of PI inflows to total inflows. For instance, gross PI inflows (3.4 percent of GDP in 2015–18) are larger than gross FDI and OI inflows (0.7 and 1.3

3 The rapid increase in gross inflows as a percentage of GDP among countries in the middle tercile is even larger when considering unweighted averages. This is primarily attributed to Mauritius—whose flows increased from 17.1 percent of GDP in 2005–08 to 202.6 percent in 2015–18. Mauritius is an international financial center in the Africa region, and its global business sector is an important conduit for FDI into India and Africa. Mauritius does not offer a zero-tax jurisdiction. In the past, global business entities could offset any tax collected abroad against their tax liability in Mauritius or alternatively be offered a foreign tax credit of 80 percent (irrespective of the foreign tax paid); hence, foreign companies would have been liable for a maximum effective rate of tax of 3 percent. However, this tax policy has changed: the foreign tax credit (that is, the presumed foreign tax of 80 percent) available to some global business companies (GBCs) was abolished as of January 1, 2019. The tax rate for domestic companies and GBCs has been harmonized to 15 percent. A new tax regime is being introduced, where the 80 percent exemption ("partial exemption") applies to: foreign source dividends derived by a company; interest derived from overseas by a non-banking company; profit attributable to a permanent establishment that a resident company has in a foreign country; foreign source income derived from a collective investment scheme (CIS), closed-end fund, CIS manager, CIS administrator, investment adviser, or asset manager, licensed or approved by the Financial Services Commission (FSC); and income derived from overseas by companies engaged in ship and aircraft leasing. This partial exemption now applies to domestic companies and GBCs (subject to requirements issued by the FSC). If a company has claimed the partial exemption, no credit for foreign taxes in the form of actual tax credit, underlying tax credit, or tax-sparing credit shall be available. Finally, the definition of foreign source income has changed to income that is not derived from Mauritius (Grant Thornton 2018).

4 The sharp increase in FDI inflows was partly influenced by the drastic rise recorded by Mauritius, from 2.6 percent of GDP in 2005–08 to 128.4 percent of GDP in 2015–18. The large amount of inflows in 2015–18 might include what the Central Bank of Mauritius denotes as "Global Business" FDI.

percent of GDP, respectively). From 2005–08 to 2015–18, gross FDI and OI inflows have declined in South Africa, by 1.4 and 1.2 percentage points, respectively, while gross PI inflows have only increased 0.3 percentage point. South Africa has a platform to attract PI inflows—its developed domestic financial market. Developing domestic bond and stock markets is essential to attract foreign investors (see also the October 2018 issue of *Africa's Pulse*).

General Government Gross Debt

General government gross debt increased, on average, in all the growth performance terciles of the region from 2010–12 to 2015–18, particularly for the bottom and middle terciles, where the average variation in gross debt is about 20 and 24 percentage points of GDP, respectively. The increase in general government gross debt among countries in the middle and bottom terciles is primarily explained by faster accumulation of foreign currency debt (average variation of 19.5 and 11.4 percentage points of GDP, respectively).

On average, general government gross debt exceeded 50 percent of GDP in 2015–18 for these groups of countries: it totaled 67 percent of GDP for those in the middle tercile and 52 percent of GDP for those in the bottom tercile. When looking at the currency composition of debt, foreign currency debt has a greater weight than domestic currency debt for the bottom, middle, and top tercile countries. This poses greater risks because foreign currency debt has increased at a fast pace (table 1A.3). Therefore, a sharp depreciation of the domestic currency would have a severe impact in the presence of greater currency mismatches. For instance, the accumulation of foreign currency–denominated debt has led to liability positions in foreign currency that exceed 90 percent of GDP in 2015–18, namely, in Sudan (108.8 percent of GDP) and Cabo Verde (95.9 percent of GDP). For these countries, it is crucial to develop alternative financing instruments that allow them to borrow in domestic currency and diversify their debt composition to avoid risks (specifically, currency risks).

TABLE 1A.3: Public Debt in Sub-Saharan Africa across Growth Performance Terciles
(percent of GDP, unweighted averages)

	Bottom		Middle		Top	
	2010-12	2015-18	2010-12	2015-18	2010-12	2015-18
General Government Gross Debt (% GDP)						
Total	23.0	34.4	24.2	43.7	25.6	29.3
Domestic Currency	12.1	20.5	15.5	26.5	14.3	19.0
Foreign Currency	32.2	52.1	43.2	67.0	38.9	47.4
PPG External Debt Stocks (% GDP)						
Total	17.8	25.0	27.3	34.5	24.9	25.0
Domestic Currency	15.0	18.9	25.8	30.2	23.1	19.9
Foreign Currency	2.8	6.1	1.5	4.3	1.9	5.2

Sources: World Development Indicators, World Bank; World Economic Outlook, International Monetary Fund.

Public External Debt

Public and publicly guaranteed (PPG) external debt across all terciles of Sub-Saharan African countries has increased. The composition of PPG external debt has also shifted from public creditors to private creditors. The average PPG external debt stocks have increased across terciles and, especially, among the middle and bottom terciles, where the debt stock has increased by 7.2 percentage points of GDP from 2010–12 to 2015–18. By contrast, the average increase in PPG debt stock is rather small for countries in the top tercile (0.1 percentage point of GDP). In 2005–18, countries in the middle tercile have accumulated the largest (average) PPG external debt stock, at 35 percent of GDP, while the corresponding debt for top and bottom tercile countries has amounted to 25 percent of GDP (table 1A.3).

From 2010–12 to 2015–18, the average composition of PPG external debt stocks in Sub-Saharan Africa has gradually changed. The October 2018 issue of *Africa's Pulse* argues that the 2008–09 global financial crisis and the 2011 euro sovereign debt crisis drove changes in the structure of financing (that is, debt structure) of many countries in the region. Consequently, those countries had to seek other financing opportunities with non-Paris Club governments, such as China, and private creditors. Table 1A.3 shows the composition of PPG external debt stocks by official creditors and private creditors. Both sources of PPG external debt appear to have increased from 2010–12 to 2015–18. In 2010–12, the larger share of PPG external debt is owed to official creditors—more specifically, 93 percent of the PPG external debt stocks of the top tercile countries is owed to official creditors, while the share owed to this type of creditor is 95 percent for the middle tercile and 84 percent for the bottom tercile. In 2015–18, the share of PPG external debt owed to private creditors among bottom tercile countries has accounted for 25 percent of the total PPG external debt stocks, about 20 percent for the top tercile, and 12 percent for the middle tercile.

The reporting of average changes in the composition of PPG external debt stocks fails to account for the heterogeneity of country experiences. For instance, the average PPG external debt in Cabo Verde increased from 58.9 percent of GDP in 2010–12 to 95.4 percent of GDP in 2015–18. The amount of PPG external debt owed to private creditors almost tripled, rising from 10 percent of GDP in 2010–12 to 29 percent of GDP in 2015–18. The share of debt owed to private creditors in Cabo Verde increased from 17 percent of total PPG debt stocks in 2010–12 to 30 percent in 2015–18. In Mozambique, PPG external debt stocks increased more than twice, from 31.6 percent of GDP in 2010–12 to 90 percent of GDP in 2015–18. This increase came with a higher amount borrowed from private creditors.[5] Debt owed to private creditors in Mozambique increased to 22 percent of the total external debt in 2015-18. In Mauritania, the increase in PPG external debt stocks was driven by greater borrowing from public creditors—as this country is categorized as an International Development Association (IDA)–fragile country and thus does not have access to private creditors. The devaluation of the Mauritanian ouguiya and the decline in nominal GDP (as terms of trade worsened) also played a role in increasing external debt.

5 The bulk of borrowing from private creditors in Mozambique (Credit Suisse, VTB, and so forth) took place in 2013 and 2014.

Governance

The strength of the institutional framework and regulations that protect investors plays a key role in growth and development (Dollar and Kraay 2003). It also fosters the impact of financial openness on domestic financial sector development (Calderón and Kubota 2009). The World Bank Governance Indicators show that there was little to no progress in institutional quality across the terciles in Sub-Saharan Africa during 2000–15 (table 1A.4).

Regulatory quality worsened for all terciles from 2000 to 2015—especially among middle tercile countries. The negative scores and decline in this dimension of governance reflect not only the low capacity to formulate regulations that foster private sector development but also its deterioration over time. Despite having negative scores, countries in the top tercile have improved in all dimensions of governance except regulatory quality. The largest (absolute) increases in governance for the top tercile countries occurred in voice and accountability (0.41) and the rule of law (0.36).

Government effectiveness has deteriorated among countries in the middle and bottom terciles, while it has remained almost invariant among top tercile countries. The perception of the quality of public services, quality of policy formulation and implementation, and credibility of the government's commitment is relatively poor—especially among countries in the bottom tercile. Political stability and absence of violence have improved in the top tercile; however, it has deteriorated among countries in the middle and bottom terciles. Most of these governments show a poorer capacity to manage violent conflict or other destabilizing forces.

Progress has been faster in voice and accountability among countries in the top and bottom terciles, while there has been a slight deterioration in the middle tercile. The latter group of countries has the lowest score in this governance dimension. This implies that governments in the middle tercile have a poor record in promoting government participation. There has been some progress in the rule of law and control of corruption for the bottom and top terciles; however, countries in the middle tercile have failed to show improvement. Accordingly, countries in the bottom and top terciles are making improvements in the quality of contract enforcement, property rights, the courts, and tackling corruption, while the middle tercile has not advanced in those areas.

TABLE 1A.4: Governance in Sub-Saharan Africa across Growth Performance Terciles *(medians)*

	Bottom		Middle		Top	
	2000	2015	2000	2015	2000	2015
Government effectiveness	-0.799	-1.000	-0.524	-0.762	-0.645	-0.611
Regulatory quality	-0.748	-0.851	-0.503	-0.747	-0.271	-0.375
Control of corruption	-0.804	-0.762	-0.617	-0.760	-0.685	-0.450
Voice and accountability	-0.978	-0.367	-0.445	-0.475	-0.638	-0.230
Political stability	-0.254	-0.308	0.000	-0.471	-0.702	-0.518
Rule of law	-1.092	-0.854	-0.713	-0.739	-0.873	-0.509

Source: World Bank Governance Indicators.

Section 2: Implementing Regional Solutions to Exit Fragility in Sub-Saharan Africa

2.1 INTRODUCTION

Fragility, conflict, and violence (FCV) currently pose a major threat to the implementation of the Sustainable Development Agenda. FCV hinders human and economic development, thus making it difficult to sustain the peace agenda. The interconnected nature of human activity implies that conflict may no longer be confined to community, regional, or national borders, and it can potentially affect a larger number of people. By 2019, approximately two billion people (about one-quarter of the world's population) live in countries where development outcomes are affected by FCV. In 2015, countries with fragile situations housed 513 million people living in extreme poverty—that is, living on less than $1.90 per day (2011 purchasing power parity (PPP)). The number of poor people living in FCV-affected countries could exceed 620 million by 2030—that is, more than 80 percent of the world's poorest (OECD 2018). In 2017, 30.6 million people (about 80,000 people per day) were also forced to flee their homes due to conflict, violence, and disasters (IDMC 2018). Countries in FCV situations create the largest number of refugees and house the largest share of internally displaced and refugee populations. Violent conflict not only affects development, but also has a disproportionate impact on the most vulnerable populations—women and children. Overall, countries with FCV situations are at the epicenter of the global development crisis, and the majority of these are in Sub-Saharan Africa.

Sub-Saharan Africa's borders, set by colonial rulers and later reaffirmed by the African Union, created multicultural, multilinguistic, and multiethnic nation states, which may help explain the persistence of disputes within and across states. Africa's borders are typically porous and almost impossible to control for weak state institutions, small armies, and poorly funded police forces. However, the borders constitute obstacles to trade, as manifested by tariffs, non-tariff barriers, and inefficient customs arrangements. In this context, the need to trade across borders creates opportunities for smuggling, tax evasion, and illicit activities.

Addressing the challenges posed by FCV is crucial to eradicate extreme poverty and boost shared prosperity. However, operating in FCV settings requires a fundamentally different approach than in non-FCV settings. The challenges of weak institutions, low capacity, and a frayed social contract between citizens and the state often hinder effective development approaches. Moreover, when compounded with conflict and violence, these issues can create a "fragility trap" in which countries fail to deliver services to their citizens. Insecurity is pervasive and, consequently, fragility becomes an endemic and long-term challenge.

Helping FCV-affected countries escape from the fragility trap is critical to the broader approach needed to support peace, stability, and prosperity in fragile and conflict-affected settings. The government, private sector, and civil society can meet the conditions needed to recover from fragility over the long term by strengthening accountability, trust, and institutions. It is crucial to build the state's legitimacy and capacity, as well as renew the social contract between citizens and the state. More importantly, long-term engagement is required to avoid relapses into fragility, as well as to take advantage of windows of opportunity to

provide significant development support and build the momentum necessary to escape from fragility over the long term.

This section documents five issues: (a) the development, structural, and institutional features of fragile countries in Sub-Saharan Africa; (b) successful transitions out of fragility and greater resilience in the region; (c) lessons from successful (ongoing) regional projects that address fragility in the region; (d) (ongoing) regional arrangements to support FCV-affected countries; and (e) possible pathways out of fragility (state-building capacity, digital economy, and trade facilitation).

Fragile situations include countries or territories with: (i) a harmonized Country Policy and Institutional Assessment (CPIA) rating of 3.2 or less; and/or (ii) the presence of United Nations and regional peacekeeping or peacebuilding missions (say, African Union, European Union, and North Atlantic Treaty Organization), with the exclusion of border monitoring operations, during the past three years.[1] The harmonization results from averaging World Bank CPIA scores with those of the countries' corresponding regional development banks' (African Development Bank and Asian Development Bank) ratings. Based on these criteria, 19 of the identified 36 countries with fragile situations are located in Sub-Saharan Africa.

To characterize fragile countries in Sub-Saharan Africa, a database of 48 countries in the entire region has been collected. This database includes several development, structural, and institutional indicators, and comparisons are made among fragile and non-fragile country groups—including their extent of natural resource abundance. One of the main findings is that the structural transformation process of fragile countries is considerably slower than that of non-fragile countries, as manifested, among other things, by their very high share of agricultural employment. This structural feature is associated with not only lower rates of growth per capita, but also higher rates of poverty. Fragile and non-fragile countries have made little progress in improving governance over the past two decades, and yet non-fragile countries exhibit the lowest levels of governance, especially in government effectiveness, political stability, and absence of violence and the rule of law.

Successful transitions out of fragility in Sub-Saharan Africa (for example, Ethiopia, Mozambique, and Rwanda) achieved the following objectives: (a) reaching political stability, (b) delivering services, (c) addressing institutional weaknesses, (d) achieving macroeconomic stability, and (e) fostering growth and investment. Therefore, successful transitions strengthened the legitimacy of the state and enhanced its core functions.

Although Sub-Saharan African countries are making efforts to find a way out of fragility, it is necessary to engage and receive much larger support from regional organizations and the international community. Fragile contexts in one country can affect not only the population directly involved, but also people in neighboring countries. Consequently, projects at the regional level have been deployed to address the issue of fragility. For example, a regional stabilization, recovery, and resilience strategy for areas affected by Boko Haram in the Lake Chad Basin region was adopted by Cameroon, Chad, Niger, and Nigeria in August 2018.

1 The annual release of the Harmonized List of Fragile Situations can be downloaded from: http://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations.

Finally, this section addresses possible pathways out of fragility for affected countries in the region. It first argues that Sub-Saharan Africa needs to build state capacity to prevent and exit fragility, renew the social contract, and strengthen social cohesion. Second, it explores the introduction of digital technologies to enable a rapid reconstruction process—contributing especially to public engagement and media development. Digital technologies can provide solutions to the problems posed by the production and trade of conflict minerals, such as child labor and illicit flows. Third, sustaining peace across borders could be ensured by fostering cross-border trade through the reduction of logistics costs.

As a result, fragility has become the new development frontier and, in general, requires a holistic approach to address issues of security reform, humanitarian assistance, and service delivery to achieve peace, reduce poverty, and generate shared prosperity.

2.2 CHARACTERIZING FCV-AFFECTED COUNTRIES IN SUB-SAHARAN AFRICA

FCV affects growth and development through different channels: (a) the diversion of resources from productive to nonproductive activities (say, rent-seeking or military spending); (b) higher risks associated with insecurity, which decreases investment; and (c) the destruction of capital and wealth that results from violent conflict. Tackling fragility involves understanding the factors that characterize these situations in the region—more broadly, the underlying issues and possible economic policies to address FCV situations. This is particularly important in Sub-Saharan Africa where more than half of the listed fragile contexts in the world (53 percent) are in the region.

In 2017, 299 million people lived in countries with fragile situations in Sub-Saharan Africa (about 28 percent of the total population), and economic activity in these countries amounted to US$289 billion (nearly 17 percent of the region's gross domestic product (GDP)). Consequently, addressing fragility situations would help lift people out of poverty and sustain growth in Sub-Saharan Africa. Commodity booms have helped boost economic activity in some countries; however, this is insufficient to take these economies out of a fragile situation and into sustained growth. This section asks three questions. (i) What are the main development features of countries in a fragile situation? (ii) What are the main constraints to leaving their FCV situation and sustaining growth? (iii) Where are the bottlenecks in the quality of policies and institutions among FCV-affected countries?

The main message of this section is that it is important to strengthen institutions in Sub-Saharan Africa—especially respect for the rule of law and improved political stability—to foster state legitimacy, guarantee political and macroeconomic stability and attract more investors and business activities in these economies. Securing peace and stability would help support policies that enable the development of infrastructure (especially in countries that need reconstruction) and the modernization of agriculture (since most of the people living in FCV situations work in agriculture). This would facilitate the acceleration of the structural transformation process and, thus, allow the reallocation of labor from agriculture toward more productive activities in industry and services.

The main findings are that poverty and inequality have decreased modestly but are still high in Sub-Saharan Africa—especially among FCV-affected countries. Fragile countries tend to exhibit low levels of institutional quality, weak business environments, and a shortage of economic infrastructure. Although there has been a rapid expansion in the use of mobile phones, individuals living in FCV-affected countries have very low access to internet services and restricted access to important analog complements, such as electricity. Most people living in FCV situations depend on agriculture for their livelihoods. The insertion of digital technologies in agriculture (especially the development of low-skill digital applications) is one way to modernize and boost productivity in the sector and accelerate the shift of labor toward more productive activities in the industry and services sectors.

This section characterizes FCV-affected countries in Sub-Saharan Africa by comparing their economic and political features with those of non-FCV-affected countries in the region. The sample of 48 countries in Sub-Saharan Africa is divided into six groups according to their extent of natural resource abundance and incidence of FCV, namely, non-fragile, non-fragile non–resource abundant, non-fragile resource abundant, fragile, fragile non–resource abundant, and fragile resource abundant countries. The inclusion of natural resource abundance in this classification reflects the fact that groups within society will be incentivized to capture either rents or control of the commodity wealth. The World Bank identifies a list of 19 FCV-affected (or simply "fragile") countries in Sub-Saharan Africa (of which nine countries are resource abundant) and 29 non-FCV countries (of which 12 are resource abundant). The detailed classification of countries by FCV incidence and natural resource abundance is presented in the appendix (table A.3). To conduct a comparative analysis of FCV-affected versus non-FCV-affected countries in Sub-Saharan Africa, annual data are compiled from 1998 to 2018 on the following four groups of drivers of FCV:

1. *Development indicators.* Poverty, inequality, and growth can have an impact on the onset and incidence of conflict. The nature of the relationship between these development indicators and conflict depends on the prevalence of the greed hypothesis or the grievances hypothesis. It has been typically argued that greater poverty and inequality increase the likelihood of conflict according to the grievances hypothesis. It has also been argued that economic growth can reduce the likelihood of conflict (grievances) or increase it (greed). The impact of economic growth on conflict depends on the inclusiveness of growth. The risk of conflict increases if growth benefits only a certain group in society—and this is particularly the case of communities with commodity resource wealth or large export windfalls. Income inequality is proxied by the Gini coefficient, where higher values indicate greater inequality in the distribution of income. The poverty rate is captured by the poverty gap and poverty headcount ratio, compared with (population-weighted) averages during 1998–2007 and 2008–17.[2] Economic growth is measured by the rate of growth of real GDP per capita. Commodity resource wealth is proxied by natural resource rents excluding forests, and it is expressed as a percentage of GDP. Export windfalls are measured by terms of trade (TOT) volatility or extreme movements in TOT.

2 The poverty gap at $1.90 a day (2011 PPP) is the mean shortfall in income or consumption from the poverty line of $1.90 a day (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. The poverty headcount ratio at $1.90 a day is the percentage of the population living on less than $1.90 a day at 2011 international prices.

2. *Economic drivers.* This exercise compares the level of development of fragile countries vis-à-vis that of non-fragile countries (as proxied by the level of real GDP per capita) and indicators of the structural transformation process (such as value added and employment shares in agriculture, industry, and services). It also includes the level of human capital, as measured by the Human Capital Index (HCI), infrastructure (specifically, indicators of access to telecommunications and energy), and quality of the business environment (as proxied by scores on the ease of doing business, starting a business, getting electricity, getting credit, trading across borders, and enforcing contracts, from the Doing Business report).

3. *Institutional drivers.* Two sets of indicators are used. The first is the World Bank Governance Indicators (Kaufmann, Kraay, and Mastruzzi 2009), which include voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, control of corruption, and rule of law. The second is the CPIA ratings on economic management, structural policies, social inclusion and equity, public sector management and institutions, and the overall rating.

4. *Country-specific factors.* This group of factors includes geographic and climatic factors.

Development Indicators: Greed versus Grievances

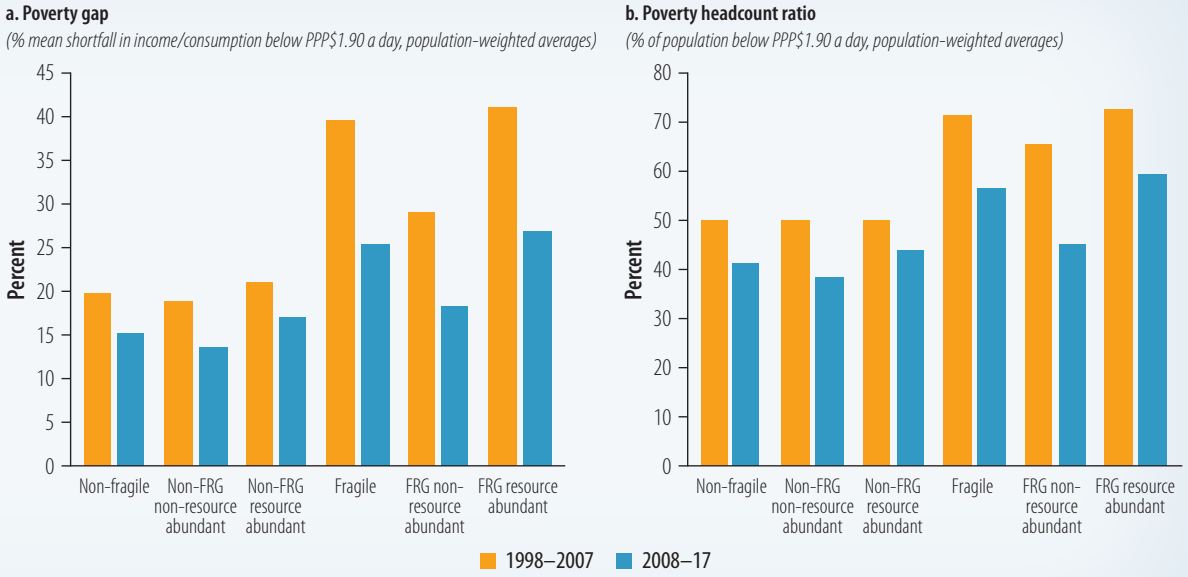
The academic debate on the causes of FCV has become polarized. There are two mainstream hypotheses: one, the grievances hypothesis claims that FCV is due to relative deprivation (as captured by lower economic growth, greater inequality, and high poverty rates), and another, the greed hypothesis postulates that FCV is influenced by the ability to mobilize resources to create and sustain conflict groups regardless of grievances.

Poverty

Some of the world's poorest countries are riddled with violent conflict (such as Chad, the Democratic Republic of Congo, and Sierra Leone). The persistence of FCV engenders more violence and restricts the ability of states and communities to redistribute wealth in the face of economic grievances (Nafziger and Auvinen 2003). Figure 2.1 illustrates two main findings. First, the poverty gap and poverty headcount ratio have decreased in the fragile and non-fragile country groups. The largest decline in the poverty gap occurred among fragile and resource rich countries (from 41.2 points in 1998–2007 to 27.1 points in 2008–17). The largest reduction in the poverty headcount was experienced by fragile and non–resource rich countries (from 65.5 percent in 1998–2007 to 54.3 percent in 2008–17). Second, on average, fragile countries have higher poverty rates than non-fragile countries. This is particularly the case for fragile countries that are resource abundant, where almost 60 percent of the population lived under the poverty line during 2008–17.

Despite a decrease in poverty indicators, there is still higher levels of poverty in fragile countries.

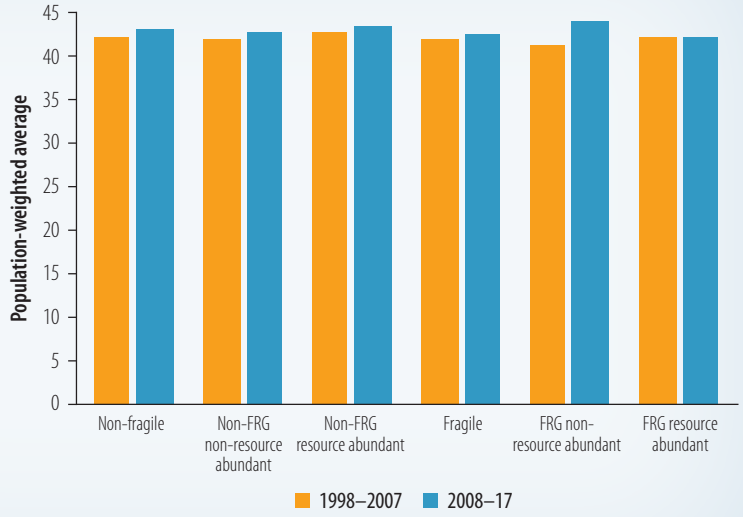
FIGURE 2.1: Poverty Rates in Sub-Saharan Africa, by Condition of Fragility



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile; PPP = purchasing power parity.

Income inequality is high, and there are negligible differences between fragile and non-fragile countries.

FIGURE 2.2: Income Inequality in Sub-Saharan Africa, by Condition of Fragility *(Gini coefficient)*



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

Inequality

Income inequality is identified as an additional source of grievance that could trigger conflict. It can arise from specific population groups (say, ethnic groups) that feel collectively deprived and at the bottom of an unequal distribution of economic wealth and political power (Goodhand 2003).[3] Figure 2.2 illustrates three main findings. First, the Gini coefficient has slightly increased for fragile and non-fragile countries; therefore, income inequality has slightly deteriorated. Next, the Gini coefficients are relatively high for all the country groups—fluctuating between 41 and 44. Finally, fragile countries that are non–resource abundant not only display the highest level of inequality (44.1 in 2008–17) but also the greatest pace of increase (up from 41.2 points in 1998–2007).

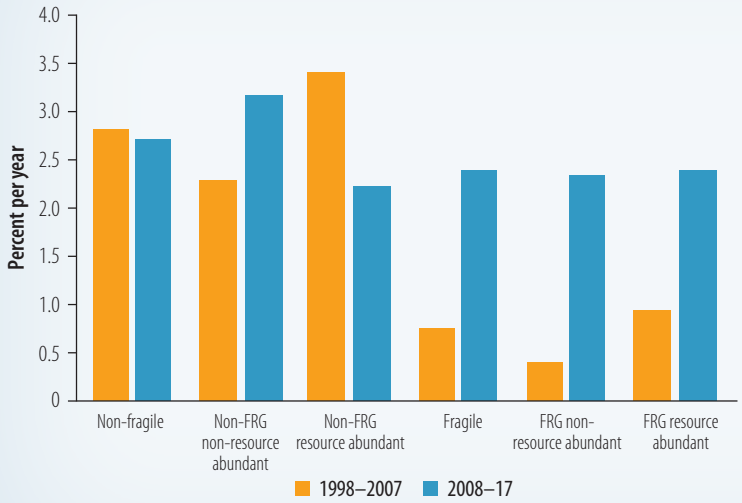
3 Empirical evidence on the relationship between inequality and conflict is mixed at best (Ray and Esteban 2017). An interpretation of mixed evidence in the literature is that the main predictor of conflict it not inequality per se but horizontal inequalities which are often reflected in increasing subregional inequalities. To this end, inequality between socio cultural groups is often a main source of grievances and conflict in African FCV countries.

Economic Growth

The greed hypothesis argues that economic growth influences the opportunity costs of fighting (Chassang and Padro-i-Miquel 2009), the gains from state appropriation (Besley and Persson 2011), and the capacity of the state to bargain or fight insurgencies (Fearon and Laitin 2003; Bazzi and Blattman 2014). The nature of this relationship is different according to the grievance hypothesis: the larger availability of resources—as a result of economic growth—may be used to alleviate the problems of marginalized groups, reduce the likelihood of conflict or, alternatively, increase the likelihood of conflict if these resources are appropriated by narrow elites.

Growth in economic activities—as it is related to the greed and grievances hypotheses—is one of the most assessed drivers of violent conflict (Miguel, Satyanath, and Sergenti 2004; Hegre and Sambanis 2006; Brückner and Ciccone 2010; Dube and Vargas 2013; Bazzi and Blattman 2014). Figure 2.3 reports the annual average growth rate of GDP per capita for 1998–2007 and 2008–17. First, economic growth improved for fragile countries, from an annual average rate of 0.8 percent in 1998–2007 to 2.4 percent in 2008–17. Second, the economic growth of fragile countries is still lower than that of non-fragile countries (2.7 percent in 2008–17). Third, growth per capita in non–resource abundant countries is higher than that in resource abundant countries—regardless of their condition of fragility. Fourth, the growth of fragile non–resource abundant countries (2.34 percent in 2008–17) is still lower than that of non-fragile non–resource abundant countries (3.17 percent in 2008–17). Finally, growth decelerated in non-fragile resource abundant countries (from 3.4 percent in 1998–2007 to 2.22 percent in 2008–17), while it accelerated in fragile resource abundant countries (from 0.95 percent in 1998–2007 to 2.4 percent in 2008–17).

FIGURE 2.3: Economic Growth in Sub-Saharan Africa, by Condition of Fragility
(annual average GDP growth, %)



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

Although growth accelerated among fragile countries, it is still lower than the average of non-fragile countries in 2008-17.

Natural Resources

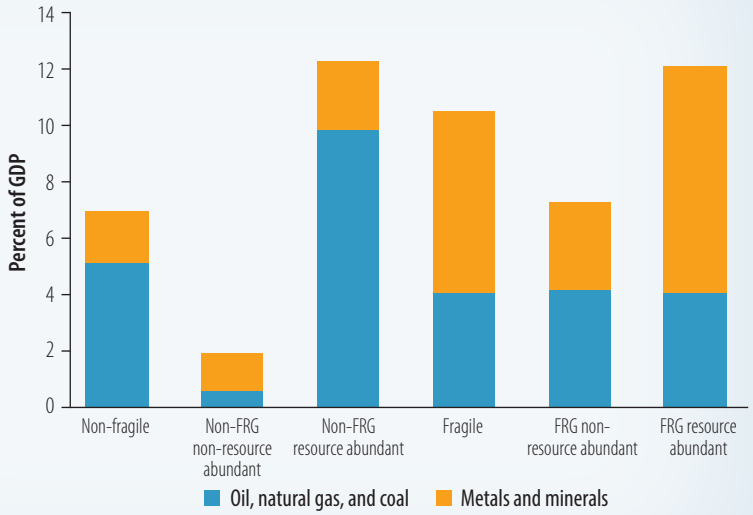
Evidence shows that economic growth can reduce the risk of conflict in low-income countries (Collier et al. 2003; Miguel et al. 2004) and, on average, fragile countries tend to display lower growth per capita. However, growth may have a destabilizing influence—particularly when it involves natural resources. Countries with an output structure that is heavily reliant on the production of one or a few commodities (such as oil, copper, or iron ore) appear to be prone to conflict (Collier et al. 2003). The presence of natural resources encourages certain groups to

capture some of the commodity wealth. Natural resources could perpetuate contemporary conflicts, according to the greed hypothesis.

Economic rents from natural resources are abnormal profits given by the value of extraction. There are more opportunities to generate this type of rent in natural resource abundant countries. The FCV condition may lead to conflict among groups to appropriate the flow of revenues associated with natural resources. Figure 2.4 shows that: first, economic rents from energy, metals, and minerals are, on average, larger among fragile than non-fragile countries (10.5 and 7 percent of GDP, respectively). However, the composition of economic rents is different. Natural resource rents among fragile countries are dominated by rents from metals and minerals. Those of non-fragile countries are primarily driven by oil, natural gas, and coal. Second, the largest natural resource rents, by definition, are accrued by resource rich countries—regardless of their condition of fragility. The natural resource rents of fragile and non-fragile natural resource abundant countries amount to approximately 12 percent of GDP. Rents from energy commodities account for almost 10 percent of GDP in non-fragile resource abundant countries, and rents from metals and minerals represent 8 percent of GDP for fragile resource abundant countries.

Natural resource rents are, on average, larger among fragile countries and non-fragile resource abundant countries.

FIGURE 2.4: Natural Resource Rents in Sub-Saharan Africa, by Condition of Fragility
(% of GDP)



Source: World Development Indicators, World Bank.
Note: Natural resource rents are defined as economic rents from energy commodities (oil, natural gas, and coal) and metals and minerals. Group averages are population-weighted. FRG = fragile.

Terms of Trade

It has been argued that increases in the prices of labor-intensive export goods are more likely to increase the opportunity cost of engaging in violent conflict as opposed to capital-intensive goods (Dal Bó and Dal Bó 2011). It has also been argued that if the production sector of an economy is concentrated in few goods that have a greater share in government revenues and are easier to appropriate, changes in the prices of these goods may increase the likelihood of conflict (Bazzi and Blattman 2014). Figure 2.5 examines whether fragile countries have more volatile terms of trade and are more prone to TOT collapses or booms. For resource abundant countries, commodity prices are one of the main sources of TOT volatility.

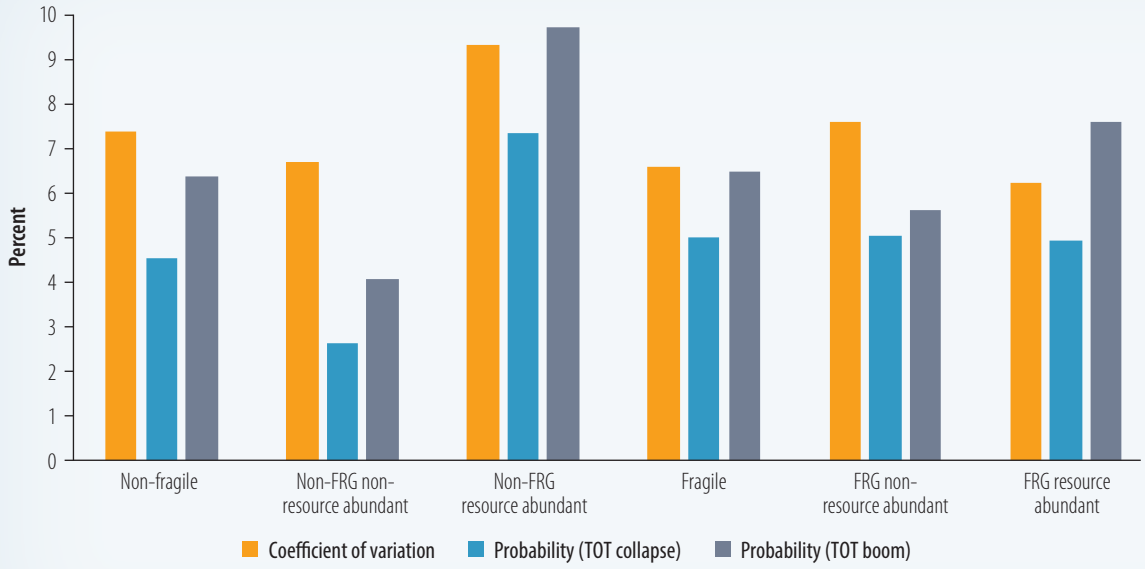
Terms of trade do not appear to be more volatile among fragile countries than non-fragile countries, as the coefficient of variation of the former group (6.6) is lower than that of the latter (7.4). However, non-fragile resource abundant countries exhibit the largest coefficient of variation among all country groups (9.3). This finding implies that these countries face unexpected TOT

shocks due to volatile international commodity prices. The high coefficient of variation among fragile non–resource abundant countries (7.6) also implies that they may face unexpected TOT shocks. This could be due to the following: (a) extreme weather conditions (such as drought, flood, and so forth) that influence the prices of agricultural products, and (b) violent or armed conflict in fragile countries that could hurt agricultural production or natural resource extraction.

On the likelihood of a TOT collapse, the difference between fragile and non-fragile countries is small (5 and 4.5 percent, respectively). However, non-fragile resource abundant countries are more likely to experience a TOT collapse (9.3 percent) than the other country groups. Fragile and non-fragile countries are almost equally likely to experience a TOT boom (with probabilities of 6.5 and 6.4 percent, respectively). Non-fragile resource abundant countries exhibit the largest probability of experiencing a TOT boom (9.7 percent), followed by fragile resource rich countries (7.6 percent). African countries are generally more likely to experience a TOT boom than a TOT collapse during 1980–2017.

FIGURE 2.5: Terms of Trade: Volatility, Collapses, and Booms in Sub-Saharan Africa
(percent)

Terms of trade are less disperse among fragile countries compared with non-fragile countries.



Source: World Development Indicators, World Bank.

Note: TOT volatility is captured by the coefficient of variation of the changes in the TOT index over 1980–2014. The coefficient of variation is defined as the ratio of the standard deviation to its corresponding average. The probability of a TOT collapse is defined as the frequency of TOT percentage changes lower than -20 percent in a year. Conversely, the probability of a TOT boom is defined as the frequency of percentage changes in the TOT that exceed 20 percent in a year. The coefficient of variation is a ratio whereas the probability of an extreme TOT movement is expressed in percentages. FRG = fragile; TOT = terms of trade.

Economic Drivers

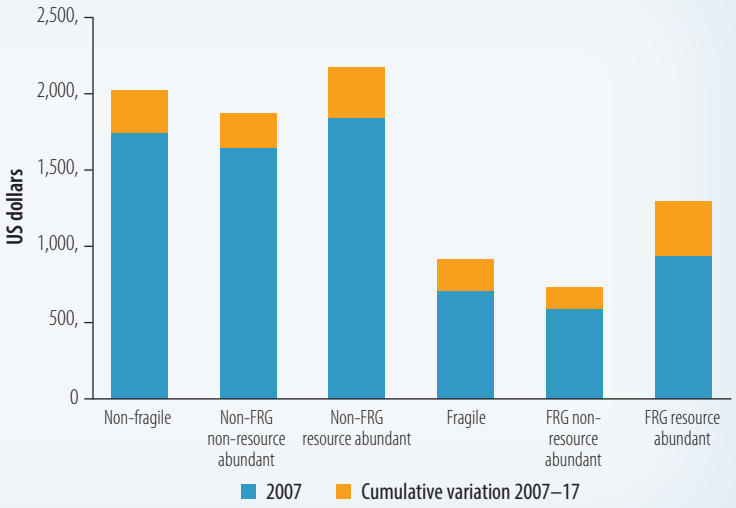
Income per Capita

According to the literature, the level of income per capita is systematically and negatively associated with violent conflict and civil war—whether it is the incidence or onset of said episode (see, for example, Collier and Hoeffler 2004; Hegre and Sambanis 2006). Figure 2.6 shows that the (population-weighted) average real GDP per capita of non-fragile countries is more than

double that of fragile countries (US$2,016 and US$911, respectively, in 2010 constant prices). The average real income per capita of non-fragile non–resource abundant countries is 2.5 times as large as that of fragile non–resource abundant countries. However, the income disparity among non-fragile and fragile resource abundant countries is narrower. For instance, real GDP per capita of the former group is 1.7 times as large as that of the latter group.

Despite rapid growth, fragile countries still have lower levels of income per capita in 2017.

FIGURE 2.6: Income per Capita in Sub-Saharan Africa *(constant 2010 US$)*



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

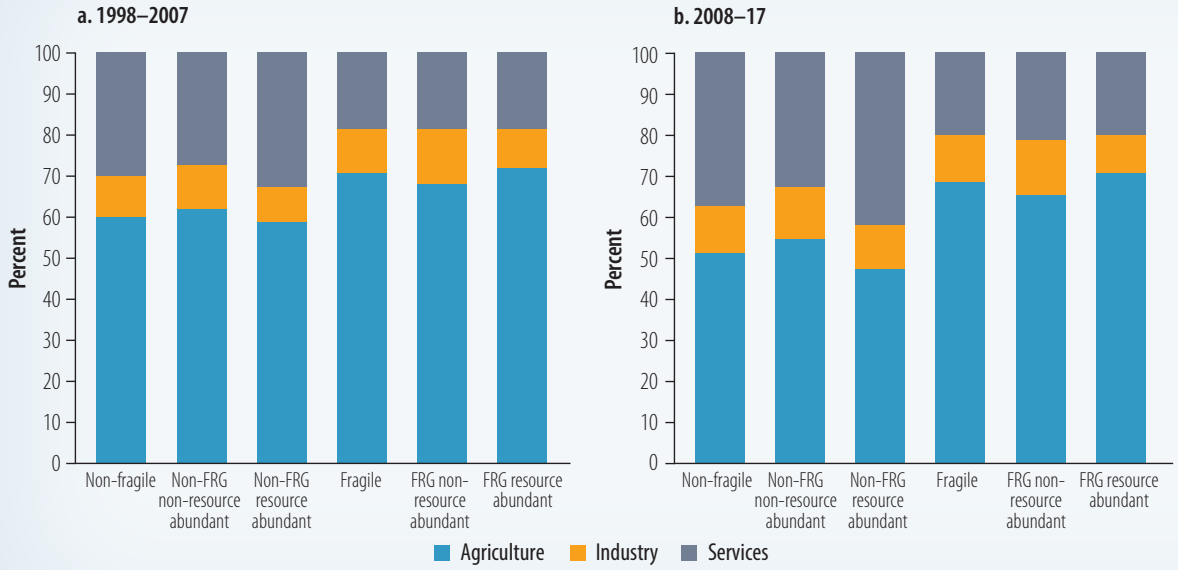
Structural Transformation

The low aggregate productivity of Sub-Saharan Africa is primarily attributed to the very low productivity of the agriculture sector. In turn, this is attributed to the absence of a technological revolution in the sector, as well as institutions and policies that lead to resource misallocation. Structural transformation that yields sustained long-term growth is characterized by: (a) declining labor (or hours worked) in agriculture over time; (b) rising share of labor (or hours worked) in services; and (c) increasing a share of labor in manufacturing at an early stage, and then decreasing at a later stage, which is a hump-shaped share of labor (or hours worked) in manufacturing (Duarte and Restuccia 2010; Herrendorf, Rogerson, and Valentinyi 2014). Developing countries could manage to lift their economies from lower-income levels and reach upper-middle-income and high-income levels by shifting resources (say, capital and labor) from agriculture and other traditional sectors toward modern sectors of the economy (see the October 2018 issue of *Africa's Pulse).*

Figure 2.7 depicts the employment shares in agriculture, industry, and services in Sub-Saharan African countries, classified by their incidence of FCV and extent of natural resource abundance. The following messages emerge from this figure. First, there is still a very large share of workers employed in agriculture among FCV-affected countries (69 percent in 2008–17), and this share is considerably larger than that of agricultural employment in non-FCV countries (51 percent in 2008–17). Second, the share of employment in services in FCV-affected countries (20 percent in 2008–17) is significantly smaller than that of non-FCV countries (37 percent in 2008–17). Third, the reduction in the agricultural employment share from 1998–2007 to 2008–17 is faster among non-fragile countries than among fragile countries (where the declines are about 9 and 1 percentage points, respectively). Fourth, the increase in the employment share in services over the same period is faster among non-fragile countries than among fragile countries (increases of 7 and 1.7 percentage points, respectively). Fifth, there are no marked differences in the industry employment shares of fragile and non-fragile economies in 2008–17 (10.7 and 11.7

percent, respectively). Finally, non-fragile resource rich countries exhibit the lowest agricultural employment share in 2008–17 (47.4 percent), while fragile resource rich countries have the highest share (71 percent). The former group has the highest share of employment in services (42 percent), whereas the latter group has the lowest employment shares in industry (9 percent) and agriculture (20 percent).

FIGURE 2.7: Sectoral Employment Shares in Sub-Saharan Africa
(percent)



Agricultural employment share in fragile countries is not only high but also larger than the one in non-fragile countries.

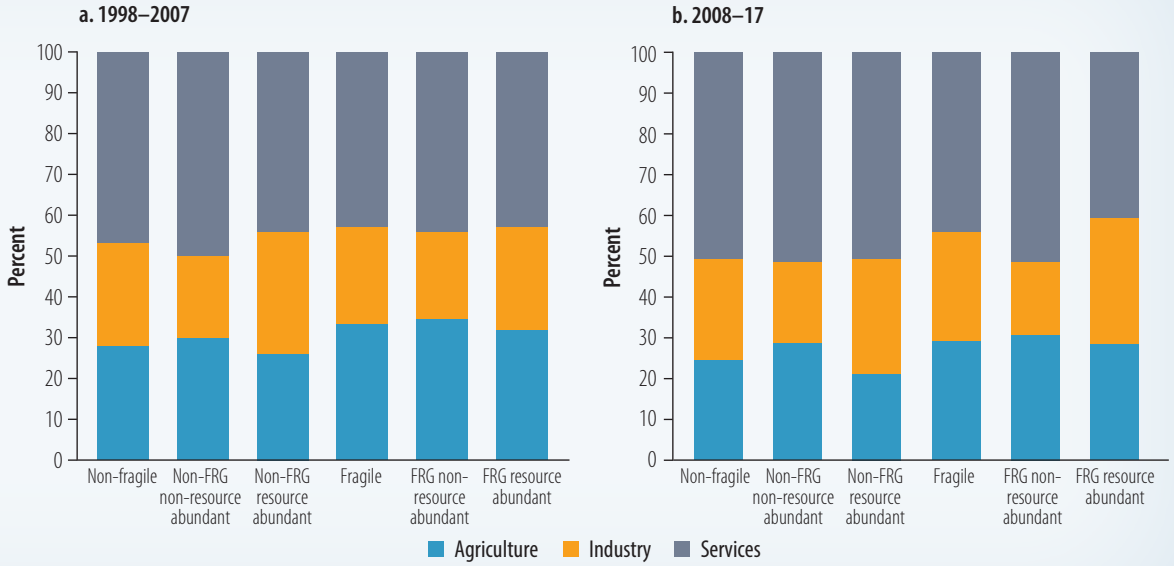
Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

Figure 2.8 presents the composition of economic activity across Sub-Saharan Africa, by depicting the value-added shares of agriculture, industry, and services during 1998–2007 and 2008–17. The services sector among non-fragile countries accounts for half of the economic activity in 2008–17, regardless of the extent of resource abundance. In fragile countries, 44 percent of the aggregate value added is attributed to the services sector—although the contribution of this sector is strikingly different between fragile non–resource abundant and fragile resource abundant countries (51.4 and 40.9 percent, respectively). The value-added share of agriculture in economic activity is greater among fragile countries in 2008–17 (29.2 percent) than among non-fragile countries (24.9 percent). In both groups of countries, resource abundant countries tend to have a lower share of value-added in agriculture than non–resource abundant ones—for example, 28.5 percent of workers are employed in agriculture among non-fragile non–resource rich countries, compared with 21.3 percent among non-fragile resource rich countries.

Comparing the evolution of the sectoral value-added shares in 1998-2007 with the one in 2008-17 shows that the agricultural value-added share decreases at a faster pace among fragile countries than non-fragile countries (-3.7 and -3 percentage points, respectively). Conversely, the value-added share in services increases at a faster pace among non-fragile countries than fragile countries (3.7 and 1.1 percentage points, respectively). Interestingly, the value-added share of industry grows by 2.6 percentage points among fragile countries, while it declines by

Sectoral value-added shares have slowly changed over time.

FIGURE 2.8: Sectoral Value-Added Shares in Sub-Saharan Africa *(percent)*



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

0.8 percentage point among non-fragile countries. The largest shifts in the sectoral value-added shares take place among non-fragile and fragile resource abundant countries. For non-fragile resource abundant countries, the increase in the value-added share of services (6.5 percentage points) occurs at the expense of agriculture and industry (-4.4 and -2.1 percentage points, respectively). In the case of fragile resource abundant countries, the increase in the industry value-added share (5.4 percentage points) takes place at the expense of agriculture and services (-3.6 and -1.8 percentage points, respectively).

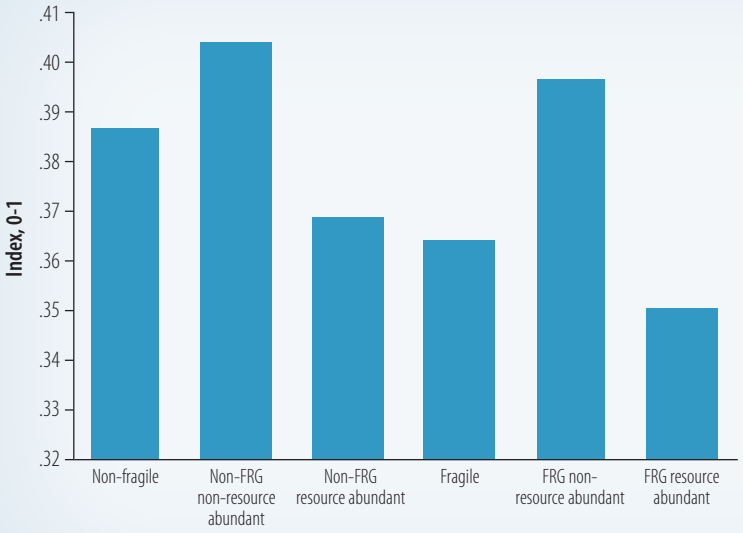
Human Capital

The incidence of violent conflict is associated with the level of and access to education of the affected civilian and combatant populations. Shocks to educational access can have significant and persistent adverse effects on educational attainment, health outcomes, and labor market opportunities (Justino 2011). The HCI is the measure used for this analysis. The HCI has three components: probability of survival, expected learning-adjusted years of school, and health (World Bank 2019b). The index reflects the human capital of the next generation, given the risks of inadequate education and health in the country. The HCI takes values between 0 and 1, and it reflects workers' productivity relative to a benchmark of complete education and full health.

Figure 2.9 reports the value of the HCI in 2017 for country groups in Sub-Saharan Africa, classified by their condition of fragility and extent of natural resource abundance. In this figure, the value of the HCI for fragile countries (0.36) is smaller than that of non-fragile countries (0.39). These scores imply that the future productivity of a child born in 2017 in a fragile country is 64 percent below what she could have achieved with complete education and full health, while that of a child born

in a non-fragile country in the region is 61 percent below potential. The lowest value of the HCI is attained by fragile resource abundant countries (0.35), and the highest is attained by non-fragile non–resource abundant countries (0.4). Compared with the benchmark of complete education and good health, a child born in 2017 is expected to be 35 and 40 percent as productive in fragile resource abundant and non-fragile non–resource abundant countries, respectively. Sub-Saharan African countries need greater domestic resource mobilization to create space for spending on health, education, and/or social protection that would boost future human capital—especially among fragile countries.

FIGURE 2.9: Human Capital Index in Sub-Saharan Africa



Human capital levels are low in Africa, especially in fragile resource abundant countries.

Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

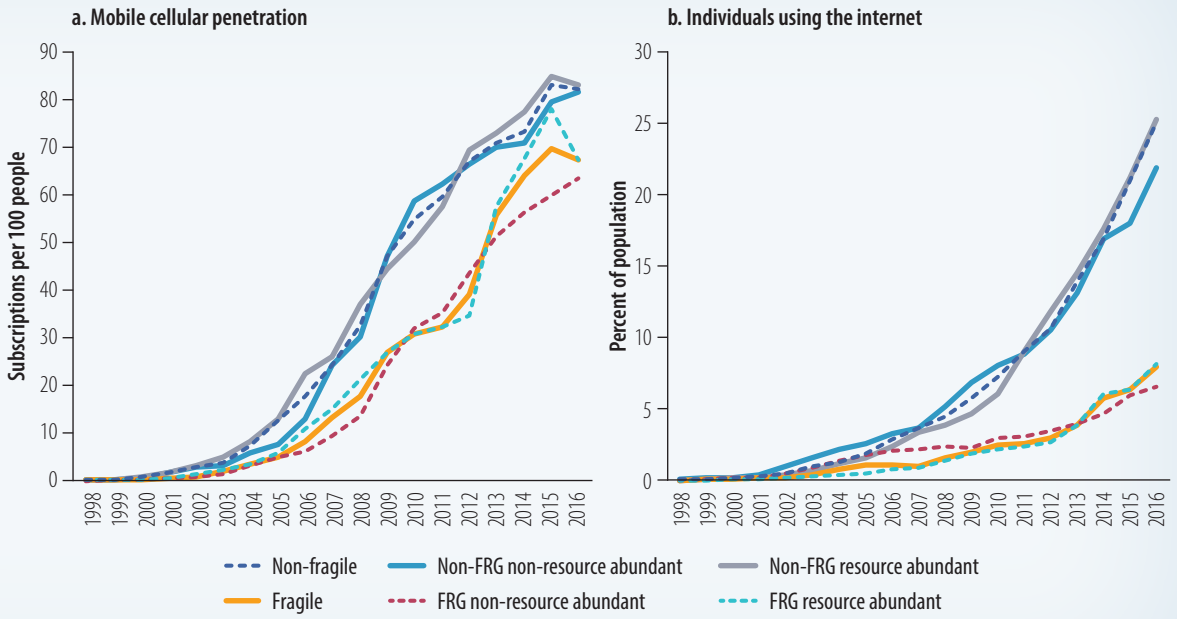
Infrastructure

Access to markets in conflict-prone countries plays a key role in restoring growth and creating the prerequisites for peace and reconstruction. Repairing damaged roads and electrical grids and building digital infrastructure emerge as investment priorities. Hence, infrastructure constitutes an important pathway out of fragility. This subsection focuses on indicators of the digital economy and electricity (an analog complement to the digital economy).

Developing digital infrastructure is one of the key elements to foster digitalization. Owning a mobile phone is relatively easier and cheaper than having an individual internet connection at home. The latter option becomes more expensive and intricate to the extent that the country lacks the adequate wireline infrastructure and has a non-competitive market of internet providers. Mobile cellular subscriptions have increased dramatically over the past 15 years in Sub-Saharan Africa. Figure 2.10 shows that mobile cellular subscriptions among non-fragile countries have increased from 0.67 per 100 people in 2000 to 83 per 100 people in 2016 while it increases from 0.2 subscriptions per 100 people in 2000 to 68 per 100 people in 2016 among fragile countries. In spite of the rapid growth, the penetration of mobile cellular subscriptions is still larger among non-fragile countries. On the other hand, the divergent trends of individuals using the internet between fragile and non-fragile countries is significant. The population penetration of internet services among non-fragile countries has improved from 0.2% in 2000 to 25% in 2016 while that of fragile countries has increased up to about 8% in 2016 (Figure 2.10).

Mobile services expanded rapidly in fragile and non-fragile countries while fragile countries are still behind in internet use.

FIGURE 2.10: Digital Infrastructure in Sub-Saharan Africa

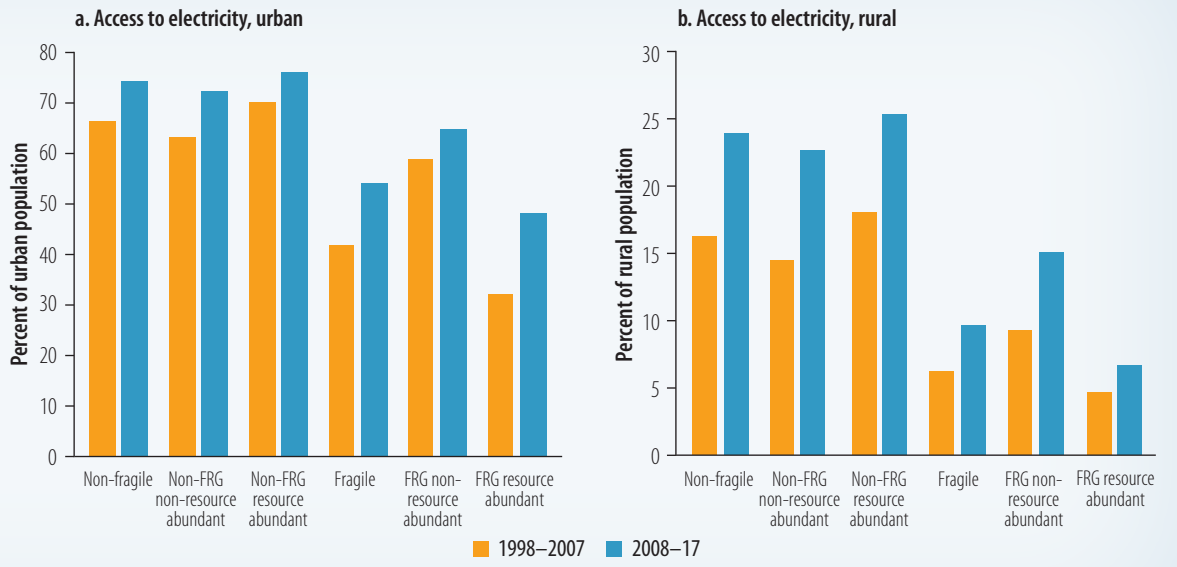


Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

If African countries were to be digitally-ready, the development of the digital infrastructure would also require having the appropriate analog complements—for instance, access to reliable and affordable electricity. Figure 2.11 reports the access to electricity in urban and rural areas of Sub-Saharan African countries. It shows that, first, access rates to electricity—

Fragile countries have lower access to electricity, especially in rural areas.

FIGURE 2.11: Access to Electricity in Sub-Saharan Africa



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

urban or rural—are higher in non-fragile than fragile countries.[4] For instance, almost three-quarters of the urban population in non-fragile countries in Sub-Saharan Africa has access to electricity. The access rate for fragile countries is only 54 percent of the urban population in 2008–17. Second, rural rates of access are smaller than urban rates for all groups of countries in the region; however, the disparity in access to electricity in rural areas is larger between fragile and non-fragile countries. For instance, the rural access rate of non-fragile countries is more than double that of fragile countries in 2008–17 (24 and 10 percent of the rural population, respectively). Third, access to electricity in urban areas has increased at a faster pace among fragile countries—especially those that are resource abundant (from 32.5 percent of the urban population in 1998–2007 to 48 percent in 2008–17). Fourth, access to electricity in rural areas, in contrast, grew at a faster pace among non-fragile countries—especially non-fragile non–resource abundant countries (from 14 percent of the rural population in 1998–2007 to 22.5 percent in 2008–17).

Doing Business

Civil conflict can impact the performance of firms by increasing their operating costs and raising obstacles to the business environment. The ease of doing business score captures the position of an economy relative to the best regulatory practice in dimensions such as starting a business, getting electricity, getting credit, paying taxes, trading across borders, and enforcing contracts, among others. The score is from 0 to 100, and higher scores imply a better business environment.

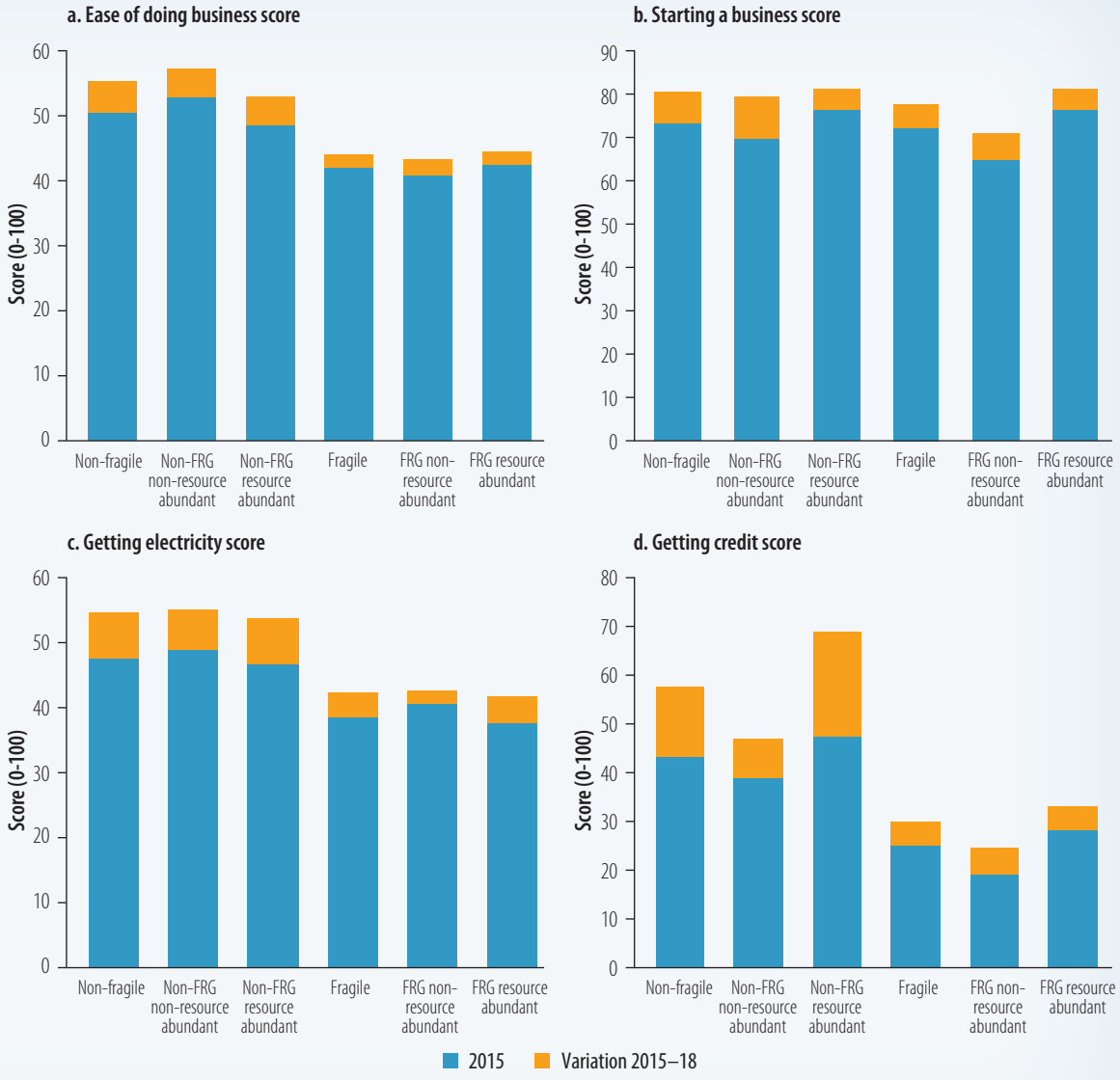
The overall business environment—as captured by the ease of doing business score—is still underdeveloped in the Sub-Saharan Africa region, especially compared with more dynamic middle-income economies. On average, the ease of doing business score is not only low for the region, but also has shown little improvement from 2015 to 2018. Yet, the overall business environment is significantly better among non-fragile than fragile countries (scores of 55.4 and 44.3, respectively, in 2018) (figure 2.12, panel a). Non-fragile non–resource abundant countries registered the highest score on the ease of doing business (57.7), and fragile non–resource abundant countries attained the lowest score (43.6).

Starting a business is a dimension of the business environment that not only registers high scores among fragile and non-fragile countries, but also has experienced some progress. Non-fragile countries outperform fragile countries in the score for starting a business although by a slight margin (80.6 and 77.9, respectively) (figure 2.12, panel b). These scores reflect a favorable environment for starting a new business; however, if there are no proper business regulations, such as appropriate business registries, owners' protections, proper business laws and regulations, and so forth, easier procedures to start new firms may not promote sustainable businesses in the domestic market. Lack of proper regulations may not guarantee the sustainability of new businesses entering an industry.

4 This measure does not account for the quality of the electricity provided or the number of consumers connected to the grid.

Greater obstacles in getting credit and electricity are weighing on the ease of doing business among fragile countries.

FIGURE 2.12: Ease of Doing Business in Sub-Saharan Africa



Source: Doing Business 2019, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

The scores for getting electricity are inadequate, on average, among fragile countries (42 points in 2018) and non-fragile countries (55 points in 2018) (figure 2.12, panel c). Proper access to electricity is essential to foster manufacturing businesses as well as the digital economy. The scores for getting credit are dismal among fragile countries (30 in 2018) and significantly lower than those of non-fragile countries (58 in 2018) (figure 2.12, panel d). The score for getting credit is the lowest among fragile non–resource abundant countries (about 25 in 2018), while non-fragile resource abundant countries exhibit the highest score (about 70 in 2018). Access to

credit is an obstacle for most firms in Africa—especially small and medium-size enterprises—given that they lack collateral or a credit history. Supporting Grameen Bank–like efforts and startup businesses would help increase access to credit for businesses. The insertion of digital technologies into financial services may also speed up access to finance—especially for the unbanked in FCV-affected countries in the region.

Institutional Drivers

Governance

Institutional quality tends to be low in Sub-Saharan Africa relative to other regions. Figure 2.13 presents the evolution from 1998–2007 to 2008–17 of six dimensions of governance, namely, voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, control of corruption, and rule of law. These indicators fluctuate between -2.5 and 2.5, with lower scores signaling poor institutional quality. All the governance indicators for all the groups of countries in Sub-Saharan Africa score negatively; consequently, the quality of institutions is not strong in the region. Why is this important? Governance is a key foundation of many features of economic development. For instance, governance aspects associated with the quality of institutions and investors play a role in fostering the impact of financial openness on domestic financial sector development (Calderon and Kubota 2009).

The quality of institutions is poorer in fragile countries than non-fragile countries along the six dimensions of the World Bank Governance Indicators—as the former group of countries has more negative scores than the latter group for all the indicators and in 1998–2007 and 2008–17 (figure 2.13). In this subsection, the analysis focuses on two of the six dimensions—governance effectiveness and rule of law.[5]

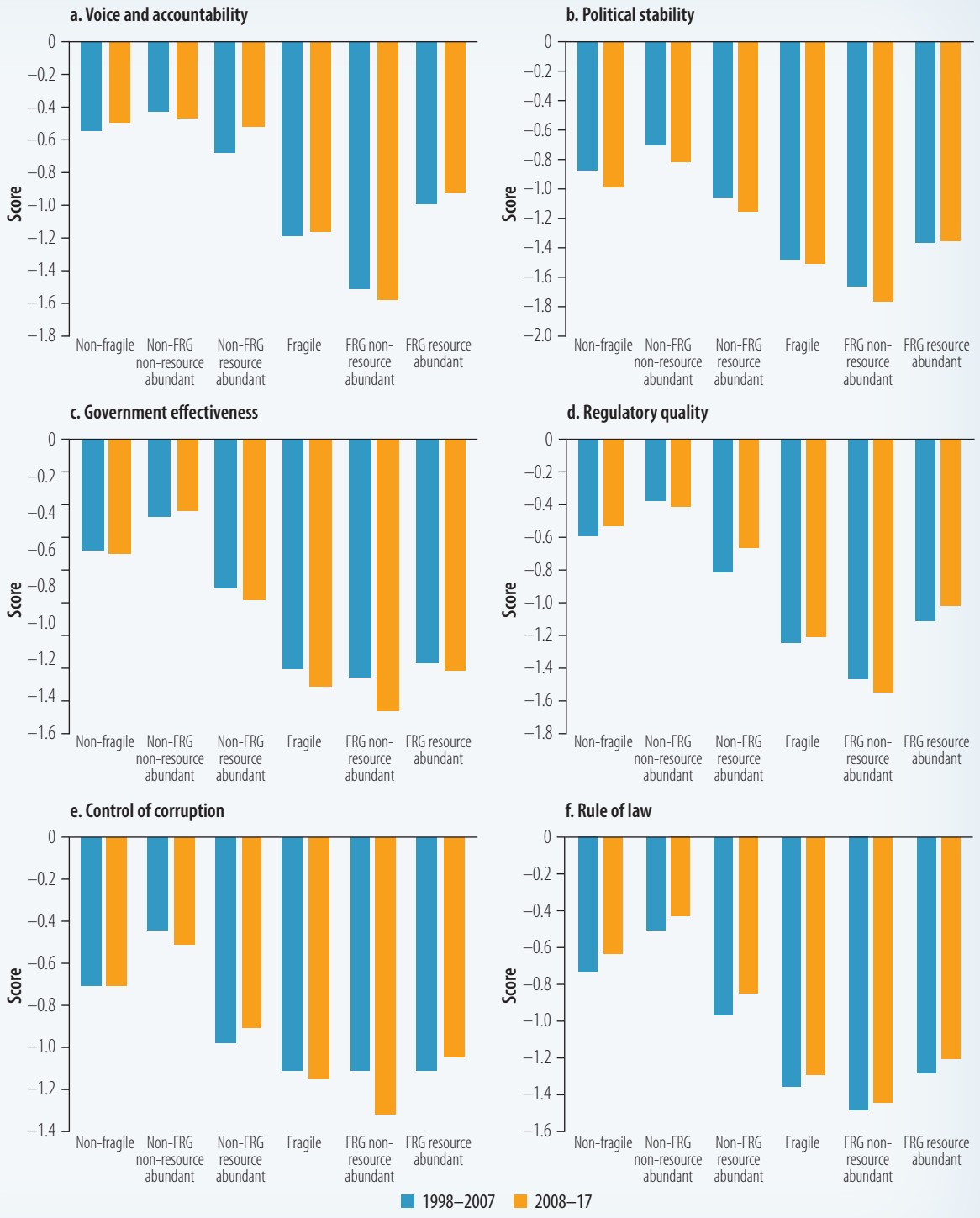
In the case of government effectiveness, first, there is no improvement in the scores for fragile or non-fragile countries. On the contrary, there is a slight deterioration, as their scores become more negative from 1998–2007 to 2008–17. The deterioration in the scores in both groups of countries is attributed to the worse performance in fragile and non-fragile countries that are non–resource abundant. Second, the government effectiveness scores are significantly better among non-fragile than fragile countries in 2008–17 (-0.62 and -1.34, respectively). Third, fragile non–resource abundant countries have the lowest score in government effectiveness (-1.48 in 2008–17), while non-fragile non–resource abundant countries have the highest score (-0.39 in 2008–17).

In the case of the rule of law, there is improvement in fragile and non-fragile countries in the region—as their scores become less negative from 1998–2007 to 2008–17. First, improvement in the rule of law among fragile countries is primarily driven by the better scores attained by fragile resource rich countries. Second, scores on the rule of law among non-fragile countries are higher than those of fragile countries (-0.63 and -1.28, respectively in 2008–17). Third, the score for the rule of law is the lowest for fragile non–resource abundant countries (-1.43 in 2008–17) and the highest for non-fragile non–resource rich countries (-0.43 in 2008–17).

5 The accountability of the state, and in particular the weak security and justice sector, is one of the main challenges faced by many FCV countries.

All governance indicators take negative values in Sub-Saharan Africa, and they are lower in fragile countries.

FIGURE 2.13: Governance Scores in Sub-Saharan Africa



Source: Governance Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

Country Policy and Institutional Assessment

The CPIA rates countries against a set of criteria classified in four clusters: economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. These ratings take values from 1 to 6, with higher ratings signaling higher quality of policies and institutions. The overall CPIA rating among non-fragile countries (3.5) exceeds that of the Sub-Saharan Africa International Development Association (IDA) average (3.1). However, that is not the case for fragile countries (2.8). Within the group of fragile countries, the CPIA is the lowest among fragile non–resource abundant countries in 2008–17 (2.53). Over time, there has been little progress in the overall CPIA rating: it has increased among non-fragile countries, from 3.49 in 1998–2007 to 3.51 in 2008–17, while it has grown among fragile countries, from 2.81 in 1998–2007 to 2.86 in 2008–17 (figure 2.14, panel a).

On economic management, there is a slight deterioration in the CPIA rating for non-fragile countries (from 3.92 in 1998–2007 to 3.86 in 2008–17) and an improvement for fragile countries (from 2.98 in 1998–2007 to 3.09 in 2008–17). Yet, non-fragile countries have better economic management scores than fragile countries (figure 2.14, panel b). Fragile non–resource abundant countries display the lowest score (2.5 in 2008–17).

Progress in structural policies has been slow among non-fragile countries (the CPIA score increased from 3.4 in 1998–2007 to 3.5 in 2008–17), while it slightly deteriorated among fragile countries (from 3.0 in 1998–2007 to 2.9 in 2008–17). The quality of structural policies is higher in non-fragile countries than in fragile countries. Fragile non–resource abundant countries display the lowest score (2.6 in 2008–17).

Fragile and non-fragile countries in the region exhibit some progress on the quality of policies for social inclusion and equity; however, the quality of these policies is higher in the latter group (3.5 versus 2.87 in 2008–17). Finally, the quality of public sector management and institutions has remained almost invariant (3.2 among non-fragile countries and 2.5 among fragile countries in 2008–17). Fragile non–resource abundant countries show the poorest quality of public sector institutions (with a score of 2.36 in 2008–17).

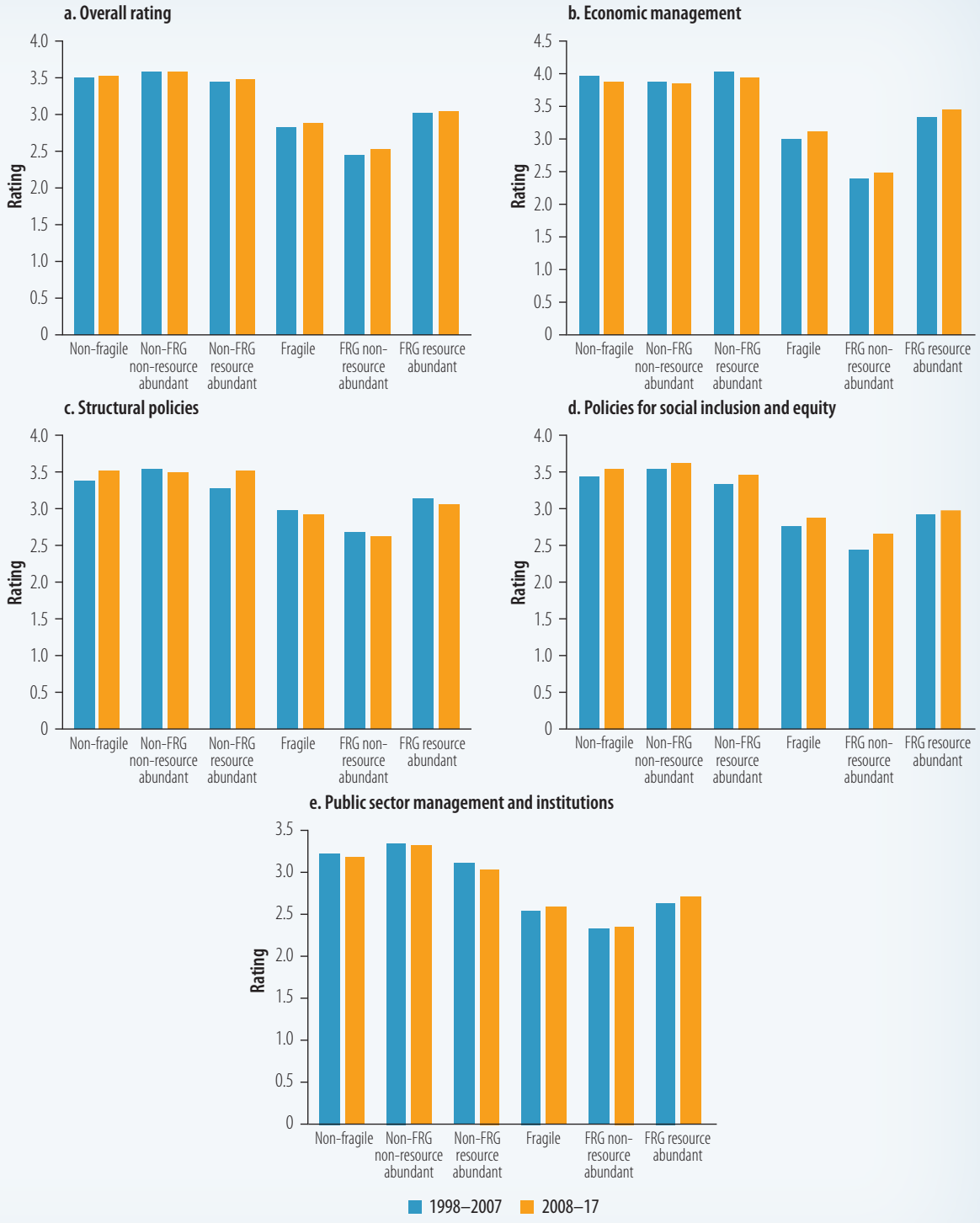
Country-Specific Factors

Climate shocks can increase the likelihood of conflict to the extent that these shocks lead to greater disputes over resources. Floods in Southern Africa and droughts in the Sahel have disrupted agricultural cycles. If climate shocks reduce growth or agricultural prices, they could lower the opportunity costs of violent conflict.[6] More generally, extreme weather events and geographic conditions could negatively affect economic activity through lower agricultural production and deteriorated infrastructure, among other factors—thus, provoking civil conflict.

6 Evidence shows that warmer years in Africa are associated with greater risk of civil war: if trends in temperature were to continue, the incidence of armed conflict would increase by 54 percent by 2030 (Burke et al. 2009).

All CPIA ratings are lower among fragile countries compared with non-fragile countries.

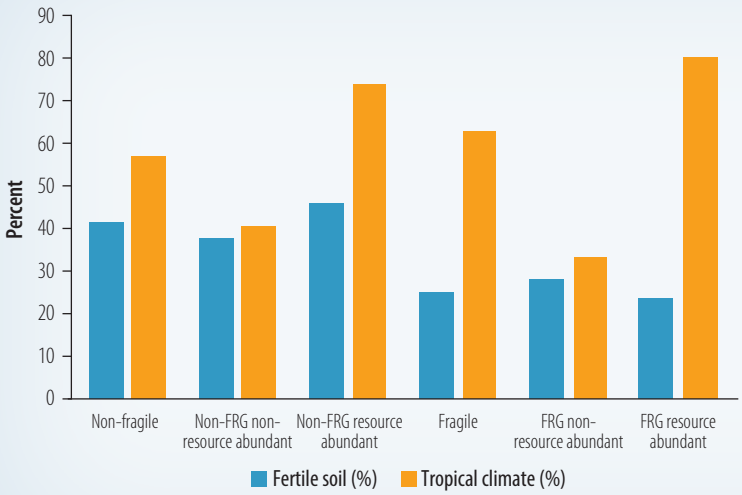
FIGURE 2.14: CPIA Ratings in Sub-Saharan Africa



Source: World Development Indicators, World Bank.
Note: The reported group averages are population-weighted. FRG = fragile.

Figure 2.15 reports some geographic features of the land in Sub-Saharan Africa that can be related to climate change: (a) the percentage of the land surface area of each country that is classified by the Food and Agriculture Organization (2008) as arable land or permanent crop land, and (b) the percentage of the land surface area of each country that have any of the four Köppen-Geiger tropical climates. The data have been obtained from Nunn and Puga (2012). The percentage of fertile land among non-fragile countries (41.8 percent) is greater than among fragile countries (25.3 percent). Non-fragile resource abundant countries have the largest percentage of fertile soil (46 percent), and fragile resource abundant countries have the lowest (23.5 percent). A larger surface area has a tropical climate among fragile countries (63 percent) than among non-fragile countries (57 percent). Tropical climate is the major climate type in 80 percent of the land among fragile resource rich countries.

FIGURE 2.15: Geographic Factors across Sub-Saharan African Countries



There is lower fertile soil and more land with tropical climate among fragile countries.

Source: Nunn and Puga 2012.
Note: The reported group averages are population-weighted. FRG = fragile.

2.3 TACKLING FRAGILITY IN AFRICA

Sub-Saharan African countries need to set up organizing principles to cope with and exit from a fragile context. Some countries have been making efforts to build state capacity and enhance legitimacy, guaranteeing peace and security, and delivering services to citizens. However, the country efforts may need to be complemented by regional initiatives to secure a path to inclusive institutions and a resilient political order. This section first documents successful historical transitions out of fragility and resilience build-up in the 21st century. Post-conflict countries in the region, like Angola, Mozambique, Ethiopia, Rwanda, Sierra Leone, and Uganda, have adopted more inclusive political arrangements, strengthened their institutions, and are fostering investment. Second, the section describes some of the milestones achieved by ongoing projects to alleviate FCV situations not only at the country level, but also at the regional level—for instance, the Sahel Women Empowerment and Demographic Dividend (SWEDD) project and the LONDO project in the Central African Republic. Finally, the section reports current regional approaches to support FCV-affected countries and reduce the risk of cross-border contagion.

Successful Historical Transitions out of Fragility and Building Resilience in the 21st Century

Several African countries have successfully transitioned out of conflict and fragile situations. Successful exits are partly explained by global and regional trends (Gelbard et al. 2015): (a) the culmination of surrogate conflicts related to the Cold War by the late 1980s and early 1990s; (b) shifts toward a peace and development agenda by country leaders in the developing world—and, notably, Africa; (c) debt forgiveness initiatives undertaken by the international community to grant relief and fiscal space to poor countries; and (d) the Great Moderation, commodity price super cycle, and growth surge among developing countries.

Substantial progress in building resilience has been made by countries in the region, including Angola, Ethiopia, Mozambique, Rwanda, and Uganda. Rwanda and Mozambique managed to emerge from conflict during the first half of the 1990s. In the following decade, these countries were able to restore capacity, revamp their institutions, and build resilience. This progress was captured by CPIA ratings that have consistently exceeded 3.2 since the mid-2000s. By 2017, Rwanda had the highest CPIA rating in Sub-Saharan Africa (4.0)—with higher than average scores in policies for social inclusion and equity (4.3) and structural policies (4.2). In the case of Mozambique, the overall CPIA rating was, on average, 3.6 during 2005–15.

The approach followed by Mozambique and Rwanda rendered greater political stability, averted conflict, strengthened the quality of their institutions, and achieved macroeconomic stability. In this context, they were able to enjoy rapid and protracted increases in real GDP per capita: Mozambique and Rwanda have had annual average growth per capita rates of 4 and 5 percent, respectively, since 2000. Sustained growth has led to reduced poverty rates, higher education enrollment rates, and lower under-five mortality rates.

Ethiopia emerged from a civil war in the early 1990s. From September 1974 to June 1991, the war reflected extreme ideological and ethnic divides, leaving at least 1.4 million people dead (with one million of the deaths being associated with famine). After putting an end to the communist dictatorship of Mengistu in 1991, Ethiopia moved to a multiparty system in 1993, and a new constitution came into force in 1995. The government's commitment to growth, poverty reduction, and social policies has contributed to stability and progress since then. Since 2014, real GDP per capita in Ethiopia has increased at an annual average rate of 7.7 percent.

Post-conflict successful countries have generally adopted more inclusive political arrangements, strengthened their institutions, and promoted investment. They were able to maintain macroeconomic stability and improve domestic resource mobilization to finance higher levels of public investment and enhanced social services (Gelbard et al. 2015). The approached followed by these countries to transition out of fragility can be summarized in a series of actions under three categories, namely, peacebuilding and stabilization; delivering services and addressing institutional weaknesses; and driving growth and investments and creating equity.

Peacebuilding and Stabilization

Political stabilization is a paramount foundational element of the transition out of and mitigation of fragility. Securing peace and stabilization requires political inclusion that puts an end to

hostilities, averts political turmoil, and buttresses the establishment of a national development vision as essential for building resilience. Policy makers need to create fiscal policy space to deliver results to the population, including through public investment. Actions to secure peacebuilding and stabilization include the following (United Nations and World Bank 2018).

Navigating and leveraging transition moments. During transition moments, windows of opportunity emerge to deploy new efforts in preventing or recovering from violence (World Bank 2011a). These moments may emerge suddenly or gradually. They can be set off by domestic or external factors—or a confluence of them. They may occur suddenly in the aftermath of natural disasters or economic shocks, as a result of political changes (for example, elections or new constitutions) or actor-related changes (for example, the death of a leader). These sudden transition moments can change incentives rapidly. One way to leverage these transition moments is through the successful management of outbreaks of violence. Introducing peacekeeping missions or a ceasefire, as was the case in Liberia in 2003 and Timor-Leste in 2006, can alter the incentives toward negotiations. Mediation and diplomacy can also redirect incendiary situations. Another example is the way some countries capitalize on external shocks. Exogenous shocks, such as natural disasters or major shifts in the global economy, can alter the dynamics for conflict prevention and recovery by changing incentives and shaking up entrenched positions. For example, the Boxing Day tsunami in 2004 provided a window of opportunity to reach an agreement in Aceh, Indonesia. The tsunami damaged many existing institutions, including much of the military's control infrastructure, and led to a humanitarian crisis that incentivized the rebels to come to the negotiating table.

Political inclusion and checks on power.[7] An inclusive political settlement is a crucial pillar for peace and building resilience. Inclusiveness captures the extent to which the interests of previously unrepresented or competing groups have been accounted for in the political settlement—as opposed to an all-inclusive system that prevails in well-functioning democracies. Such inclusive approaches can help prevent the recurrence of violence. The leadership in Timor-Leste reached out to other political parties, independent figures, and entrepreneurs to help with the reconstruction in 2007. They took a different approach to the one followed between the 2002 Independence and renewed violence in 2006, when the ruling party rarely engaged with civil society, the church, or other domestic actors to build support and legitimacy for its program. Peace agreements in Mozambique and Rwanda provided a platform for broad-based governments to define their political, economic, and social objectives, and established the needed institutional provisions to hold them accountable.[8] These two countries have achieved sustained political stability since the 1990s; however, they have yet to experience further political transition.

Strengthening leadership through coalition building.[9] The incentives of key actors that play an important role in the transition out of fragility can be changed through the formation of coalitions. These coalitions can strengthen the legitimacy of the country's leaders and help secure peace. They can align incentives among the key players and create a sense of collective

7 See Gelbard et al. (2015, 64–65).

8 This was the role played by the General Peace Agreement for Mozambique in 1992 and the formation of a government of national unity in Rwanda in July 1994, which incorporated the principal provisions of the 1993 Arusha Accord.

9 United Nations and World Bank (2018, 190–94).

ownership among discordant actors. Coalitions can demonstrate unity of purpose and ensure that peace talks and leaders stay the course. Formal and informal coalitions can involve different actors—including civil society, the private sector, and international actors. Civil society groups can help increase accountability among disputing parties and endow the process with public credibility. Civil society groups in Liberia were involved from the early stages of the civil war in trying to end hostilities—especially faith-based groups that were among the first to intervene. Women's groups actively advocated against rape in times war and on behalf of women's rights. Local and international civil society groups worked to deactivate tensions at various junctures. Initially, civil society was not adequately involved in the Liberian peace process, which partly contributed to the initial flawed agreements that reflected only the interests of the combatants. The inclusion of civil society in the 2003 Accra peace talks was attributed to their valuable contribution in making peace deals stick and the desire to represent the interests of a wide range of groups in society. Civil society was also ultimately included in the power-sharing agreement that emerged from those talks (Marc, Verjee, and Mogaka 2015). Analogously, the Inter-Religious Council of Sierra Leone played an active role in building confidence and trust between the government and the rebels, during and after the 1991–2002 civil war in Sierra Leone, and helped prevent the emergence of religious divisions.

Innovative risk management strategies by the private sector.[10] There is a role for private sector firms to help manage risks in FCV situations: they can secure the continuity of economic activity. For instance, firms cope with risk in the FCV context by producing goods that are widely demanded (for example, beer and mobile phone services). Larger firms can manage risks better than small firms—as larger firms have access to policy makers. These firms can also raise the stakes of failure if governments interfere in their operations and can be better placed to mobilize external support against political interference. A challenge for policy makers is to prevent large firms from becoming permanent rent-seeking monopolies. Companies have also managed risk through practices related to good corporate citizenship. For example, money transfer firms in Somalia, which aligned themselves with religious principles and local values, provide widely used services. Other examples include Chinese investors in Liberian construction looking for local capacity; Dahabshil and Hormud issuing local shares and engaging in appropriate staff recruitment; and cocoa investors in Sierra Leone taking over the government's role of providing infrastructure.

Delivering early results.[11] Capitalizing on low-hanging fruit and using existing resources to deliver early results incentivizes citizens and other stakeholders to support the peacebuilding process. The Liberian government capitalized on a well-managed donor program and the long absence of a humanitarian-oriented government to deliver public goods and restore confidence in government (for example, fulfilling the promise to restore electricity in Monrovia in a year). The government also took some immediate actions to satisfy public opinion—including the use of United Nations forces to guarantee peace and security, the provision of free primary education and free primary health care, and electricity in the capital city. Those interventions helped build confidence in the government (World Bank 2011a).

Influencing narratives and norms.[12] Many state and civil society actors have used narratives to

10 McKechnie, Willem te Velde, and Lightner (2018, 34).

11 World Bank (2011, 130).

12 United Nations and World Bank (2018).

strengthen the norms of social cohesion and tolerance. Some countries have tried to counter the destructive effects of exclusionary and violent narratives. For example, Niger has reinforced a national narrative of social cohesion, peace, and tolerance, by building on some of its unique societal features. In times of crisis, the country's leadership leverages this sense of solidarity to manage and alleviate tensions between groups. Gender norms can also be called on to mitigate tensions and support peace. In Liberia, women evoked norms of masculinity to pressure men to continue peace negotiations and empowered women in their traditional conflict resolution roles (Marc, Verjee, and Mogaka 2015).

Challenges remain in some of these countries—especially around land allocation and identity politics, although they are not as active as they were before the conflict episodes.[13] Institutions were significantly strengthened, and economic activity promptly resumed; however, the reforms need to be sustained.

Delivering Services and Addressing Institutional Weaknesses

Effective institutions can build and strengthen resilience to shocks as well as enhance the capacity for conflict mitigation and resolution in the medium to long term. Countries seeking to increase the representativeness and scope of institutions and deliver public goods have typically experienced a reduction in the risk of violent conflict. Nevertheless, reform efforts can run into problems and experience setbacks and reversals, as groups tend to contest change processes. This underscores the lesson that how institutions are reformed matters at least as much as what technical reforms are implemented.[14] The specific steps taken by various countries transitioning out of fragility to deliver services and build institutions include the following.

Implementing power-sharing arrangements.[15] Increasing access to power can help reduce the opportunity costs of conflict and violence, especially if the power-sharing arrangement is included in a formal agreement, such as a new constitution. Negotiated roadmaps, peace accords, and post-conflict settlements have typically enabled the reformulation of institutional arrangements and provided public signals of reform appetite—thus creating space for longer-term change. The founding president of Côte d'Ivoire, Félix Houphouët-Boigny, ran an inclusive government and promoted national cohesion for decades, through temporary elite pacts and patronage mechanisms (Marc, Verjee, and Mogaka 2015). The death of President Houphouët-Boigny ended the stability and contributed to the country's eventual descent into civil war in 2002. Peace cannot be sustained in the absence of progress in building state capacity or laying the foundations for more durable institutions.

Building administrative capacity.[16] Rebuilding economic capacity and public institutions played an important role in countries that sustained peace efforts. These countries focused on three areas of capacity development: (a) budget and public financial management (PFM), (b) revenue mobilization, and (c) strengthened central bank and banking sector. Rebuilding PFM systems can contribute to improve the transparency, accountability, and inclusiveness of the fiscal

13 See Marc, Verjee, and Mogaka (2015, 153).
14 United Nations and World Bank (2018, 200).
15 United Nations and World Bank (2018, 200–04).
16 Gelbard et al. (2015, 65–66).

accounts and policy actions. The routing of donor support through national budgets can also become more transparent. The budget process was reinstituted in Rwanda with the Parliament enacting annual budget laws since 1998. The PFM system was mostly rebuilt by the mid-2000s. Strengthening tax administration remained a priority for the government. Institutional reforms were implemented to raise the effectiveness of the conduct of monetary policy by the central bank; however, the banking sector reform took longer than anticipated. In Mozambique, reforms in revenue administration were crucial to attain a steady increase in government revenue since 1999. Additionally, the 2002 PFM Law provisioned for increased transparency in budget execution. The functions of the Bank of Mozambique were streamlined in the early 2000s, although central bank independence and banking sector restructuring took more time.

Achieving macroeconomic stability and policy space.[17] Macroeconomic instability often prevails in times of conflict, and it was restored within two to four years after the end of hostilities in countries that have successfully transitioned out of fragility. The Governments of Mozambique and Rwanda implemented liberalization policies that included removing controls on prices, the foreign exchange system, and the financial sectors, among others. This facilitated the move to a more market-based economy. As a result of enhanced policy-making capacity and the removal of controls, growth accelerated in a sustained fashion before stabilizing during the post-conflict period. The liberalization of the foreign exchange system not only increased policy space, but also increased foreign exchange reserves. In Ethiopia, significant progress was made in macroeconomic stability within two or three years following the change in government, although afterward further progress in institutional reforms weakened. The authorities implemented an ambitious program that included price and trade liberalization, reforms of the interest rate structure, tax reforms, a public enterprise law, and investment and labor codes. A weakening of the Ethiopian birr in 1992 helped restore competitiveness and shored up international reserves. Growth per capita accelerated (slightly) more than 6 percent annually in 2000–17.

Decentralizing authority and resources.[18] The decentralization of power and resources to local governments has been a significant force for preventing and mitigating conflict. It represents a practical demonstration of reforms that boost political and social inclusion. Decentralization requires fundamental and, often, extensive institutional changes that can address underlying conflict risks, shift incentives, and navigate structural constraints to peace. In Indonesia, the devolution of power and funds increased opportunities for contestation at the local level. After implementation, decentralization raised the stakes for access to resources from the central government, and political elites exploited ethnic identity to mobilize their bases. After 2004, however, the country stabilized due to public satisfaction with decentralization, greater space for the expression of local identities, greater levels of state penetration, effective design of local elections, and strong leadership and institutional frameworks at the local level (Steven and Sucuoglu 2017). Devolution may also pose challenges. In Kenya, local contestations arose due to the lack of rules and the amount of resources available (Mogaka 2017).

Strengthening the rule of law.[19] Increasing checks, accountability, and transparency in key government agencies tends to signal a change of direction. For instance, strengthening the

17 Gelbard et al. (2015, 66).

18 United Nations and World Bank (2018, 204).

19 United Nations and World Bank (2018, 209).

rule of law has required paying closer attention to the separation between military and policing functions in the security services. Alongside such reforms, where ethnic or identity divides run deep, integrating marginalized ethnic or religious groups into the military has contributed to deactivate the salience of schisms (Brzoska 2006). In Burundi, focus on maintaining parity between Hutus and Tutsis in military recruitment helped foster inclusion and reconciliation (Samii 2013). Based on the Arusha Peace and Reconciliation Agreement in 2000, the Burundian military reforms—along with international support—became inclusive in two ways. First, they accounted for governance, prioritized political dialogue, and progressively included civil society and the experiences of neighboring countries. Second, the Arusha Agreement stipulated open membership to all citizens (including rebel groups), and that no more than half of the armed forces could be drawn from any one ethnic group. These reforms were complemented with actions to educate citizens and increase local ownership of the process. Full-scale civil war has been prevented under the Arusha Agreement.

Driving Growth and Investments and Creating Equity

Structural factors comprise the foundational elements of society and shape the overall decision-making environment. Structural factors tend to change slowly, but targeted actions can possibly deal with the risks associated with them. For example, economic reforms, redistributive policies, and infrastructure investments can foster structural changes that reduce the risk of violence (United Nations and World Bank 2018).

Addressing economic and social grievances. Grievances associated with uneven access to and ownership of resources, especially land, are a driver of violent conflict. Addressing these grievances involves improving access and redistributing benefits. In some cases, governments have implemented these measures amid a peace agreement or a new constitution, and they have been incorporated in national development plans. In others, they have involved stand-alone, targeted efforts to address the source of a grievance. Country efforts to address grievances have focused mainly on land reform to promote redistribution of and expand access to land. In its Vision 2030, Kenya addressed the destabilizing potential of regional imbalances by committing investments in marginalized areas to unlock their development potential, while contributing to spatial and national inclusion (Mogaka 2017).

Public spending and investment.[20] Public investment plays an important role in rebuilding infrastructure, catalyzing private investment, and boosting growth. Mozambique and Rwanda have had investment ratios of 12 to 15 percent of GDP in the 2000s. However, rising rates of public investment should be accompanied by increased spending efficiency—that is, having a high-quality pipeline of projects and a public investment management system that is competent in project preparation, implementation, and monitoring. These countries have also launched a participatory consultative process to formalize their development priorities and poverty reduction strategies. Spending on these concerted economic, institutional, and human development priorities is a good indication of the government's commitment to building a more inclusive society. Strong commitment to social development has resulted in higher priority spending in Ethiopia (10-13 percent of GDP per year since 1999), and public investment has dramatically increased.

20 Gelbard et al. (2015, 67–68).

Confronting the past and building social cohesion.[21] Rebuilding trust and cohesion is key to prevent additional cycles of violence. Many countries have found it necessary to take measures toward reckoning with past events to build trust to move forward. For example, formal truth commissions in Sierra Leone brought people together to help close and heal the divides between groups, reducing the threat of the recurrence of violence.

Sustaining long-term growth.[22] Many countries have embarked on second-generation economic reforms to accelerate growth beyond the post-conflict rebound. Reforms to strengthen domestic revenue mobilization and PFM were accompanied by measures to enhance governance and the anticorruption framework. Countries also embarked on reforms to strengthen the financial sector, the framework for management of natural resources, and easing the conditions for doing business. Rwanda embarked on reforms to improve its business environment, including in the legal and financial sectors, and policies promoting trade and diversification and boosting agricultural productivity.

2.4 SUCCESSFUL ONGOING REGIONAL PROJECTS TO ADDRESS FRAGILITY

There is a renewed focus to address the drivers of fragility using a regional and multisectoral approach. The three different corridors on which the World Bank is currently focusing are the Sahel, the Horn of Africa, and the Lake Chad region.

The Sahel

The Sahel region is fraught with recurring conflicts, natural disasters, and epidemics that exacerbate poverty, perpetuate inequality, and affect socioeconomic security and development in these countries.[23] Millions of people—primarily women and young people—are exposed to risks, including famine, forced migration, and radicalization, as they are faced with the threat of terrorism and the propagation of criminal networks.[24] To address the development challenges in this region, the World Bank is focusing on empowering women and providing economic opportunities in the Sahel.

Sahel Women Empowerment and Demographic Dividend Project

The high fertility rates, alarming rates of child marriage, and high numbers of maternal and child deaths in the Sahel region have negatively affected the development and health of girls and young women, their ability to participate in life-skills programs, and, consequently, their ability to prosper and formally contribute to the economy (table 2.1). To respond to these challenges, the World Bank is financing the SWEDD project, a regional operation covering the Sahel countries. The United Nations Population Fund is supporting the implementation of this project. The Economic Community of West African States (ECOWAS), a regional organization, has also received a grant to implement regional aspects of the project.

21 United Nations and World Bank (2018, 218–19).

22 Gelbard et al. (2015).

23 The operations described here referred to projects among the G5 Sahel countries; namely, Burkina Faso, Chad, Mali, Mauritania, and Niger.

24 Link: https://wcaro.unfpa.org/sites/default/files/pub-pdf/SWEDD_ENG.pdf

The project aims to increase the empowerment of women and adolescent girls and their access to quality reproductive, child, and maternal health services, and to improve regional knowledge generation and sharing as well as regional capacity and coordination. Empowering women and girls implies helping them to continue their education and improving their knowledge of reproductive, maternal, neonatal, and child health and nutrition. The project works across borders to help overcome barriers to empowering women and girls and create more economic opportunities for women and girls in the region. This will ultimately enable the Sahel countries to harness the demographic dividend, with a higher proportion of economically active people compared with dependents.

TABLE 2.1: Prevalence of Child Marriage across Countries in the Sahel

Country	Prevalence of child marriage (%)
Niger	75
Chad	68
Mali	55

Source: World Bank 2019a.

Note: Niger has the world's highest prevalence of child marriage; Chad, the third highest; and Mali, the fifth highest.

The SWEDD project has brought together influential Muslim scholars and religious and traditional leaders from the participating countries. In May 2018, these leaders gathered in Nouakchott, Mauritania, to discuss the position Islam takes on issues related to child marriage, maternal and child health, family planning, girls' education, gender-based violence, and women's economic and social empowerment. In their declaration of engagement, issued after the conference, the leaders said they were *"committed to bring their contribution to the field of girls' schooling [and] reproductive health, including safe motherhood during pregnancy, during delivery, and women's right of access to contraceptive methods of birth spacing."* The message from the Grand Imam of Al-Azhar was clear: child marriage in the eyes of Islam is haram (forbidden by Allah). The engagement of this regional network of religious leaders was formalized through a joint declaration and action plans to support the project's goals.

In Mali, the high school dropout rate among young girls remains a concern. To curb the school dropout phenomenon, about 900 young girls from 75 schools in the regions of Kayes, Mopti, Ségou, and Sikasso have received bikes financed under the project to enable them to get to school. Additionally, at least 3,000 girls have received school kits containing such items as text books, notebooks, and bags. The girls have also received sanitary kits, and their parents or host families have received food supplies. Furthermore, to offer an incentive to young girls to stay in school and encourage their parents to keep them there, the project organizes make-up classes in math, physics, chemistry, French, and English for more than 7,400 girls attending the selected schools. By staying in school, these girls can escape the arranged marriages that their parents end up proposing to them when they stay at home.

Regional Sahel Pastoralism Support Project

Pastoralism is key to the economies in the Sahel and the Horn of Africa. These two regions have experienced mounting levels of instability and insecurity, threatening the livelihoods of the local farmers and ranchers. The World Bank provided US$1.25 million to the Intergovernmental Authority on Development (IGAD) through the State and Peace-Building Fund to finance the Pastoralism and Stability in the Sahel and Horn of Africa project. The project was designed in 2016 to address the "conflict prevention" dimension associated with pastoral mobility. The project supported (a) activities to understand the impact of pastoral interventions on reducing conflict, and (b) programs to monitor conflicts and provide regional conflict-warning systems. These activities fed into the two regional pastoral projects in the Sahel and the Horn of Africa.

To assist the Sahelians in improving and perpetuating their pastoral activities, on which most of their livelihood is based, the World Bank is providing US$248 million–equivalent to the Sahel countries and regional organizations to finance the Regional Sahel Pastoralism Support Project. The goal of this project is to improve access to essential productive assets, services, and markets for pastoralists and agro-pastoralists in selected transborder areas and along transhumance axes across six Sahel countries. The project focuses on key areas, such as veterinary services, water, weather data, herd and rangeland management practices, animal nutrition, market information, and advisory services adapted to mobile communities to boost productivity. Furthermore, the project aims at promoting national and regional cooperation, particularly for disease control, natural resource management, transboundary movements of herds, and the facilitation of trade. It also aims at enhancing resilience to climate change, animal diseases, economic hazards, conflicts, and insecurity. By building on the collective action of the Sahel countries, the project aims to deliver a set of public goods that address the challenges and build on the opportunities created by the changing environment, including zoonotic animal diseases, shared rangelands and water resources, cross-border trade, market information, and pastoral risks, including shocks. All these challenges and opportunities cut across national borders and have key regional dimensions that are important to address and can only be addressed from a cross-frontier concerted approach.

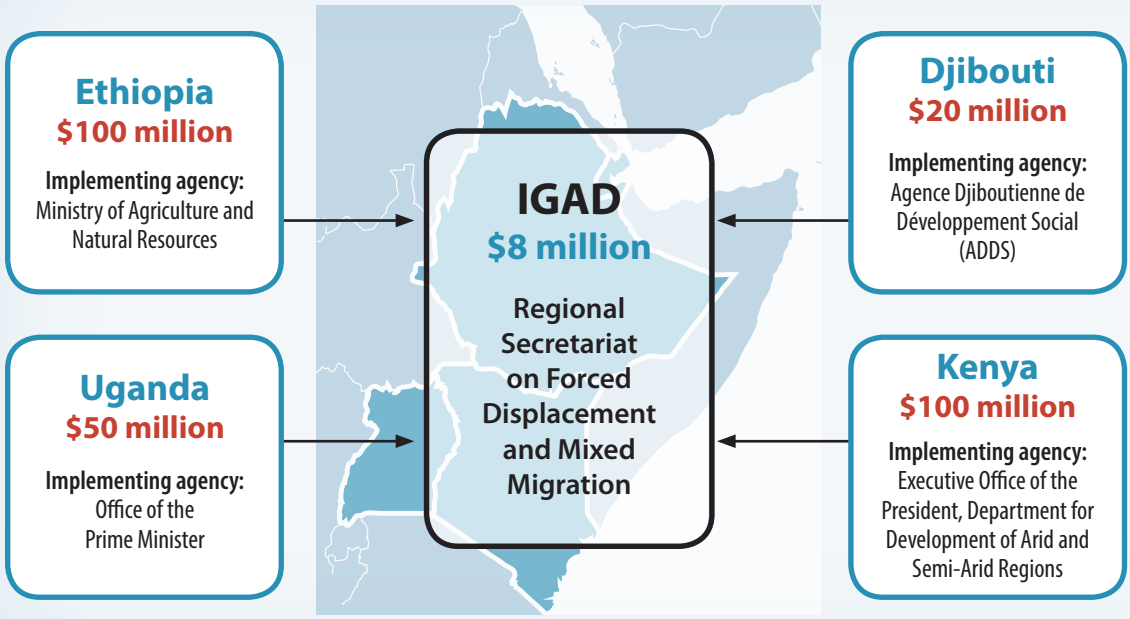
The Horn of Africa: Managing Internally Displaced People

The World Bank Group/International Finance Corporation (IFC) undertook some analytical work on the Kakuma Refugee Camp in the western part of Kenya. The evidence from this work revealed that there are benefits to local citizens of living near refugee camps. Households located near such camps showed higher consumption as refugee numbers increased. The mechanism behind this appears to be increases in wage and agricultural employment opportunities, as well as increases in the prices of livestock induced by refugee demand (Alix-García et al. 2018). Refugees are economic agents who are interested not just in engaging in economic activities to eke out a living, but in bettering society at large and making a difference (Sanghi, Onder, and Vemuru 2016). The evidence from this research has changed the conversation around refugees, who were previously viewed as aid recipients who sit at the camps all day doing nothing but receiving assistance. The refugee camps and settlements are now seen as markets for lucrative, engaging activity as opposed to dumps and squalors.

The IFC is using the data collected on consumption levels, access to finance, telecommunications, education, employment, and business ownership to encourage private companies to invest in Kakuma—by initiating new projects or scaling up existing ones—to benefit refugees and their host communities.

To respond to the social, economic, and environmental impacts of forced displacement, the World Bank approved the regional Development Response to Displacement Impacts Project (DRDIP) in the Horn of Africa in 2016, in partnership with the Governments of Ethiopia, Djibouti, Uganda (first phase), and Kenya (second phase). DRDIP is among the first World Bank–supported operations on development interventions rather than just a humanitarian and security response, and it is complementary to the work of traditional humanitarian agencies (figure 2.16).

FIGURE 2.16: Development Response to Displacement Impacts in the Horn of Africa



Note: IGAD = Intergovernmental Authority on Development.

The Development Response to Displacement Impacts Project (DRDIP) is a regional operation to support development interventions in the Horn of Africa.

The project's development objectives are to improve access to basic social services, expand economic opportunities, and enhance environmental management for communities hosting refugees in the target areas of these countries (figure 2.17). The project's components include (a) social and economic services and infrastructure, (b) sustainable environmental management, and (c) a livelihoods program. A community-driven development operational approach ensures that the voices of all the communities are heard in the decision-making process of sub-project prioritization and overall project preparation and implementation, and strengthens the capacity building of local institutions.

The goals of DRDIP are to improve access to basic social services, expand economic opportunities, and enhance environmental management for communities hosting refugees.

FIGURE 2.17: Objectives of the Regional Development Response to Displacement Impacts Project

The primary project beneficiaries are the host communities impacted by the protracted presence of refugees, and the secondary project beneficiaries are the displaced persons (refugees and returnees). By investing in public service delivery and social mobilization for host communities and refugees, DRDIP enhances social cohesion in beneficiary communities. The project has implemented a range of sub-projects in the fields of agriculture, education, electricity and clean energy, health, livelihoods, water, and others.

Stabilizing the Region through Country-Specific Projects: The LONDO Project

As a landlocked country bordered by unstable neighbors, the Central African Republic is one of the poorest and most fragile countries in the world. In January 2014, approximately 25 percent of the country's population was displaced, with close to one million internally and more than 200,000 in neighboring countries. That same year, the gross national income per capita plummeted to $600, measured in PPP—reaching again the dismal levels of the 1990s. Infrastructure was destroyed throughout the country, including schools and health care centers, and the payment of civil service wages was suspended for the better part of 2013, severely disrupting service provision. The government was unable to provide the most basic services and ensure its citizens' security, further eroding the already weak social contract between the population and the state. The Central African Republic faces the tremendous challenge of having to stabilize the country while investing in early recovery and lasting peacebuilding efforts aimed at breaking the fragility trap.

To assist the Central African Republic on a recovery road, the World Bank is supporting stabilization to break the cycle of violence and maintain confidence in the fragile transition. The support is principally focused on addressing some of the primary conflict drivers and building confidence in public sector institutions. Through the LONDO project, the World Bank is providing temporary employment to vulnerable people, through national labor-intensive public works programs. LONDO is now the largest cash-for-work program in the Central African Republic, with more than one million person-days working in all regions of the country (59 of 71 subprefectures). Across the country, 29,500 beneficiaries (36 percent women) have maintained more than 1,850 kilometers of roads to reconnect their communities to essential markets and services, and they are working together to reestablish the social contract in the country. The project has deployed in rebel-controlled areas and set examples in partnering with peacekeeping forces and the humanitarian community.

2.5 ONGOING REGIONAL ARRANGEMENTS TO SUPPORT FCV-AFFECTED COUNTRIES

Regional organizations are playing a more important role in preventing action on security challenges that go beyond national borders (Verjee 2017). Regional approaches are also key to reduce the risks of transnational contagion and instability generated by the rise of non-state actors and intra-state conflict in Africa. Some regional and subregional organizations, supported by the Security Council, have gained authority and capacity to manage conflict, including the following:

- The continentwide initiatives spurred by the African Union, which has created specialized institutions and capacities to support political mediation, crisis management, post-conflict reconstruction, and peacekeeping.
- ECOWAS, which is empowered to act in the case of threats to stability through political, economic, and military means. Its proximity and access to regional and national stakeholders allows ECOWAS to engage and intervene quickly when crises occur.

Regional solutions will remain important as the consequences of fragile contexts cross national borders. However, the effectiveness of regional organizations in addressing conflict situations is put into question when there is no consensus among member states and perceptions of partiality emerge, or when important capabilities are in short supply.

Regional Economic Communities for Stabilization and Peacekeeping

Regional and subregional economic communities have gone beyond promoting economic cooperation to addressing regional threats to peace and security. Regional economic communities are engaging in ever-growing operations, identifying subregional threats through regional coalitions like the Multinational Joint Taskforce against Boko Haram and the G-5 Sahel, among others.

Economic Community of West African States

ECOWAS has been one of the most effective regional economic communities, and Nigeria has served as a strong anchor and advocate for democratization and peacekeeping (Khadiagala 2018). ECOWAS has intervened against, sanctioned, or condemned actions taken by most of its 15-member states over the past two decades. The military interventions launched by ECOWAS to destabilize civil wars in Guinea-Bissau, Liberia, and Sierra Leone resulted in the creation of crucial mechanisms for regional security. In an unprecedented move, ECOWAS created a peacekeeping force, the Economic Community Cease-Fire Monitoring Group, to secure peace in Liberia in 1990. It also had a proactive role in deploying the United Nations Mission in Liberia, which supervised the 2005 elections that marked the end of the civil war. The Economic Community Cease-Fire Monitoring Group played an analogous role in Sierra Leone between 1997 and 1999, to prevent the rebels of the Revolutionary United Front from destabilizing the country's legitimate government. Similarly, ECOWAS organized peaceful resolutions and restored constitutional governments in Burkina Faso, Côte d'Ivoire, and The Gambia, among others. Increased risk of conflict spillovers, and the need for stability to support growth and investment, made the involvement of heads of states and governments essential in supporting stabilization in FCV-affected countries across the region (Marc, Verjee, and Mogaka 2015). In The Gambia, a coalition of regional and international leaders, led by ECOWAS, balanced internal negotiations with diplomatic pressure and credible threats of military action (Steven and Sucuoglu 2017).

West Africa Coast Initiative

There are initiatives on trafficking and economic integration in West Africa that are important for stabilization and managing factors that could heighten fragility and conflict. The West Africa Coast Initiative is a joint program among the United Nations Office on Drugs and Crime, United Nations Office for West Africa, United Nations Department of Political Affairs, and Interpol, to combat illicit drug trafficking, organized crime, and drug abuse in West Africa. This initiative includes a comprehensive set of activities targeting national and regional capacity building in law enforcement, forensics, border management, anti–money laundering, and strengthening of criminal justice institutions (World Bank 2011a).

Regional Strategy to Address Boko Haram

Lake Chad provides water to more than 30 million people living in four surrounding countries: Chad, Cameroon, Niger, and Nigeria. In past and recent times, the region has witnessed severe violence and bloodshed as a result of the Boko Haram insurgency in Nigeria. The Regional Stabilization, Recovery and Resilience Strategy for areas affected by Boko Haram in the Lake Chad Basin region was adopted by Cameroon, Chad, Niger, and Nigeria in August 2018 (African Union 2018). The goal of this strategy is to address the short-, medium-, and long-term stabilization, resilience, and recovery needs in the areas affected by Boko Haram. It is supported by nine pillars: political cooperation; security and human rights; disarmament, demobilization, rehabilitation, reinsertion, and reintegration of persons associated with Boko Haram; humanitarian assistance; governance and social contract; socioeconomic recovery and environmental sustainability; education and vocational training; prevention of violent extremism and peacebuilding; and empowerment and inclusion of women and youth. These pillars respond to the multilayered

challenges in the Lake Chad Basin region. The strategy is expected to drive, rationalize, and complement various initiatives aimed at stabilizing the areas affected by Boko Haram's activities in the Lake Chad Basin region.

Intergovernmental Authority on Development[25]

To address conflicts in the region that comprises the Horn of Africa, Nile Valley, and African Great Lakes, IGAD has designed the Conflict Early Warning and Response Mechanism. Under the leadership of Ethiopia, Kenya, and Uganda, IGAD has mediated peace agreements in Sudan, South Sudan, and Somalia. The protracted negotiations by IGAD and its external partners yielded the 2005 Comprehensive Peace Agreement that led to the birth of South Sudan in July 2011.

Along with their potential benefits, the regional economic communities face significant challenges. Regional organizations, except ECOWAS, often lack strong champions for democratic norms (Khadiagala 2018). Regional institutions are typically underfunded, by international standards, and typically lack common identities or shared values—thus, hindering the fulfillment of their core mandates. Progress toward integration and multilateralism remains limited in areas of Sub-Saharan Africa where states face long-running conflicts and politicians are fearful of relinquishing sovereignty.

Continentwide Initiatives

The African Union brandishes significant normative power in advocating constitutionalism, democracy, and the rule of law. Its involvement has provided legitimacy to successful efforts to reverse unconstitutional changes in government in several countries, which could have given rise to political instability and conflict. Over the past decade, the African Union has actively implemented provisions for unconstitutional government changes. Its successes in censuring and/or reversing unconstitutional government changes in Burkina Faso (2015), the Central African Republic (2003), Côte d'Ivoire (2010), Guinea (2009), Guinea-Bissau (2003, 2012), Mauritania (2005), Madagascar (2001, 2009, 2014), and Niger (2010) have helped set up an African norm around constitutional legality (Khadiagala 2018).[26]

At the intergovernmental level, the African Union has developed a Continental Early Warning System to advise the Peace and Security Council on "potential conflict and threats to peace and security" and "recommend best courses of action."[27] The Peace and Security Council, Africa's leading conflict management institution, has had a mixed record in addressing conflict episodes over the past two decades. Limited organizational and financial resources as well as the intractable nature of some conflicts have contributed to this uneven performance. The Peace and Security Council's successes have emerged from its ability to mobilize international resources and build partnerships with the regional economic communities to address conflicts in Burundi, the Central African Republic, Mali, Somalia, and Sudan. Box 2.1 summarizes fragile contexts where domestic efforts are insufficient and regional initiatives can potentially provide a solution.

25 United Nations and World Bank (2018, 239).

26 The African Union played an important role preventing conflict in the 2014 elections. By staying engaged in the country and bringing in high-level mediation (Ambassador Ramtane Lamamra) at critical times, the African Union contributed to ensure that the presidential transition followed a constitutional process.

27 United Nations and World Bank (2018, 239).

2.6 PATHWAYS OUT OF FRAGILITY

This section discusses possible pathways out of FCV for the affected countries in Sub-Saharan Africa. Successful prevention and exit from fragility require the buildup of state capacity along with the renewal of the social contract and promoting social cohesion. Digital technologies can speed up the exit from fragility by allowing a rapid reconstruction process—especially contributing to citizen engagement and media development. Digital technologies can also address the challenges associated with the production and trade of conflict minerals (for example, child labor and illicit flows). And regional initiatives to foster trade facilitation can help sustain peace across borders to the extent that they reduce logistic costs and address cross-border illegal commerce practices.

Building State Capacity and Strengthening the Social Contract

FCV situations are diverse and complex—from countries at risk, countrywide conflict and violence, and deep fragility, to pockets of fragility—all demanding different responses. In situations of deep fragility, the state core functions are the weakest, violence and conflict are endemic, and trust between the state and society, and between different social groups, is low or nonexistent. Countries often enter deep fragility after a long internal conflict (for example, Liberia, Sierra Leone, Sudan, and Somalia), or following a slow degradation of social cohesion and state capacity over the years (the Central African Republic).

In situations where violence is high, government capacity is weak, the elite pact has unraveled, and the state is captured by elite interests not connected to the needs of the population, an entrenched "fragility system" is progressively established. In such a system, national actors behave according to a set of incentives that reinforce fragility through increased clientelism, in which politicians use their position of privilege to access revenues and private benefits, as well as use violence to intimidate social groups. As a result, institutions become highly corrupt and trust between citizens and the state—as well as between citizens—rapidly erodes, resulting in increased conflict and violence. Once countries reach such a stage of deep fragility, most are not able to exit for long periods of time. To this end, most countries on the present World Bank Harmonized List of Fragile Situations have remained there for years. Furthermore, when they finally exit fragility, it usually takes a long time, often decades, as demonstrated by the cases of Liberia and Sierra Leone, and it is rarely a linear process.

Helping Countries Escape the Fragility Trap

Promoting state legitimacy is fundamental for preventing and exiting fragility. Beyond building capacity, supporting the state and strengthening state and local institutions is a first-order priority to confer legitimacy, renew the social contract between citizens and the state, and foster social cohesion. Ultimately, stronger institutions can more effectively manage power sharing, redistribution, dispute resolution, and sanctions (World Bank 2017).

Core government functions need to be supported in ways that build efficiency and trust in the state. Overcoming fragility entails strengthening the efficiency and transparency of core government functions. If governments are to provide security and rule of law and regulate and/or deliver public goods, they must have the capacity to plan, allocate resources, and oversee

the delivery of those services efficiently, and raise revenue through transparent and equitable taxation. In FCV situations, strengthening government accountability and efficiency is a long-standing priority. It is essential to find a balance between "capacity fixes" and "institutional sustainability," to avoid the harmful practices that can arise from parallel delivery structures. The ability to ensure that revenue is created and public funds are used for their intended purpose is equally important. Furthermore, macroeconomic instability can precipitate political violence, and escalation of violence can quickly unravel political bargains around taxation, spending commitments, and monetary targets. To this end, rebuilding the state's capacity to conduct fiscal and monetary policy is a precondition for effective government service delivery, private sector development, and ensuring resilience to shocks.

With this context, helping countries escape the fragility trap requires the following approaches: (a) remain engaged for the long term, (b) take a step-by-step approach to reforms and institution building, (c) ensure country ownership, (d) seize windows of opportunity, and (e) focus on effectiveness and inclusion.

First, development actors must be engaged for the long term in FCV settings. Although strengthening accountability, legitimacy, trust, and institutions is essential to foster the conditions required to escape fragility, it is evident that it cannot be done quickly nor through simplistic solutions. The pathway out of fragility is often mired with crises and setbacks. Remaining proactively engaged over the long term is therefore critical to avoid relapses into conflict and provide the steady support needed for peace and stability to take root.

Second, the prioritization and sequencing of reforms is another critical piece of the iterative approach needed in FCV settings. In countries where there are significant capacity constraints or fragile peace settlements in place, it is of paramount importance to avoid overly complex reforms or doing too much at once. Instead, an incremental and pragmatic approach to development is needed to allow flexibility and adaptability to rapidly changing on-the-ground dynamics. A concrete example of this approach is the World Bank's engagement in Somalia. Over the past few years, the World Bank has focused on iterative steps to strengthen state institutions and governance. Through careful selectivity, close coordination with the international community, and ultimately by empowering the government, the World Bank has been able to support the development of a more capable and legitimate state that is able to deliver services and respond to the demands of its citizens.

Third, country ownership is key for a lasting exit from the fragility trap. Ensuring that development interventions help build and improve existing national systems, rather than focus on sustaining parallel governance structures, is critical to strengthening government legitimacy and renewing the social contract over the long run. To be effective, interventions must support national leadership—in the form of the national government or a coalition of domestic actors—committed to exiting fragility.

Fourth, seizing windows of opportunity in FCV settings is critical to provide the much-needed support to catalyze an escape from the fragility trap. Although the balance between focusing on "quick wins" and lasting solutions is extremely challenging, building momentum early on is crucial to being able to support the long-term reforms needed. Therefore, although incremental approaches to long-term institution building are key, it is pivotal to act fast when windows of

opportunity present themselves, to allow progress to be made and momentum to build. In some situations, it can be a crisis itself that catalyzes a sudden breakthrough, whether it is due to an election, the discovery of oil, or a peace agreement. In such instances, working closely with international partners is important to ensure a fully coordinated approach. This is the case in the joint World Bank–United Nations–European Union Recovery and Peacebuilding Assessments that support the coordination of international efforts in countries undergoing post-conflict or political transitions. These assessments help governments prioritize recovery and peacebuilding activities that then form the basis of multiyear plans to support inclusive development and durable peace. In the Central African Republic, for example, after three years of armed conflict and political crisis, a Recovery and Peacebuilding Assessment served as the basis of the country's five-year National Recovery and Peacebuilding Plan. This later allowed the international community to provide critical development support in insecure and active conflict zones, for instance, in parts of the country where the Lord's Resistance Army was active and development projects had not taken place in two decades.

Finally, delivering services effectively and inclusively is central to rebuilding the social contract in FCV settings and improving the legitimacy of the state. Although security and justice are known to be the most relevant services to address fragility, the provision of social services and social protection can also reduce FCV over the long term and increase trust in the government and service providers. Therefore, it is key not only to focus on what services are provided, but also on how services are delivered to maximize inclusion and build social cohesion. In this context, civic engagement and community-driven development programs can be crucial. In fragile settings where governments have limited capacity, the focus on how to engage citizens in overseeing service delivery and creating mechanisms to reinforce their participation is critical to improve service delivery and social cohesion. The voices of the most vulnerable need to be heard, and how the sociopolitical context impacts the distribution of services must be well understood. Evidence shows that community-driven development operations can be designed to support prevention and resilience in very polarized situations and help local governments. Furthermore, they can help remove perceptions of injustice and ensure that resources are distributed fairly, which can lower the risk of conflict.

Embracing the Digital Economy

ICTs and Post-Conflict Reconstruction

Information and communication technologies (ICTs) can contribute to reconstruction policy and practice in post-conflict contexts. The application of ICTs cuts across the following areas of reconstruction: stabilization, reconciliation, and media and public engagement.[28]

Stabilization. ICTs can play an important role in facilitating the reconstruction process. For example, restoring telecommunications contributes to building public confidence that a country is returning to normality. New ICTs have enabled early warning systems to leverage information from within communities to detect confrontations between former combatants (or other actors) that threaten to break out into violence. A pioneering example of the application of information technology was the use of the Ushahidi software to monitor violence during Kenya's

28 See the analysis in Kelly and Souter (2014, 15–34).

postelection crisis during 2007/08, which reduced the risk of escalating violence. ICTs can also help with coordination and information sharing among governments, development partners, and international intervention forces in the early days of reconstruction.

Reconciliation. Several countries that transitioned out of conflict have implemented a variation of a Truth and Reconciliation Commission. This constituted a platform for the individuals who were involved in and suffered from violent conflict to record their experiences, to establish a shared understanding of what went wrong and what may go right in the future. In this context, ICTs can provide a platform to collect and organize different types of documents for the Truth and Reconciliation Commissions.

Media and public engagement. ICTs are at the heart of public debate and public participation. They provide the platforms and channels through which governments and politicians communicate to their citizens, and through which the population expresses their opinions to those in power. ICTs can foster citizen participation and empowerment, especially in countries with greater uncertainty about future security. ICTs provide crowdsourcing platforms and other bottom-up approaches to report the abuse of power by officials, perceptions of crime and personal security, shortages in public services, and other indicators of progress (or lack thereof) toward stabilization and development. Through big data and open data, governments today can examine a larger amount of information about national circumstances.

Digital Solutions to Problems Associated with "Conflict Minerals"

Blockchain technology offers the opportunity to create transparency in the supply chain of "conflict minerals" and help mitigate conflict, child labor, and illicit trade around mineral production, especially in the Great Lakes region of Africa. The mineral trade has funded some of the world's deadliest conflicts for decades.[29] Resources from conflict or high-risk areas in Sub-Saharan Africa, including the Democratic Republic of Congo and Zimbabwe, and historically, in Angola and Liberia, can fund armed groups and fuel human rights abuses (Global Witness 2019). These resources, also known as "*conflict minerals*," can enter global supply chains and end up in mobile phones, laptops, jewelry, and other products. International advocacy campaigns by nongovernmental organizations, such as Global Witness, have pressured companies using or trading resources that may have come from conflict areas to carry out risk-based due diligence and commit to sourcing responsibly and sustainably. Blockchain and distributed ledger technology can permit compliance with global standards, supply chain management, and the responsible sourcing of minerals.

Blockchain, at its most basic, is a secure archive of records stored on a distributed ledger, which uses smart contracts built on the Ethereum platform. The technology enables chain-linked stakeholders to exchange securely critical trade documents, such as bills of lading and letters of credit, via the use of smart contracts (Weiland 2018). This database provides a platform to record supply chain transactions from mine to smelter and beyond (RCS Global and ICMM 2017). The data include information on weight, quantity, grade, and information on origin and responsible production certificates that can be uploaded to the system, validated at the appropriate supply chain points, and linked to the physical material using bar codes, tags, or other internet of things

29 According to OECD (2018), 20 of 58 fragile contexts across the world were considered natural resource abundant.

applications (such as radio-frequency identification tags). This information can be shared with downstream buyers and other third parties. Several companies are already exploring the use of blockchain in their supply chains, as illustrated by the following examples.

Blockchain use in the diamond industry. Diamonds and other gems are given a digital fingerprint that can be tracked by blockchain as they are sold, thus providing a forgery-proof record of the source of the stones (Lewis 2018). De Beers—which mines, trades, and markets over 30 percent of the world's supply of diamonds—recently announced that it will create the first blockchain ledger for tracing stones from the mine to the consumer (Marr 2018). Other companies applying blockchain technology to the gemstone business include FuraGems and Everledger.

Responsible sourcing of cobalt from the Democratic Republic of Congo. The Democratic Republic of Congo, which holds half the world's cobalt reserves, has launched a pilot scheme to ensure that the cobalt in lithium-ion batteries for manufactured products, such as iPhones and Tesla's electric vehicles, has not been mined by children. Businesses in China, the main destination for Congolese cobalt from artisanal mines, have set up a Responsible Cobalt Initiative to address child labor (Lewis 2018). The growing pressure from consumers and investors to show that the cobalt used by manufacturers comes from a supply chain free of rights abuses has extended to other minerals used in electronics, such as tantalum, tin, tungsten, and gold.

Responsible sourcing of tantalum from Rwanda. In 2018, the Rwandan government, along with London blockchain startup Circulor, created a blockchain-based solution for a transparent record of the movement of tantalum along the supply chain. Rwanda is a world leader in the production of tantalum concentrates and metals (material used in consumer electronics such as smartphones and laptops). The mining of tantalum has generated revenue for the Rwandan government; however, it has been linked to child labor, sexual and gender-based violence, and crime in neighboring countries. The joint project between Circulor and the Rwandan government will give companies access to use Circulor's blockchain platform to tag and trace tantalum mined in Rwanda as it goes through the supply chain (Graham 2018). Consequently, buyers, investors, and regulatory bodies can be confident about the source of products that contain tantalum.

Overall, the blockchain technology can potentially address issues of transparency, conflict, and illicit activity in the mining industry. First, it can potentially increase compliance rates for supply chain management among mining companies and promote responsible sourcing in the global economy (Weiland 2018). Blockchain technology could also facilitate a collaborative effort for the industry to promote transparency in the sourcing of minerals and metals (RCS Global and ICMM 2017). Second, blockchain can be used to implement comprehensive end-to-end tracking of mineral ores and concentrates. It helps secure high-value minerals in transit and confirm that the purchased minerals come from compliant and conflict-free regions. However, the risk that concentrates and ores could be mixed with materials of unknown origin prior to being assigned an ID remains a possibility (Weiland 2018).

Blockchain technology is still new, and its use is being piloted in the minerals and metals supply. The implementation of this technology poses at least three challenges (RCS Global and ICMM 2017). First, it is difficult to find consensus around chain of custody data and responsible production standards among companies with different risk exposure and supply chain positions. Second, it is far from trivial to transform non-standardized, paper-based chain of custody systems

into a digital system. Third, blockchain technology is still costly, due to the amount of computing power needed and significant operations costs (estimates range from US$100 per gigabyte to US$50,000 to US$100,000 per user). In sum, blockchain technology is not a silver bullet to fix the structural problems in minerals and metals supply chain management.

Overcoming Barriers to Trade: Trade Facilitation in the Great Lakes Region

In May 2013, during a joint United Nations and World Bank Group mission to the Great Lakes region, the World Bank announced US$1.4 billion in new funding to help countries in the region provide better health and education services, generate more cross-border trade, and fund hydroelectricity projects in support of the Great Lakes Peace, Security and Cooperation Framework.

Cross-border trade between nations in the Great Lakes region plays an important role in sustaining peace and security in Central Africa. It has helped build peaceful links between Burundi, the Democratic Republic of Congo, Rwanda, Tanzania, and Uganda after years of unrest and instability. Conflicts in the Great Lakes region have displaced millions of people within countries and across borders. Africa's borders are porous and difficult to control—especially for FCV-affected countries. However, that is not the case for goods. Thick borders in the Great Lakes region—particularly, the eastern border of the Democratic Republic of Congo—reflect not only uncertainty over security, but also the financial costs that traders face when crossing the border into and out of these nations. Improving border crossing includes the simplification of rules, zero tolerance for violence, better infrastructure and physical conditions for officials and traders at the border, and support for traders' associations for better representation of poor, small traders (World Bank 2011b).

Poor infrastructure and high trade facilitation costs often hinder cross-border trade—and this cost is particularly high among firms in countries with FCV situations. High transport costs are particularly important for landlocked countries. Business opportunities may be missed in the event of unanticipated shipment delays. Firms may also have to bear additional inventory costs.

The Great Lakes Trade Facilitation Program, under implementation since early 2016, aims to foster trade across borders by raising the capacity for commerce and lowering the costs faced by traders—particularly, small-scale and female traders—at selected border crossings and port locations in the region. The program highlights the need to improve border infrastructure (transport, customs and crossing facilities, and basic services including water and power), build the capacity of customs officials, upgrade electronic systems, and implement the Small Traders Charter.

The ongoing Great Lakes Trade Facilitation Program has already reached some milestones. First, the program installed remedial infrastructure at two major crossings along the Democratic Republic of Congo–Rwanda border, easing conditions for small-scale operators (especially women). Solar power lighting was installed at the Goma-Petite Barrière and Ruzizi 1 border crossings, allowing for greater security and extended trading hours. Second, the completion of the fencing of the Kamembe airport in Rwanda contributes to the greater safety and security of aviation in the area. It also benefits the local community farming on airport land, by providing security for their crops. Third, regional policy dialogue has fostered cross-border coordination on trade facilitation across project countries, including measures to streamline procedures for small-scale traders and support the introduction of simplified trade regimes. Fourth, trade information desks have been established or enhanced at all project locations in collaboration

with the Common Market for Eastern and Southern Africa, with the aim of assisting traders with border clearance procedures, and also helping them solve disputes with border authorities. Finally, regional and national training for traders and officials is underway or in preparation, including on the gender aspects of cross-border trade, along with extensive awareness-raising and dissemination activities.

BOX 2.1: Regional Arrangements as a Means to Address Fragility and Violent Conflict When Domestic Efforts Are Insufficient

This box presents some experiences when domestic efforts to prevent or exit a fragile/conflict context fell short and regional cooperation from supranational institutions or mechanisms played a key role in providing a solution.

Post-Election Violence in Kenya

A wave of violence erupted in Kenya after the general elections that were held on December 27, 2007. Among the casualties, there were more than 1,000 deaths and 300,000 people were displaced. The cost in human lives and economic destruction, although catastrophic, would have been more onerous if it were not for the mediation of the African Union in January 2008. The panel of eminent African personalities, chaired by former United Nations Secretary General Kofi Annan, led the 41-day peace process that led to the Agreement on the Principles of Partnership of the Coalition Government. The agreement was signed by President Mwai Kibaki and the opposition leader, Honorable Raila Odinga, on February 28, 2008. This power-sharing agreement established the office of the Prime Minister and created a coalition government, thus putting an end to the political, economic, and humanitarian crisis that had engulfed the country (Lindenmayer and Kaye 2009).

End of the Civil War in Sudan

At the Inter-Governmental Authority on Development (IGAD) summit in September 1993, Sudanese President Omar El-Bashir requested the assistance of neighboring countries to help end the civil war. The IGAD Standing Committee on Peace in Sudan was formed and chaired by then President of Kenya Daniel Arap Moi. By July 2002, General Lazaro Sumbeiwyo had negotiated the Machakos Protocol, which ensured the one country, two systems compromise. According to this protocol, Sharia Law would prevail in the North, and a secular administration would be established in the South. The protocol also set the timeline for a referendum on self-determination by the South, to be held six years after signing the peace agreement. Over the next two years, further accords were reached on security arrangements, power sharing, and wealth sharing. This ended with the signature of Sudan's Comprehensive Peace Agreement on January 9, 2005 (Healy 2009).

Ongoing Violent Conflict in South Sudan

BOX 2.1
Continued

By early 2016, the violent conflict, which resulted from a leadership division in South Sudan since 2013, had taken a turn for the worse. Fifty thousand people were reported to have been killed and millions had been forcibly displaced. South Sudan had faced enormous challenges in its efforts to build institutions since the country's independence in 2011. At the onset of the conflict, there was a lack of legitimate political institutions along with the absence of security forces (United Nations and World Bank 2018). In 2018, the factions once again agreed to stop fighting and form a unity government; however, the accords, which were finalized on September 12, 2018, have not put an end to South Sudan's profound crisis. The agreement has not settled the power struggle between President Salva Kiir Mayardit and rebel leader Riek Machar. Instead, the agreement failed to outline a political settlement for the country: it has not delivered any power- or wealth-sharing mechanisms for other groups. Although the fighting has tapered off with the new deal, the country remains fragile. There is scope for diplomats to nurture the momentum toward peace while trying to secure a more lasting settlement. To support the peace process, and prevent a return to large-scale conflict, IGAD, the African Union, the United Nations, and donor countries should speed up and sustain diplomatic efforts to resolve the crisis (International Crisis Group 2019).

Section 3: Harnessing the Digital Revolution to Eradicate Poverty in Africa

3.1 INTRODUCTION[1]

Digital technologies offer a chance to unlock new pathways for rapid economic growth, innovation, job creation, and access to services in Africa. Yet, access to the internet remains unattainable for most people in the continent: only 27 percent of the population had access to the internet in 2018. Few African citizens have digital IDs or transaction accounts, thus impeding their access to key services—including e-commerce. Businesses are slowly adopting digital technologies to foster productivity, jobs, and sales. Digital startups face steep hurdles to obtain financing. A few governments are investing strategically and systematically in developing digital infrastructure, services, skills, and entrepreneurship. The youth population will miss the opportunity to maximize their potential in the job market if economic activity in the region does not fully embrace the Fourth Industrial Revolution.

Growth in real economic activity sharply accelerated over the past two decades: from an annual average rate of 1.4 percent in 1978–95 to 4.6 percent in 1996–2016. However, the growth performance of the region is less than stellar when accounting for population growth: real gross domestic product (GDP) per capita grew at an annual average rate of 1.8 percent in 1996–2016. At the same time as poverty rates have declined at a faster pace than in other regions in the world, the (absolute) number of poor people in the region has increased. Slow economic growth is not the only culprit of the greater concentration of extreme poverty in the region, but also conflict, weak institutions, and the lack of success in channeling growth into poverty reduction.

The poverty reduction needs of Africa are particularly stark. Most of the world's poor reside in the region, and without drastic action, this share will increase dramatically in the coming years. The rising concentration of extreme poverty in Africa over the past quarter-century can be attributed to the fact that economic growth has not been as fast and inclusive as needed to reduce poverty significantly.[2] Africa needs policies to accelerate growth, and these policies need to be complemented with programs and strategies targeted to reach the extreme poor.

Combating extreme poverty requires actions that boost productivity in the agriculture sector, foster rural development, and create jobs for the youth bulge that is joining the labor force. Most of the people in the region live in rural areas (82 percent), earning their living primarily from subsistence farming. Informal labor makes up 75 percent of total employment. The low productivity of farms, firms, and workers in the informal sector is partly explained by poor access to information on input, knowledge, and output markets. Radical technological change and adoption are needed to eradicate extreme poverty by 2030, as business-as-usual methods are largely insufficient to achieve this goal (World Bank 2018c).

1 This thematic section draws from and complements ongoing World Bank Group research and operational projects that are summarized in World Bank (2019a, 2019b, 2019c).

2 The rate of economic growth of the countries with the largest number of poor people has declined in recent years. The conversion of growth into poverty reduction—the growth elasticity of poverty—has also been historically lower in Africa than elsewhere (World Bank 2018c). That growth buys less poverty reduction in Africa can be attributed to the initial level of poverty holding back growth and poverty reduction. Poorer countries have fewer households with the assets and empowerment structures needed to contribute to and participate in aggregate growth. The levels of fertility, education, health, and infrastructure also affect the conversion rate (World Bank 2018a).

Can the digital revolution succeed in reducing poverty in Africa? For the past two decades, the internet has provided a platform for innovation. It has allowed startups, institutions, and governments, among others, to develop and bring many products and services to the market. It has not only been conducive to the creation of innovative applications, but also transformed daily activities, including the nature of work, labor-leisure decisions, communications, social networking, shopping, banking, and engaging with the government. Differences in access to the digital economy between advanced and developing countries (notably, African countries), although still large, are narrowing thanks to the shift from the more limited connected economy of personal computers and web servers to the more connected economy of inexpensive mobile phones, broadband wireless networks, and cloud-based applications. Access to the internet and mobile phones has rapidly become a necessity that more people can now afford. To reap the growth benefits and eradicate poverty, access to the internet is critical but not sufficient. The digital economy also quires a strong analog foundation, consisting of regulations that create a vibrant business climate and let firms leverage digital technologies to compete and innovate; skills that allow workers, entrepreneurs, and government officials to seize opportunities in the digital world; and accountable institutions that use the internet to empower citizens.

Digital technologies (DTs) can have an impact on Africa's development path through several channels (Aker and Blumenstock 2015):

First, DTs help to alleviate information asymmetry problems and improve communication. They can reduce search costs and potentially improve market efficiency (Stahl 1989). Mobile phones may help reduce informational barriers for consumers, producers, and traders and facilitate learning about prices (Aker and Mbiti 2010). Other mobile applications may also reduce demand uncertainty and coordination costs by improving the flow of information. For instance, mobile phones can help farmers, traders, and firms to identify potential buyers (suppliers) for their products in an expanded geographic area (Aker 2011). Better farmer-trader communications reduce the uncertainty associated with demand for certain goods and facilitate the provision of inputs to rural areas (Debo and Van Ryzin 2013). Additionally, pilot programs have shown that technologies like blockchain can potentially increase access to export markets by small stakeholders, by increasing data transparency across the supply chain and replacing time-consuming paperwork by automatic digital verifications (World Bank 2018d).

Second, DTs have dramatically reduced the cost of private and public transfers and payments relative to traditional methods. Mobile phones have provided a platform for electronic transfers that have reduced the transaction costs of sending and receiving money. The mobile money innovation has increased the frequency and amount of transfers and improved households' consumption-smoothing ability (Jack and Suri 2014). Government-to-person payment platforms have also reduced implementation costs and raised the efficiency of public transfer programs and payments (Aker et al. 2013). Resource allocation within households is likely to be influenced if those transfers are provided to women (Duflo and Udry 2004; Aker et al. 2013).

Third, low-income individuals—especially those living in remote, rural areas—have restricted access to formal financial institutions. They tend to resort to costly self-insurance mechanisms to share risks. Mobile money provides a safe method for individuals to deposit savings—especially for more immediate needs (Aker and Wilson 2013; Ky, Rugemintwari, and Sauviat 2018). Mobile

money accounts can be used to transfer individual or group-based savings to a financial institution or provide an entrance for the unbanked to access financial services (Mbiti and Weil 2016). New technologies, such as digital psychometric tests, can also increase access to loans by eliminating the need for collateral (Alibhai et al. 2018).

Fourth, DTs can provide educational content and foster the acquisition of educational skills by school-age children and adults. Individuals can use text-messaging or mobile money applications to practice reading and writing skills (Aker, Ksoll, and Lybbert 2012). Mobile phone–based applications can be used as a teaching tool in classrooms or as substitute teachers.

Consequently, the digital economy can unleash new market opportunities and attract new entrepreneurs and investors to serve the poor—particularly in fragile countries. Creating and adopting digital technology tools that are relevant to the African context (that is, farmers in rural areas) combined with efforts on digital literacy can empower low-skilled informal workers to perform higher-skilled tasks and learn as they work. Such technologies can enable workers without any collateral but with the ability to make small savings to access credit and insurance products based on their recorded savings and purchase histories, and to be matched to better jobs over time. Digital financial inclusion, along with skills upgrading, may help boost productivity growth and reduce poverty. Digitization is already creating new opportunities for the smallest entrepreneurs to access bigger networks and markets. Specific to fragile countries, digital technologies can be used to manage cross-border movements of displaced people (through digital identities), conduct cash transfers (blockchain), and purchase food from camp supermarkets (biometric identification).

This section finds that progress in the development of the various foundations of the digital economy is heterogeneous. There is still a large gap in the penetration, quality, access, and affordability of fixed broadband internet services. By contrast, progress in mobile broadband internet services has been faster, as indicated by the rapid expansion in mobile broadband subscriptions, mobile-cellular phones, and mobile network coverage. The use of digital platforms to pay bills or make purchases using the internet is still incipient in Africa. In contrast, Africa is the global leader in mobile money accounts, and this narrative is driven by Sub-Saharan Africa rather than North Africa. Mobile money accounts have provided access to funds to the unbanked and secure ways to facilitate electronic transactions in Sub-Saharan Africa, largely a reflection of the low level of development of traditional banking services. The opposite is the case in North Africa, where there is greater access to financial accounts and lower penetration of mobile money accounts.

The benefits of embracing the digital transformation in Africa are economically important. Reaching the targets set by the Digital Economy Moonshot in the Africa continent would increase its growth per capita by 1.5 percentage points per year and reduce the poverty headcount ratio by 0.7 percentage point per year. The potential growth benefits and poverty reduction effects are larger in Sub-Saharan Africa than in North Africa. For instance, reaching these targets would lead to higher growth by 1.95 percentage points per year and poverty reduction by 0.96 percentage point per year (as opposed to 0.4 and 0.2 percentage points per year in North Africa). Additionally, the gains in growth and poverty reduction are higher if we consider the interaction of the Digital Economy with analog complements such as human

capital. Growth gains can rise to 3.8-4 percentage points per year while poverty reduction effects increase to 1.9-2 percentage points per year.[3]

The content of this thematic section of *Africa's Pulse* draws heavily from ongoing projects on the expansion of the digital economy in Africa, the opportunities and challenges it poses to create sustained and inclusive growth, and its impact on the nature of work in Africa. Specifically, the section draws from the motivation, conceptual framework, and initial findings of the following projects: (a) Digital Economy for Africa (DE4A) Moonshot (World Bank 2019b), (b) The Future of Work in Africa: A Companion to the World Development Report 2019 on the Changing Nature of Work (World Bank 2019c), and (c) A Continent-Wide Digital Economy for Africa: Opportunities and Challenges for More Productive and Inclusive Growth (World Bank 2019a).[4]

This special topic has five subsections. Subsection 3.2 describes the conceptual framework for the adoption and development of the digital economy in Africa. Subsection 3.3 provides a benchmark of the foundations of the digital economy in Africa, namely, digital infrastructure, digital platforms, digital entrepreneurship, and digital financial services. It identifies where the larger gaps in the region are. This subsection also documents the persistent digital divides in digital financial services across gender, geography, age, and income dimensions within each country. Subsection 3.4 estimates cross-country growth regressions and calibrates the growth semi- elasticity of poverty to provide a back-of-the-envelope calculation of the potential growth and poverty reduction effects of narrowing the gaps documented in subsection 3.3. It also provides microeconomic evidence of the different ways the digital economy is disrupting economic processes and boosting productivity growth and job generation—with emphasis on the insertion of digital technologies in agriculture, finance, and government. Finally, subsection 3.5 discusses the complementary policies that are needed to reap the benefits of inserting and expanding the digital economy in the region, namely, policies to boost the growth effects of the digital economy (education, labor, and product market policies), regulatory frameworks that foster innovation and competition, and robust legal frameworks that address the challenges of privacy and cyber security.

3.2 CONCEPTUAL FRAMEWORK[5]

Traditional development models in Africa have not yet delivered sustained growth and have failed to eradicate extreme poverty. However, the models can potentially be disrupted by a more rapid pace of technology diffusion, convergence of multiple technologies, and emergence of regional and global platforms. Digital technologies can expand access to global markets, change business models, and render significant productivity gains. The digital revolution also has the potential to enhance access to basic needs and services. The global digital economy was about US$11.5 trillion in 2016 (15.5 percent of the world's GDP), and it grew more than twice as fast as global GDP from 2000 to 2016. The digital economy represents about 18.4 percent of GDP in advanced economies—with the United States having the largest share of the digital economy

3 To have an idea of the economic magnitude of this effect, World Bank (2017a) finds that closing the gap in terms of quality and quantity of infrastructure (transport roads, electricity, and telecommunications) would render higher growth per capita in Sub-Saharan Africa of 2.6 percentage points per year. These computations do not account for the timing and significant monetary cost involved in closing the infrastructure gap.

4 The main objectives of these projects are to: (a) shape the World Bank's knowledge on the digital economy by operationalizing the DE4A Moonshot initiative; (b) evaluate the potential impact of digital technologies on the nature of work in Africa—an environment with a low level of complementary assets such as physical, human, knowledge, and institutional capital; and (c) investigate the role of public policy in facilitating and managing the transition to the digital economy—particularly in markets that are neither competitive nor contestable..

5 This section draws heavily from World Bank (2019b).

in economic activity, at 35 percent. By contrast, the digital economy constitutes, on average, 10 percent of GDP in developing countries, and the proportion fluctuates between 2 and 19 percent. The developing countries that are ahead in the use of digital technologies—say, China, Chile, and Malaysia—are comparable to some advanced countries in the contribution of these technologies to real economic activity (Oxford Economics 2017).[6]

The Africa region has a total population of about 1.3 billion people and houses the world's youngest population. It has the fastest growing labor force: the labor supply is expected to increase by 198 million by 2030, and 11 million youth are expected to enter the labor market each year over the next decade (ILO 2018). The rising labor force in the region exhibits low levels of human capital: Africa has a dismal performance in the Human Capital Index, notably, in access to quality education, stunting, and maternal and child mortality. The education system in the region is in the midst of a crisis, with 50 million children out of school, low completion rates in secondary schooling, and poor learning outcomes.

The African continent has the potential to benefit from a digital revolution that could ensure sustained growth and provide much-needed jobs to the millions of young people joining the workforce each year. In the developing world, about 90 percent of all jobs are generated by the private sector (World Bank 2013). In this context, the region needs to implement policies to foster entrepreneurship—especially digital entrepreneurship—to deepen private sector development and accelerate job creation. The public sector plays an important dual role in this new environment: it uses digital technologies to deliver key products and services and regulates the functions and activities associated with the digital economy. There could be significant gains from plugging the continent into the digital revolution agenda and bringing together governments, the private sector, civil society, and development partners to put in place a bold vision for the African nations. The digital revolution promises to deliver output and productivity gains, but also poses new challenges. For instance, governments will need to implement policies to narrow the digital divide between the connected and unconnected and coordinate actions to quell increased cyber risks and threats to privacy.

Access to digital technology in Africa remains low. The continent lags the rest of the world in the availability of and access to broadband. For instance, 18 of the 20 least wireless connected countries in 2017 are in Africa (GSMA 2018). [7] Most mobile subscribers in Africa do not have access to the internet: more than half are covered by at least a 2G mobile network in 36 countries, one country does not have 3G services, and 11 countries are not yet covered by a 4G mobile network (TeleGeography 2018).[8] By the end of 2018, about 24 percent of the people in Africa have an active mobile broadband subscription—significantly smaller than the proportions in East Asia and the Pacific (49 percent) and advanced countries (about 75 percent) (GSMA 2018). Fixed broadband subscriptions, which are important for the larger data needs of growing

6 The Oxford Economics report estimates that the digital economy will account for almost a quarter of the world's GDP by 2025 if the current growth rates of digital investments persist over the next decade.

7 The GSMA mobile infrastructure network coverage is a weighted average of 2G (20 percent), 3G (40 percent), and 4G (40 percent) coverage. The GSMA data do not include Eritrea, South Sudan, the Central African Republic, Djibouti, Somalia, the Comoros, and Equatorial Guinea, all countries that have lower total wireless penetration than Liberia, which is listed as the fourth least covered country. This calculation does not include Liberia, São Tomé and Príncipe, and Libya. The two non-African countries that are least connected to wireless networks are Afghanistan and Haiti.

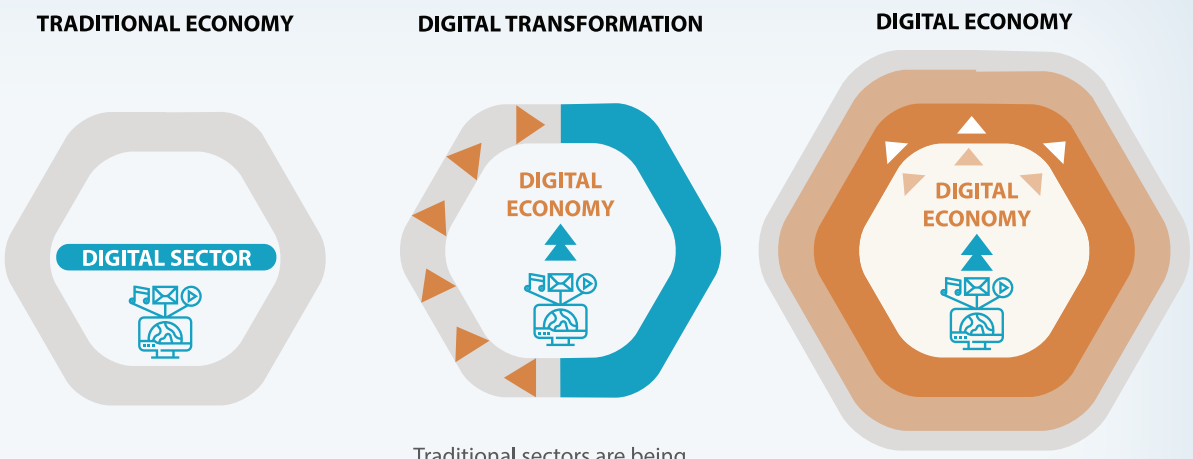
8 Of the 54 countries in Africa, 36 have 50 percent or more of total subscribers using 2G service or less, which at best supports SMS (for example, allowing access to basic digital financial services and agricultural information) but not internet access. Hence, web applications like WhatsApp—extensively used as business tools to learn about market conditions, advertise products and prices, and carry out transactions—are not available to them. Eritrea, Niger, Guinea, Equatorial Guinea, the Central African Republic, South Sudan, Burkina Faso, São Tomé and Príncipe, Mozambique, Mauritania, and Cabo Verde have no available information on 4G mobile network connections (GSMA 2018). Burkina Faso has been covered by 4G services, mainly supplied by the country's largest telecommunication operator, Orange. Additionally, Eritrea has no information on 3G mobile network coverage.

businesses, remain stagnant in Africa, covering only 0.6 percent of the people. The percentage of the population covered in other areas is larger—for example, 31 percent in Europe (ITU 2018). Africa's continentwide level of international internet bandwidth used in 2017 (7,314 billion bits per second) represented 1 percent of the world's total, a third the level of the Middle East, and about the level of Chile or Romania (TeleGeography 2018).

The Africa region has an opportunity to harness the digital revolution to foster growth and innovation, as well as eradicate extreme poverty and boost shared prosperity. However, the economies in the region run the risk of isolation and stagnation if the digital divide is not adequately addressed. Africa needs to implement reforms and promote investments in the digital economy to accelerate growth—and, possibly, leapfrog the traditional growth model—while building core infrastructure, systems, and competencies (figure 3.1). The Africa region should transition to a digital economy that: (a) provides a platform to boost agricultural productivity and modernize the rural economy, and (b) serves as a tool that accelerates the process of structural transformation from agriculture to digital-enhanced manufacturing and/or information and communication technology (ICT)–based services.

Africa needs to implement reforms and promote investments in the digital economy to accelerate growth.

FIGURE 3.1: Traditional Economies Becoming Digital Economies



Traditional sectors are being disrupted by the digitalization of the economy.

Digital economy has positive externalities such as acceleration in growth, poverty reduction, and job creation.

Source: World Bank 2019a.

To harness the digital economy, policy makers need to set an ambitious, long-term vision to transform Africa's economies, societies, and governments, unlocking new drivers of economic growth, job creation, and poverty reduction. African governments, development partners, and the private sector should commit to policies, actions, and programs that propel the digital transformation and devote resources to building the foundations of a thriving digital economy. Harnessing the digital revolution to eradicate poverty depends on five principles (World Bank 2019b):

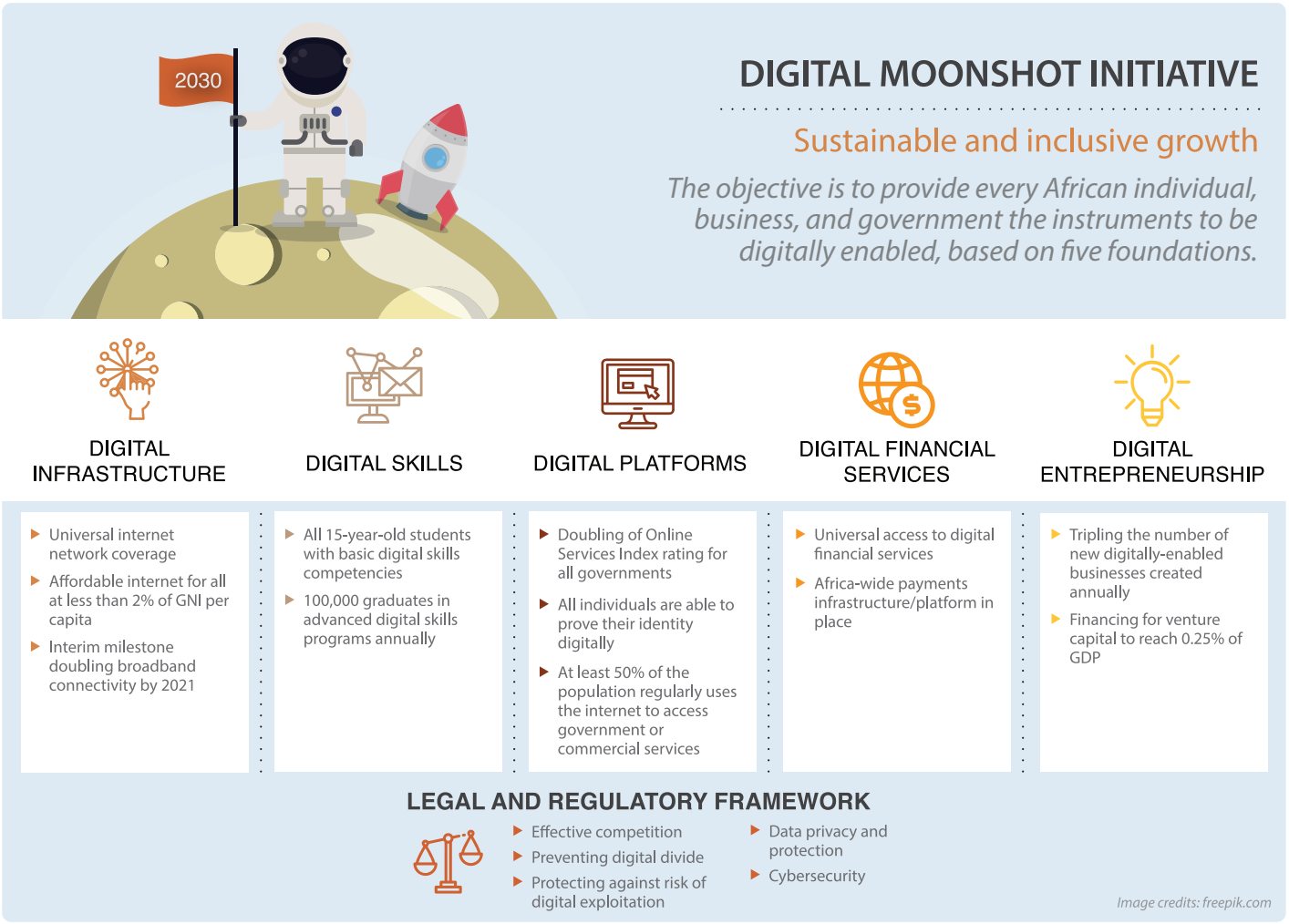
1. *Comprehensive:* taking an ecosystem approach that looks at supply and demand and defies a narrow silo approach in defining the required elements and foundations for the digital economy.

2. *Transformative:* aiming at a very different scale of ambition, beyond incremental "islands" of success.
3. *Inclusive:* ensuring that the digital economy creates equal access to opportunities and dealing with the risks of exclusion.
4. *Homegrown:* basing expansion of the digital economy on Africa's realities and unleashing the African spirit of enterprise to produce more homegrown digital content and solutions, while embracing what is good and relevant from outside the continent.
5. *Collaborative:* dealing with the digital economy requires a flexible "mindset," requiring different types of collaboration among countries, sectors, and public and private players, as well as facilitation, retooling, and encouraging risk taking.

To become a dynamic, inclusive, and digitally safe economy, African countries need to build upon five foundations (see figure 3.2).

FIGURE 3.2: Foundations of the Digital Economy and the Targets of the Moonshot Initiative

African countries need to build their economies on five foundations of the digital economy to become dynamic and inclusive.



Source: World Bank 2019.

Note: GDP = gross domestic product; GNI = gross national income.

First, *digital infrastructure* provides the way for people, businesses, and governments to get online and link with local and global digital services—thus connecting them to the global digital economy. Broadly, digital infrastructure consists of connectivity (through high-speed internet and internet exchange points),[9] the internet of things (mobile devices, computers, sensors, voice-activated devices, geospatial instruments, machine-to-machine communications, and vehicle-to-vehicle communications), and data repositories (data centers and clouds).[10] For the digital economy, good broadband connectivity to access the internet or broadband is a critical foundation.

Second, digital platforms offer products and services that are accessible through digital channels, such as mobile devices, computers, and the internet, for all aspects of life. One foundational platform for the digital economy is digital ID systems and trust services. Digital ID systems and services, such as electronic signatures, underpin trust in online transactions and create opportunities to innovate how products and services are delivered. Other foundational platforms include government-operated digital platforms that offer people-facing-government services (online facilities to pay taxes, renew a driver's license, validate a digital identity, and so forth), share information (open data or reusable public sector data), and run back-office systems (digitally managing the government's accounting information, human resource information, and so forth). Governments can stimulate the use of digital platforms by digitizing some of their operations or processes, such as procurement, invoicing, or communications. Digital platforms enable producers and users to create value by interacting with each other, with network effects provided by users generating content, data, and larger pools of buyers and sellers. Commercial firms also operate digital platforms to offer a growing array of products and services (social media, digital mapping, data analytics, digital commerce, digital education, digital health, streaming services, gamification, augmented virtual reality, ride-sharing applications, and others). Global connectivity allows users to use services and access information regardless of geographic location, leading to global services, such as Google Search, Facebook, or Amazon Web Services. Finally, governments are actively playing a role in designing and implementing policy measures that enable private sector platforms to thrive and that mitigate the market distortions that platforms can bring to the economy given their network effects. These would include robust data policy frameworks (that is, protection and localization), competition policy, antitrust policies, and labor protection, among others.

Third, access to affordable and appropriate digital financial services is critical for the participation of individuals and businesses in the digital economy. Transaction accounts enable people and firms to conduct transactions electronically or online and open a pathway to a variety of digital financial services in addition to digital payments, including credit, savings, and insurance. Firms can leverage digital financial services to transact more easily with their customers and suppliers, as well as to build digital credit histories and seek financing. Governments can use digital financial services to increase efficiency and accountability in various payment streams, including for the disbursement of social transfers and receipt of tax payments. Digital payments are often the entry point for digital financial services and provide the infrastructure through which additional products can be developed, as shown by the evolution of M-PESA in Kenya and Alipay and Tenpay in China. A digital financial services ecosystem requires forward-looking

9 Connectivity includes mobile and fixed access networks, metro and backhaul networks, national backbone networks, and international connections.

10 Service-enabling infrastructure includes private or independent data centers and, increasingly, infrastructure-as-a-service and software-as-a-service cloud platforms.

and proportionate legal and regulatory frameworks (for example, to allow market entry and innovation), robust financial infrastructures (for example, national payment systems and credit reporting systems), and development and deployment of low-cost delivery channels (agents, point of sale devices, automated teller machines, and mobile phones).

Fourth, *digital entrepreneurship* and innovation create an ecosystem to bring the digital economy to life—with new, growth-oriented ventures and transformation of existing businesses—contributing to net employment growth and helping to enhance the competitiveness and productivity of the economy. Digital entrepreneurship offers new products and services, leverages new technologies and business models, and opens new markets. Vibrant digital entrepreneurship ecosystems encompass skill development (for example, through business mentoring networks), ecosystem support infrastructure (accelerators, incubators, innovation hubs, and co-working spaces), and access to markets and early-stage financing (seed financing and venture capital). These ecosystems require a conducive and enabling business environment that motivates the creation and use of novel digital technologies.

Fifth, African economies will require a digitally savvy workforce to build robust digital economies and competitive markets. *Digital skills* constitute technology skills together with business skills for building or running a startup or enterprise. Greater digital literacy further enhances the adoption and use of digital products and services among the larger population. Advanced digital skills to create local content and drive made-in-Africa solutions are needed to ensure an inclusive digital economy, where Africa is not only on the consumer side of the digital revolution, but also plays an important role in producing technology. Ensuring inclusiveness in the provision of digital skills will be crucial to avoid disproportionately excluding already marginalized populations from the benefits of mobile connectivity, thereby deepening existing inequalities.

Finally, along these five foundations, strong regulatory frameworks are needed to maximize the growth benefits of embracing the digital revolution in the Africa region. These regulatory frameworks should aim to support an ecosystem that fosters innovation and competition. It needs to stimulate the free flow of information but also manage data privacy and cybersecurity risks. Subsection 3.5 will discuss these issues in more detail.

3.3 TAKING STOCK OF THE DIGITAL ECONOMY: A BENCHMARKING EXERCISE

This subsection investigates the trends and progress in Africa's insertion into the digital economy along four dimensions: digital infrastructure, digital platforms, digital entrepreneurship, and digital financial services. Digital skills, the fifth dimension, is largely covered in World Bank (2019c). The benchmarking of the digital economy is conducted continentwide, that is, the analysis includes a sample of (at best) 48 Sub-Saharan African countries and six North African countries. This exercise compares the performance of the Africa region in the digital economy vis-à-vis other regional comparators (such as South Asia and East Asia and the Pacific) and income groups (that is, low-, lower-middle-, upper-middle-, and high-income country groups excluding African nations). Furthermore, it looks at the evolution of the penetration of the digital economy across country groups in Africa, as classified by geographical location (North Africa, East and Southern Africa, and West and Central Africa) and incidence of fragility, conflict, and

violence (FCV) and non-FCV-affected countries. Finally, the subsection presents a scorecard on the digital economy in Africa, which provides a broad picture of where the largest gaps are in coverage, quality, and access, and which regions are the most laggard.

Stylized Facts

Digital Infrastructure

Assessing the trends in digital infrastructure across countries in the Africa region implies examining the evolution over time of two groups of indicators. The first is the *fixed broadband infrastructure* that provides access to the internet (or the interconnected network), a global system of interconnected computer networks that use the internet protocol suite to link devices around the world. It comprises private, public, academic, business, and government networks of local, regional, or global scope. These networks are connected through a wide array of electronic, wireless, and optical networking technologies. The second group of indicators measures the *mobile broadband infrastructure* that provides access to the network of devices that contain electronics, software, sensors, and connectivity that allow these devices to connect, interact, and exchange data. The sources of annual data (and quarterly when available) for these indicators are the International Telecommunications Union and TeleGeography.

The first group of indicators of the digital infrastructure includes measures of penetration (or quantity), quality, access, and affordability of fixed broadband penetration as proxied by the number of fixed broadband subscriptions and it is normalized by the population size of the corresponding country. Fixed broadband refers to fixed subscriptions to high-speed access to public internet at downstream speeds greater than or equal to 256 kilobits per second. Fixed broadband comprises cable modem, digital subscriber line, fiber-to-home/building, other fixed (wired) broadband subscriptions, satellite broadband, and terrestrial fixed wireless broadband.[11] The quality of fixed broadband services is indirectly measured by the number of days that it takes to activate the service. The underlying assumption is that the greater is the number of days that it takes to activate service, the lower is the quality of the service. Access to internet services is examined using the percentage of the population using the internet in the past three months. Affordability is proxied by the connection charge and monthly subscription cost for fixed broadband.[12]

The second group of indicators, mobile broadband services, includes an indicator of the penetration of these services and is complemented by measures of quantity and access to mobile services. Active mobile broadband subscriptions are wireless broadband internet subscriptions using terrestrial mobile telecommunications. The subscription should allow access to the internet via hypertext transfer protocol and have been used to make data connections via internet protocol (IP) in the previous three months.[13] This information is complemented by: (a) the number of total wireless subscriptions (normalized by total population), and (b) the percentage of the population covered by at least a 3G mobile network, and the one covered by at least a 4G (LTE)/WiMAX mobile network.[14]

11 Fixed broadband subscriptions exclude those with access to data communications through mobile-cellular networks. The number of subscriptions reported here includes residential subscriptions and subscriptions for organizations.

12 Affordability can also be measured, as indicated by the United Nations Broadband Commission, by an entry-level (500 megabytes) data plan that costs 5 percent or less than the average monthly income or gross national income per capita.

13 Mobile subscriptions do not include satellite and terrestrial fixed wireless broadband subscriptions. Standard SMS and MMS messaging do not count as an active Internet data connection, even if they are delivered via IP.

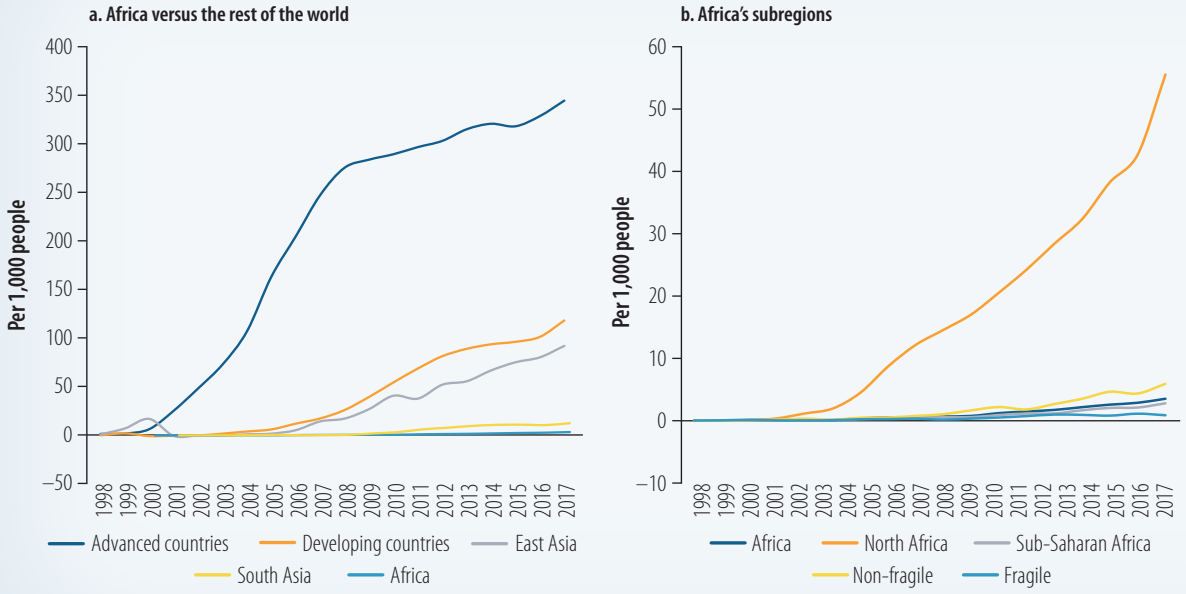
14 The latter two indicators measure the percentage of inhabitants who are within range of at least a 3G mobile-cellular signal or an LTE/LTEAdvanced, mobile WiMAX/WirelessMAN, or other more advanced mobile-cellular network, irrespective of whether they are subscribers.

Fixed broadband services. The world is currently witnessing a shift from connecting people to connecting devices, increasing use of cloud services, and greater volume of data traffic. This shift implies that fixed, high-speed internet access is even more important than before. Figure 3.3, panel a, presents the evolution of fixed broadband subscriptions (per 1,000 inhabitants) over the past two decades in the Africa region compared with advanced countries, developing countries (excluding Africa), East Asia and the Pacific, and South Asia. From 2007 to 2017, the number of fixed broadband subscriptions (per 1,000 people) in the region increased from 0.5 to 3.4 —a pace of progress that is comparable to that of developing countries outside Africa. Although the penetration of fixed broadband in Africa in 2017 was about seven times that of 2007, a few points should be noted: (a) the seven-fold jump comes from very low levels—the Africa region had the lowest penetration of fixed broadband worldwide in the early 2000s; (b) the growth of fixed broadband subscriptions (per 1,000 people) was faster in South Asia (from 0.4 in 2007 to 13.3 in 2017); and (c) the Africa region still has a large gap vis-à-vis advanced countries and developing countries.[15] In 2017, the penetration of fixed broadband among advanced countries was more than 100 times as large as that of African nations, and that of developing countries was about 35 times as large.

Figure 3.3, panel b, looks at the progress in fixed broadband penetration in the Africa region during 2000–17. It shows that, first, there is a disparity in the level of fixed broadband penetration across country groups in Africa. For instance, the number of fixed broadband subscriptions (per 1,000 people) in North Africa was 53.5 in 2017, which was almost 20 times as large as the penetration in Sub-Saharan Africa (2.7). The average penetration of fixed broadband is even lower across FCV-affected countries in the Africa region (0.9 per 1,000 people in 2017). The penetration in non-FCV countries is more than six times as high as that of FCV-affected countries.

FIGURE 3.3: Fixed Broadband Subscriptions
(per 1,000 people)

There is a large and protracted gap in fixed broadband subscriptions per capita between Africa and the rest of the world.



Source: International Telecommunications Union.
Note: The regional figures depicted are medians across countries for each corresponding year.

15 In this section, we refer to the group of developing countries as excluding African countries.

Second, the growth of fixed broadband penetration across country groups occurred at different speeds over the past decade. For instance, fixed broadband penetration in 2017 was more than six times as large as that in 2007 for North Africa, while it was nearly nine times for Sub-Saharan Africa. However, Sub-Saharan Africa has considerably lower levels of fixed broadband penetration than North Africa. Among the geographical subregions in Sub-Saharan Africa, East Africa not only displays the largest fixed broadband penetration (5.5 subscriptions per 1,000 people in 2017), but also the fastest growth (the level in 2017 was more than 27 times that in 2007). Central Africa registers the lowest penetration of fixed broadband (1.3 subscriptions per 1,000 people in 2017), which barely grew over 2007–17.

A discussion of the expansion in the quantity of fixed broadband services would not be complete without examining the quality of these services. An indirect measure of the quality is the activation time for fixed broadband service.[16] Table 3.1 reports the average time to activate service in Africa vis-à-vis other benchmarks across country groups in the Africa region classified by their geographic location or condition of FCV during 2010–12 and 2015–17. The average time to activate services in the Africa region has declined sharply, from 11 days in 2010–12 to five days in 2015–17. The reduced time for fixed broadband services is comparable to that of lower-middle-income countries (five days in 2015–17) and higher than in upper-middle-income countries (2.5 days in 2015–17). The time to activate fixed broadband services was reduced significantly in Sub-Saharan Africa (from nine days in 2010–12 to four days in 2015–17), which is faster than in North Africa (12 days). In the geographical country groups in Sub-Saharan Africa, it took fewer days to activate fixed broadband accounts in 2015–17 relative to 2010–12. The same can be said about FCV-affected and non-FCV countries in the region.

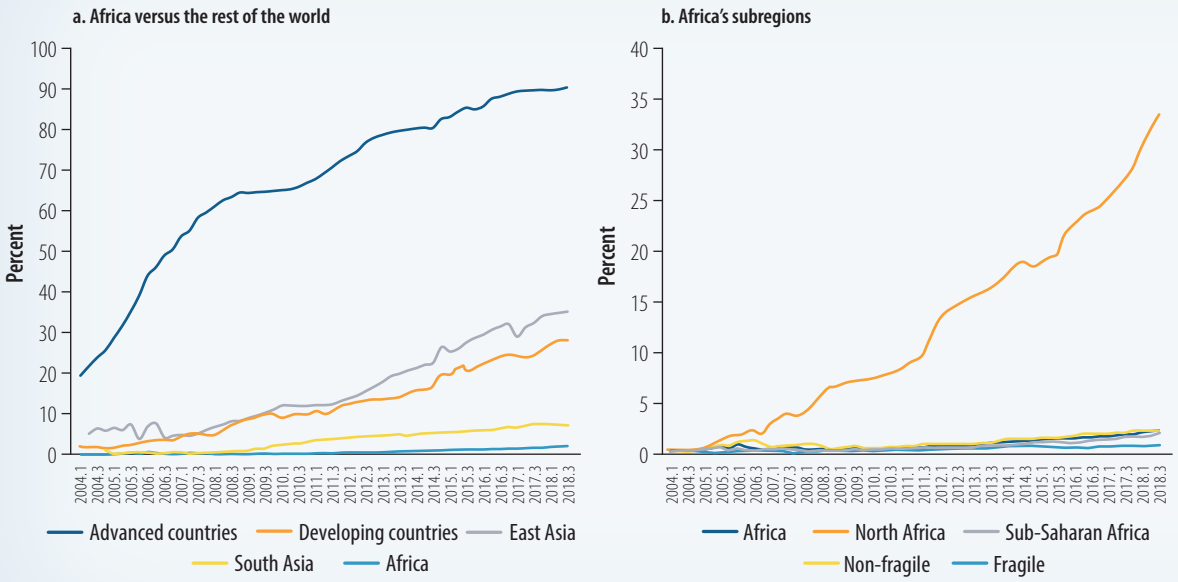
Access to fixed broadband services has increased in the African continent: the market for fixed broadband expanded to 17.9 million total subscriptions at the end of 2017, compared with 15.1 million in 2016 and 12.7 million in 2015. However, household penetration remains in the single digits: on average, 7 percent of African households subscribed to high-speed internet services by end-2017. Figure 3.4, panel a, shows the median household penetration rate of fixed broadband in Africa and compared with advanced countries, developing countries, East Asia, and South Asia. Quarterly data from TeleGeography suggest that about 90 percent of the households in advanced countries have access to fixed broadband services, while the median penetration rates in developing countries outside Africa and East Asia are about 30 and 36 percent, respectively. In Africa, the median rate of household penetration is about 2 percent (which is lower than the median rate of 7.5 percent for South Asia). Furthermore, 16 of 51 countries in Africa (all in Sub-Saharan Africa) had household penetration rates below 1 percent by the end of 2017. The higher prices of broadband connectivity and lack of network coverage in many African countries constitute barriers to fixed broadband take-up.

Zooming in on the country groups in the Africa region yields the following findings (figure 3.4, panel b). First, there is a large disparity in household penetration in North Africa vis-à-vis Sub-Saharan Africa. Nearly one-third of North African households have access to fixed broadband. The median household penetration rate in Sub-Saharan Africa was about 2

16 This indicator refers to the time (in days) from the date of application to that of service activation and considers all applications received within the 12-month reference period (ITU 2018).

FIGURE 3.4: Household Penetration of Broadband Subscriptions
(percent)

Household penetration of fixed broadband services is greater in North Africa than in Sub-Saharan Africa.



Source: TeleGeography.
Note: The regional figures depicted are medians across countries for each corresponding year.

percent by end-2017. The median access rate across FCV-affected households did not exceed 1 percent by end-2017.

Progress in access accompanies affordability of internet services. Table 3.1 presents the (median) fixed broadband connection charge and the monthly subscription charge in U.S. dollars.[17] It shows that connection charges dropped in Africa between 2010–12 and 2015–17—notably, in Sub-Saharan Africa. Fixed broadband connection charges in 2015–17 were still twice as costly as in middle-income countries outside Africa. FCV-affected countries had the most expensive connection charges in the region, while East and Southern Africa had the least expensive charges.

For fixed broadband monthly subscriptions, there was a sharp drop in charges in Africa, mainly driven by Sub-Saharan Africa. The subscription charge in Africa is still higher than that of middle-income countries. Monthly subscriptions in Sub-Saharan Africa are more than twice as costly as those in North Africa. And subscription charges are large in FCV-affected countries compared with other country groups in the region, despite the sharp drop in charges over the past five years. This gap in affordability particularly disadvantages women as well as poorer segments of the population, thereby threatening to reinforce existing inequalities.

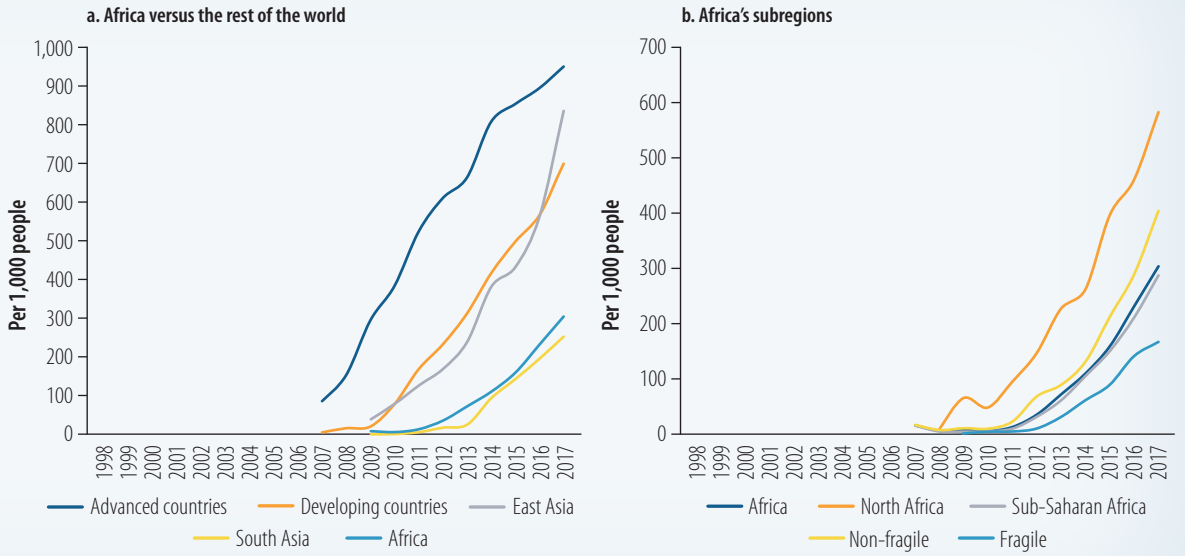
Mobile broadband services. Broadband is becoming increasingly mobile. The number of active mobile broadband subscriptions per 1,000 people has increased 16 percent annually among

17 Fixed broadband connection charge refers to the initial, one-time charge for a new fixed broadband internet connection. The tariff considered is the cheapest fixed broadband plan for 5 gigabytes of monthly usage. The subscription charge refers to the monthly subscription charge for fixed broadband internet service. Fixed broadband is considered as any dedicated connection to the internet at downstream speeds equal to or greater than 256 kilobits per second. If several offers are available, preference should be given to the cheapest one that meets the criteria of the basket (for example, for 5 gigabytes of monthly usage).

advanced countries and 56 percent annually among developing countries excluding Africa. Figure 3.5 depicts the evolution of mobile broadband subscriptions (per 1,000 people) over the past 10 years in Africa and compared with advanced economies and developing countries as well as the East Asia and South Asia regions. The figure depicts the rapid growth in mobile broadband penetration across all country groups and the narrowing gap in 2017 vis-à-vis 2010. The penetration of mobile broadband among advanced countries grew from 383 subscriptions per 1,000 people in 2010 to 951 subscriptions per 1,000 people in 2017. For developing countries (excluding Africa), mobile subscriptions per 1,000 people increased from to 78 in 2010 to 693 in 2017. The faster growth of mobile broadband subscriptions among developing countries helped narrow the gap vis-à-vis advanced countries. For instance, these subscriptions were almost five times as large among advanced countries in 2007, and they were only 1.4 times as large in 2017. In turn, the active mobile broadband subscriptions (per 1,000 people) in Africa expanded (from six in 2007 to 304 in 2017), although coming from significantly lower levels. This faster growth significantly narrowed the gaps vis-à-vis advanced countries and developing countries. For instance, the penetration of mobile broadband among developing countries was 13 times as large as that of Africa in 2007, and it was only twice as large in 2017.

There has been a surge in the penetration of active mobile broadband subscriptions in Africa, but the gap is still large.

FIGURE 3.5: Active Mobile Broadband Subscriptions *(per 1,000 people)*



Source: International Telecommunications Union.
Note: The regional figures depicted are medians across countries for each corresponding year.

Figure 3.5 shows that the sharp increase in population penetration of active mobile broadband in Africa is generalized: it takes place among all the country groups in the region, although there is some heterogeneity in levels and growth rates. The penetration of active mobile broadband is greater in North Africa than in Sub-Saharan Africa (583 and 288 subscriptions per 1,000 people in 2017, respectively); however, the pace of progress over 2010–17 was faster in Sub-Saharan Africa, where the cumulative expansion was four times as fast as that in North Africa. In 2017, the penetration of active mobile broadband among non-FCV countries was about 404 subscriptions per 1,000 people—a ratio that is 2.4-fold that of FCV-affected countries (167 subscriptions per

1,000 people). However, the faster pace of growth in this type of broadband subscription among FCV-affected countries helped reduce the gap vis-à-vis non-FCV countries. There is also some variation in the (level and growth of) penetration of mobile broadband across subregions in Sub-Saharan Africa. For instance, Southern Africa has the largest penetration (432 subscriptions per 1,000 people in 2017), whereas East Africa has the smallest penetration (234 subscriptions per 1,000 people). The fastest expansion of mobile broadband penetration took place in West Africa, where the number of subscriptions per 1,000 people grew from 4.5 in 2010 to 269 in 2017 (that is, a 59-fold increase over the past seven years).

Fixed broadband typically provides a more stable and high-performance broadband connection than mobile. However, the cost of deploying new fixed-lines is not only higher, but also requires a significant amount of civil work. For instance, deploying fixed broadband can be slow and costly due to geographical barriers (remoteness and sparseness of households across the territory) or limitations in access to private land.[18] Additionally, fixed broadband connections typically are costlier for the consumer than mobile broadband connections. For instance, the average price of broadband services with a 1 gigabyte data cap is about purchasing power parity (PPP) $30.8 for mobile broadband and PPP$67.3 for fixed broadband across developing countries. In the case of less developed countries, the prices are about PPP$40 and PPP$134 for mobile and fixed broadband, respectively (ITU 2018). In some advanced countries, telecommunications companies are using 4G to provide broadband to households where it is too costly to upgrade fixed-line networks (for example Telenor in Norway). The lack of fixed-lines or backup connectivity in the case of fixed-line fails among small and medium-size enterprises (SMEs) in developing countries is another factor that influences not only the large gap in fixed broadband between advanced and developing countries, but also the rapid expansion of mobile broadband.

The evolution of mobile broadband services is complemented with trends in mobile services—including total wireless connections and mobile (3G and 4G) connections. Over the past 20 years, the use of mobile devices has expanded rapidly across the world; however, there has been substantial variation in the rate of adoption and penetration across countries and regions. Advanced countries were the first in rapid adoption of mobile phones in the late 1990s and reached universal penetration by the mid-2000s. By the time of adoption and consolidation of this technology, advanced countries already had strong wireline infrastructure in place. In contrast, the more recent expansion of mobile phones in the developing world took place despite that operators in these countries did not install wireline communications or the more basic 2G mobile phone technology. Instead, the operators have deployed or are deploying 3G or 4G LTE mobile technologies as the primary communications networks (Korstein 2015).

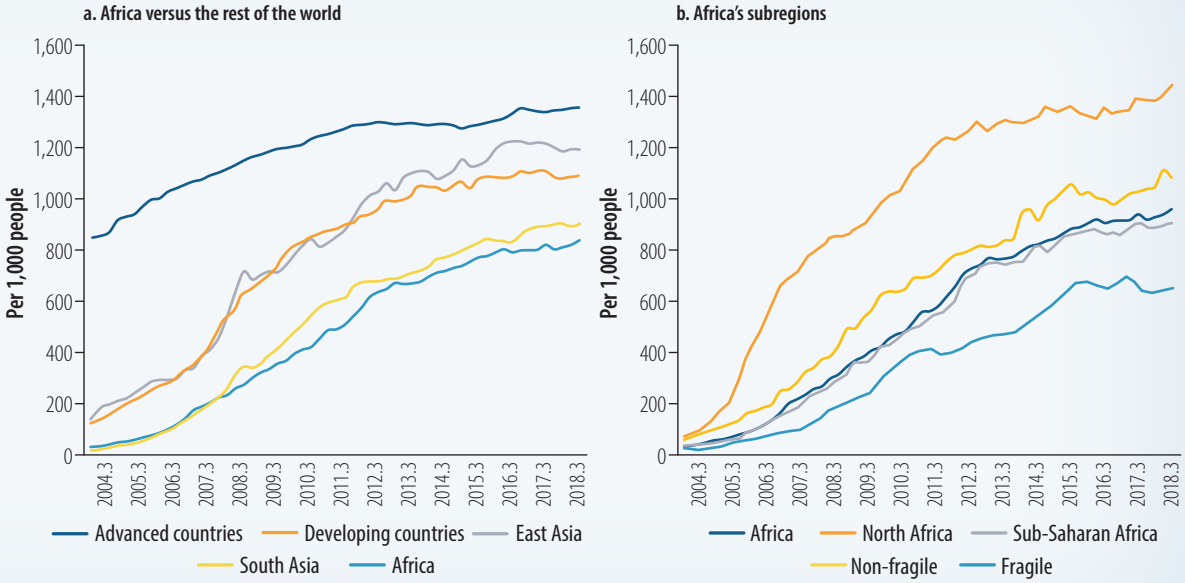
Figure 3.6, panel a, plots the total wireless subscribers (per 1,000 people), using quarterly data from 2004Q1 to 2018Q3 for advanced countries, developing countries, East Asia, South Asia, and the Africa region. The number of total wireless subscriptions per capita exceeded one in advanced and developing countries by end-2017; that is, these regions had 1,348 and 1,081 subscriptions per 1,000 people, respectively. South Asia and Africa exhibited the fastest growth in total wireless subscribers (per 1,000 people) during 2007–17. In Africa, wireless subscribers amounted to 806 per 1,000 people by end-2017, up from 226 in 2007.

18 By December 2017, the percentage of individuals using the internet in Madagascar totaled 7.2 percent. In addition, Madagascar has the highest broadband speed in Africa, at 24.87 megabits per second (that is, 22nd in the world, ahead of France, the United Kingdom, Canada, and Germany). This is attributed to the underwater Eastern Africa Submarine Cable System cable, which supplies the island's urban centers with exceptional fiber broadband speeds.

Figure 3.6, panel b, looks at the progress in wireless subscriptions across country groups in Africa. North Africa registered the largest penetration of wireless subscriptions by end-2017 (1,213 per 1,000 people). Although Sub-Saharan Africa only had 778 wireless subscriptions per 1,000 people by end-2017, its wireless penetration grew more than twice as fast as that of North Africa. FCV-affected countries registered 549 wireless subscriptions per 1,000 people by end-2017 (up from 110 by end-2007), while non-FCV countries had 908 subscriptions per 1,000 people by end-2017. Zooming in on subregions in Sub-Saharan Africa, the data show that: (a) West Africa had the largest penetration of wireless subscriptions by end-2017 (904 per 1,000 people), followed by Southern Africa (811); and (b) East Africa had the smallest penetration of wireless subscriptions by end-2017 (577 per 1,000 people) and the fastest rate of expansion during 2007–17.[19]

Wireless subscriptions per capita in North Africa are larger than those in Sub-Saharan Africa.

FIGURE 3.6: Total Wireless Subscriptions
(per 1,000 people)



Source: TeleGeography.
Note: The regional figures depicted are medians across countries for each corresponding year.

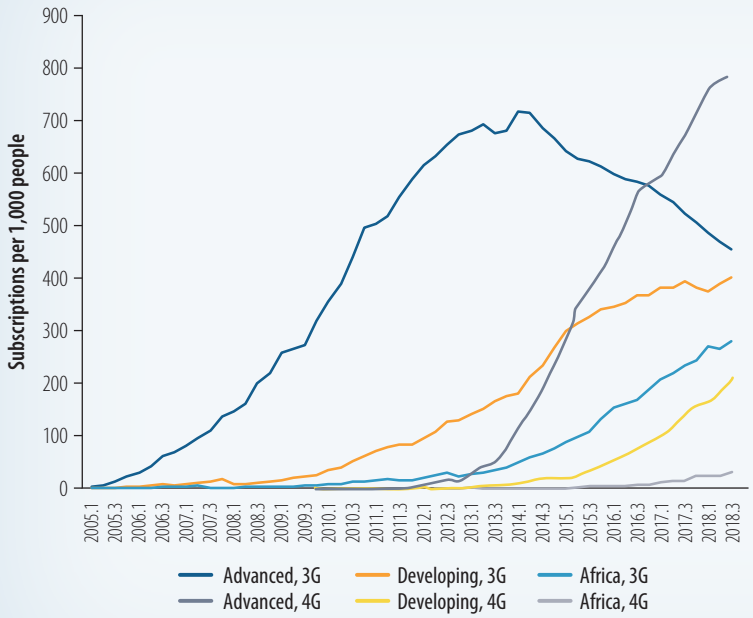
Figure 3.7 depicts the evolution of wireless subscribers (per 1,000 inhabitants) in advanced countries, developing countries, and the Africa region, by generation. As the mobile technology evolved from 3G to 4G, mobile networks provided more capacity and delivered higher speeds. Interestingly, the figure illustrates a sharp increase in the number of 4G subscribers and a decline in 3G subscribers from end-2012 in advanced countries. At the same time, 4G mobile coverage outstripped 3G mobile coverage in this group of countries, with subscriptions of 723 and 509 per 1,000 people, respectively, by end-2017. Growth in 4G mobile coverage outpaced that of 3G mobile coverage during 2012–17 in developing and African countries, but the (level of) coverage is still greater in the 3G mobile network for both groups. In the Africa region, the penetration of 4G subscriptions grew more than twice as fast as that of 3G subscriptions; however, the number of 3G subscriptions per 1,000 people by end-2017 was still more than

19 In 10 countries in the Africa region, less than 50 percent of the population has a wireless subscription, namely, Angola, the Central African Republic, the Democratic Republic of Congo, Djibouti, Eritrea, Madagascar, Malawi, Mozambique, Niger, and South Sudan (TeleGeography 2018).

10 times as large as that of 4G subscriptions per 1,000 people (246 and 23, respectively).

The digital infrastructure indicators that have been presented in this subsection are better illustrations of market size rather than universal access to broadband and other mobile services. Measuring "universality of access" requires examining the trends in the number of "unique" subscriptions rather than the number of connections, as a unique subscriber can have multiple connections. In other words, it requires examining the evolution of total unique users who have subscribed to mobile services and those that have used internet services on their mobile devices. Box 3.1 discusses the extent of the gap across African countries that needs to be closed to reach universal access to mobile broadband services.

FIGURE 3.7: 3G versus 4G Wireless Subscriptions
(per 1,000 people)



Source: TeleGeography.
Note: The regional figures depicted are medians across countries for each corresponding year.

Coverage of 4G mobile networks is still incipient in Africa.

Digital Platforms

Enabling digital connectivity in the Africa region will provide platforms for entrepreneurs and consumers to participate in the economy. Evidence from Ghana, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia shows that there are more than 300 unique digital, multi-side platforms (that is, matching providers and consumers of goods and/or services) operating in transportation, online shopping, asset sharing, and professional services. More than 80 percent of the digital platforms in these countries are homegrown. However, the usage of these homegrown platforms is not as extensive as foreign platforms. For instance, Uber is the most widely used application in Africa with services in the Arab Republic of Egypt, Ghana, Kenya, Morocco, Nigeria, and South Africa, among others. Foreign platforms are more likely to operate regionally than at the country level (Makuvaza, Chernay, and Smit 2018). U.S. platforms, like Freelancer, Elance (Upwork), ODesk, and Amazon Mechanical Turk, have global scale; however, they have been gradually challenged by local platforms in specific countries (Onkokame, Schoentgen, and Gillwald 2018).

From the production side, digital platforms will help gauge demand over a wide geographical area and provide SMEs the opportunity to conduct business in new markets, including niche markets. These platforms also allow SMEs to supply goods and services by alleviating location constraints and cutting (once prohibitive) marketing costs. The increased market efficiency arising from the digital revolution is expected to result in jobs for the rising youth population in Africa.

To assess the use and development of digital platforms, table 3A.2 reports the following indicators: (a) the percentage of people having a legal (trust and secured) national ID card; (b) indices that capture the development of e-government across countries and the availability of online services provided by African governments; and (c) the use of social networks—notably, the use of virtual professional networks.

Digital ID. An estimated one billion people around the world do not have a legal ID, according to the ID4D-Findex survey data (Demirgüç-Kunt et al. 2018). More than half of these "invisible" people live in the Africa region. Failure to provide legal identification hinders people's access to basic services (formal credit or even a mobile phone) and economic opportunities (formal employment or ownership of a registered business). Poor systems of civil registration and vital statistics help explain the deficit in the provision of legal ID. Providing legal identification for all the population is key for countries to increase efficiency in raising revenues, delivering services, and promoting private sector development. Therefore, it is urgent to scale up efforts in the region.

The ID4D-Findex survey provides information on the percentage of the adult population (ages 15+) that has a national identification card. Table 3A.2 reports the medians for Africa, country groups in the region, and the rest of the world, classified by income group. It shows that about three in four adults in the Africa region have a national ID card; however, there is a great deal of variation across subgroups. More than 90 percent of the population in North Africa has a national identification card, whereas that proportion is nearly 71 percent in Sub-Saharan Africa. The share of adult people with a national ID card in Sub-Saharan Africa is comparable to that of low-income countries outside Africa. A greater share of the adult population has a valid national registration in East and Southern Africa than in West and Central Africa (83 and 68 percent, respectively). About 40 percent of the adults living in FCV-affected countries have trouble providing proof of legal identity. In three of the 31 African countries that responded to the ID4D survey, more than half the population does not have a legal ID, namely, South Sudan, Chad, and Togo.

In ECOWAS, roughly 53 percent of the population (about 196 million people) are not registered and do not have proof of identification. Legal and institutional frameworks across ECOWAS member states tend to be weak and fragmented; however, the region is building a sufficiently-robust framework for reliable and trustworthy ID systems. Of the 15 ECOWAS member states, nine have specific data protection legislation, seven of which have created a central data protection agency. Nine ECOWAS member states also have centralized agencies dealing with identification, seven of which have also passed national ID legislation. These institutional and governance arrangements create a culture of trust between the state and citizens (World Bank 2019d).

A possible path to help lift the more than half-billion Africans out of invisibility would be to develop digital ID systems. Having a digital ID will promote inclusivity in financial services, economic opportunities, as well as social and political services. For instance, it will prevent electoral fraud, improve the efficiency of social program targeting, and enhance the management of the government payroll, among others. Despite progress in developing digital ID systems as a basis for legal identification in some countries (for example, Ghana), the Africa region has yet to harness the benefits of deploying digital ID systems. This deployment, at the same time, will require managing the associated risks, such as data security breaches and vendor lock-in. A successful story in this area is the rollout of the national ID program in Malawi.

Registration started in May 2017 and was rolled out successfully in six months. The program provided a national card to 9.5 million Malawian citizens across the country. This ID card is issued by the National Registration Bureau and uses biometric data. Malawi's national identity system is now linked to the registry for social programs (for example, cash transfers), the public service sector (for example, elimination of ghost workers), the health sector, and other public services.

Digital platforms. As argued in the conceptual framework, the government can offer a series of services and share information through public-sector-operated digital platforms. The e-government development index (EGDI) scores the development of e-government across countries—namely, e-government strategies, knowledge of best practices in e-government, and changes in technology, among others (United Nations 2018). This index is a weighted average of normalized scores on three aspects of e-government—say, the scope and quality of online services, the development of telecommunications infrastructure, and the country's human capital. Within EGDI, the online services index (OSI) examines the country's national website in the native language, including the national portal, e-services portal, and e-participation portal, as well as the websites of the related ministries of education, labor, social services, health, finance, and environment, as applicable. Specifically, OSI evaluates whether average users are able to find information and features intuitively and quickly.[20] The basic statistics on EGDI and OSI are reported in table 3A.2.

The development of e-government strategies and practices in Africa, as captured by EGDI (0.33), is slightly larger than that of low-income countries (0.3). Sub-Saharan Africa trails significantly in e-government development relative to North Africa (0.31 and 0.46, respectively), and both subregions are below the medians of lower-middle-income and upper-middle-income countries. Finally, e-government development is lower among FCV-affected countries (0.26) and Central and West African countries (0.28). These results are corroborated by the analysis of the OSI aspect of e-government. The efficiency and friendliness of government-supported platforms, as captured by OSI, in Africa (and, notably, Sub-Saharan Africa) is similar to that in low-income countries (0.31). Government platforms are less user-friendly and content-ready among FCV-affected countries (0.21) and Central and West African countries (0.26).

Another indicator from the United Nations E-Government Survey is the e-participation index (EPI), which captures the use of online services to facilitate the provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in decision-making processes ("e-decision making). In other words, EPI measures the deployment of e-participation mechanisms by the government (United Nations 2018). The availability of online services provided by governments in Africa, as captured by EPI, is lower than that in low-income countries (0.33 and 0.37, respectively). The EPI gap between North Africa and Sub-Saharan Africa (0.4 and 0.33, respectively) is not as large as that of the EGDI. Finally, the efficiency of online services deployed by the government is lower among FCV-affected countries (0.19) and Central and West African countries (0.28).

Social networks. Social networks have the potential to boost productivity by enhancing the organization of businesses. They can help develop markets, provide customer services, research

20 EGDI and OSI are normalized indexes. They take values between 0 and 1, and higher numbers indicate better e-government capacity and development.

marketing conditions, recruit employees, and enhance internal communications within firms. They can also serve the government to improve transparency, boost public participation, and improve collaboration with citizens. Social networks can provide work-related information to individuals as well as a platform to participate in the gig economy. However, social networks can pose challenges, including information security problems and social media addiction, among others.

Table 3A.2 plots the average perceptions of the survey respondents on the extent of use of social networks such as Facebook, Twitter, and LinkedIn in 2017. Social networks (consumer or corporate ones) are perceived as widely used in advanced countries (with a score of 6.9), followed by East Asia and the Pacific (5.9). The median perception in developing countries outside Africa is comparable to that of North Africa. The perceived use of these social networks in Africa (and Sub-Saharan Africa) is below that of all regions except South Asia.

Table 3A.2 reports the use of virtual professional networks, by examining the median LinkedIn users per 1,000 members of the labor force (Lanvin and Monteiro 2019). By 2016, there were 326 LinkedIn users per 1,000 workers in high-income countries, compared with 32 in the Africa region. The labor force penetration of LinkedIn users is higher in North Africa than in Sub-Saharan Africa (63 and 29 users per 1,000 workers, respectively) but still far from the 133 users per 1,000 workers among upper-middle-income countries outside Africa.

Digital Entrepreneurship

Digital entrepreneurship is broadly proxied by the quality of entrepreneurship as well as the extent and depth of the supporting entrepreneurial ecosystem, as captured by the 2018 Global Entrepreneurship Index (GEI) compiled by GEDI (2018). This index ranks 137 economies based on the ability and needed measures to build an entrepreneurship ecosystem. The GEI score for the African continent (18.3) is lower than that of low-income and lower-middle-income countries (25 and 20.1, respectively). North Africa has made more progress in supporting these ecosystems than Sub-Saharan Africa (26 and 16, respectively). Only four African countries have 2018 GEI scores above the world median (27.8), namely, Botswana, Morocco, Namibia, and South Africa. At the other side of the spectrum, nine of the 10 countries at the bottom of the GEI scores are in Africa, among which five are in West Africa (in descending order): Benin, Burkina Faso, Guinea, Uganda, Sierra Leone, Malawi, Burundi, Mauritania, and Chad.

Entrepreneurship is interpreted as the dynamic and institutional interaction between entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations by individuals, which drives the allocation of resources through the creation and operation of new ventures. Attitudes refer to the way countries think about entrepreneurship; abilities are captured by entrepreneurial skills; and aspirations are reflected in the capacity to build an ever-growing enterprise (GEDI 2018). The results for Africa and its subregions vis-à-vis other regions in the world are qualitatively similar to those of the overall GEI score (table 3A.2). The lower GEI scores for Africa might be attributed to the fact that the region's entrepreneurs operate in weak business environments—including unclear and complex laws and regulations, inefficient procedures, and excessive costs—and have low access to skilled labor, markets, transport, and supporting infrastructure.

Despite the strong entrepreneurial mindset in Africa and the growing number of digital entrepreneurial intermediaries, Africa has not translated its potential into a vibrant or

comprehensive digital entrepreneurial ecosystem with commercial digital hubs that can generate talent and ventures able to compete at the global level. For instance, only Nigeria and South Africa have been able to produce private companies with valuation exceeding US$1 billion. A strong emphasis is needed to provide the foundational building blocks to support the realization of the entrepreneurial potential of the continent and for Africa to become an essential part of the global digital entrepreneurial ecosystem.

Digital Financial Services

Accessibility and affordability in telecommunication technologies have transformed Africa from an almost unconnected region in the early 1990s to more than 80 percent of the population having wireless coverage by 2017. Mobile-cellular subscriptions (per 1,000 people) in 2017 were about 100 times as large as the number of fixed-line users. The expansion of mobile phones in the Africa region set the stage for the development and penetration of new, efficient tools, such as mobile money.

Mobile money has targeted the unbanked people in the world and enabled them to conduct financial transactions using mobile-cellular technology. In 2017, 90 countries offered 276 live mobile money services—Sub-Saharan Africa alone accounted for nearly a half of these services (135). Of a total of 690 million registered mobile money accounts worldwide, 338 million users live in Sub-Saharan Africa (GSMA 2017).

To assess the performance of the Africa region in digital financial services, this subsection looks at: (a) penetration of mobile money accounts, (b) use of mobile money accounts for agricultural payments and remittances, and (c) digital payments (as captured by the use of the internet to pay bills or make purchases, as well as the percentage of people who made/received digital payments). The first group of indicators documents the number of users of mobile money services (as a share of the population ages 15+) in Africa vis-à-vis other benchmark regions, and across country groups in Africa, especially examining the performance of FVC-affected countries. The subsection also documents the divide in access to mobile money services by gender, age (young adults versus old adults), income (richest 60 percent versus poorest 40 percent), and the rural sector. The second group of indicators documents the mobile payments received for agricultural products as well as the use of mobile money services to send and receive domestic remittances. These transactions are normalized by the total population ages 15+ and the population ages 15+ who conduct such transactions. Finally, a third group of indicators captures the percentage of adults (population ages 15+) who made or received digital payments as well as the percentage of adults who used the internet to pay bills and buy something online.

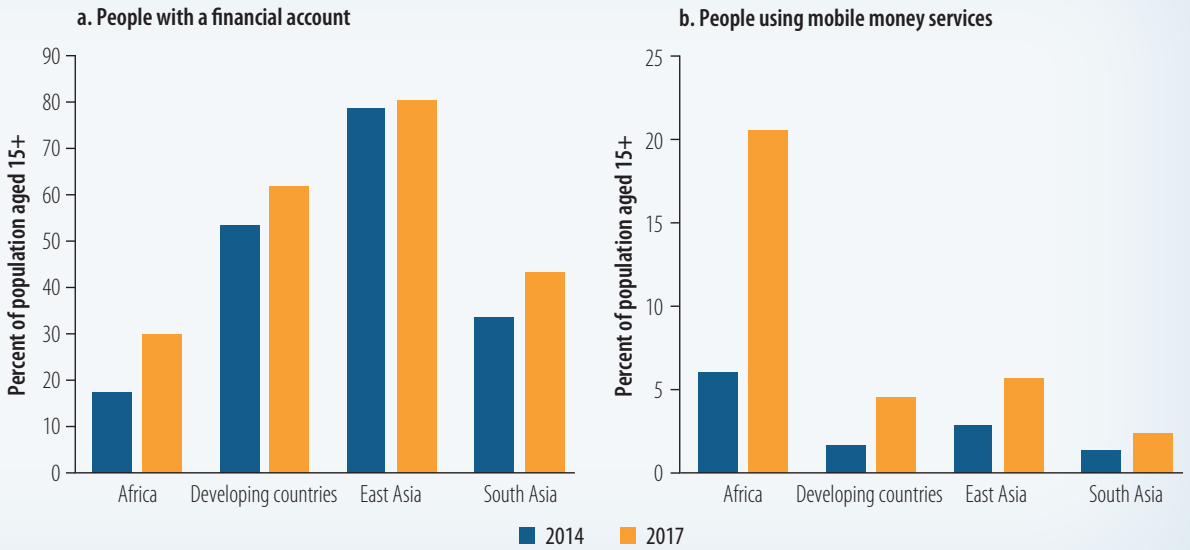
Mobile money accounts. Sub-Saharan Africa is witnessing the ability of financial technology to expand access to financial transactions through mobile money accounts. More than one in five adults in the region have a mobile money account, the highest rate of penetration of any world region (Demirgüç-Kunt et al. 2018). More than half of all mobile money services in the world are in the fastest-growing African market, and the region is expected to have more than 500 million mobile-cellular subscribers by 2020 (GSMA 2018). Mobile money has played a crucial role in extending financial services to people with limited access to traditional financial institutions, notably, women and rural populations.

Figure 3.8 compares access to formal financial institutions (as proxied by the percentage of people ages 15+ with a financial account) and the population penetration of mobile money accounts (as measured by the percentage of people ages 15+ using mobile money services). Access to formal finance deepened in all developing regions between 2014 and 2017, and the rate of progress was fastest in Africa, with about 30 percent of the population ages 15+ having a financial account in 2017 (up from 17 percent in 2014). Yet, the extent of access to finance in Africa is lower than that in South Asia. But mobile money accounts have surged dramatically in Africa: among people ages 15+, 21 percent used mobile money services in 2017, compared with 6 percent in 2014 (almost a 2.5-fold increase in only three years). Furthermore, the population penetration of mobile money accounts outstrips that of other developing countries, where less than 5 percent of the population ages 15+ used mobile money services in 2017.

Another finding that emerges from figure 3.8 is that there is a considerable gap between people using financial accounts and people using mobile money accounts across developing countries outside Africa. For instance, the (median) percentage of people (ages 15+) using financial accounts in 2017 was nearly 62 percent, which is more than 10 times as large as that of people using mobile money accounts. In Africa, the (median) share of people using financial accounts is only 1.5-fold higher than that of people using mobile money accounts. The rate of access to finance vis-à-vis mobile money services in North Africa is more in line with that in developing countries outside the Africa region (20-fold that of mobile money). In Sub-Saharan Africa, the (median) percentage of people (ages 15+) with mobile money services among FCV-affected countries (20 percent) was greater than that of people with a financial account (17 percent) in 2017.[21] East Africa and West Africa are also regions with as many financial account holders as users of mobile money services—with access rates of 35 and 21 percent, respectively.

Africa is the leader in mobile money accounts per adult.

FIGURE 3.8: Access to Financial Accounts and Mobile Money Services
(% age 15+)



Source: Demirgüç-Kunt et al. 2018.
Note: The regional figures depicted are medians across countries for each corresponding year.

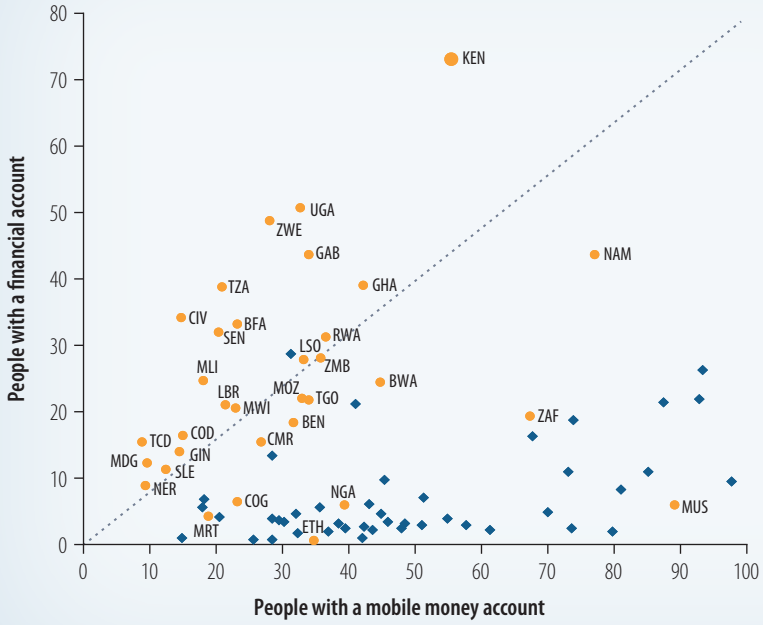
21 The flexibility and affordability of mobile phones and the greater use of mobile money services among FCV-affected countries indicate that there was no significant divide in access between FCV and non-FCV countries in 2017. Their rates of access were, respectively, 20 and 22 percent of the population ages 15+.

The gap in the rate of access to finance and mobile money services across developing regions—notably, Africa—is documented in figure 3.8. However, there is even greater variation in access rates to finance and mobile services at the country level. Figure 3.9 presents a scatterplot of the percentage of people (ages 15+) with a financial account vis-à-vis the percentage of people using mobile money services, for a sample of 77 developing countries surveyed in 2017 (of which 32 countries are in the Africa region). The figure clearly shows that, for a given rate of access to formal finance, there is a greater proportion of people using mobile money services in Africa than in the rest of the developing world. In other words, people in countries in Africa (and, notably, in Sub-Saharan Africa) tend to use mobile money services more often, compared with developing countries outside Africa. Twelve of the 35 countries in the Africa region depicted in figure 3.9 have access rates to mobile money services that are higher than those of access to finance.[22] The (median) percentage of people (ages 15+) with mobile money accounts for this group of countries is 34 percent (compared with 21 percent having a financial account). The countries in the region with the highest penetration of mobile money accounts in 2017 were Kenya (73 percent) and Uganda (51 percent).

Figure 3.9 also shows that there are no developing countries outside Africa that have more mobile money users than financial account holders. The (median) percentage of the population with financial accounts among developing countries outside Africa was 45 percent in 2017, while only 4 percent of the population used mobile money accounts. Five countries outside Africa have access rates to mobile money services exceeding 20 percent, namely, Paraguay, the Islamic Republic of Iran, Mongolia, Bangladesh, and the United Arab Emirates.

Mobile money services are expanding rapidly across Africa; however, there is a significant divide in access to these services by gender and income (table 3A.3). Although more than one in five Africans ages 15+ used mobile money services in 2017, that proportion was larger among men than women (24 and 18 percent, respectively) and among the richest 60 percent vis-à-vis the poorest 40 percent (24 and 12 percent, respectively). The gender and income divides observed in Africa are driven by the access

FIGURE 3.9: Access to Formal Finance versus Mobile Money Services across Developing Countries



Penetration of mobile money accounts in Africa reflects the low access to formal financial accounts.

Sources: Demirgüç-Kunt et al. 2018.

22 The dozen African countries that had rates of access to mobile money accounts that were greater than the rate of access to finance in 2017 were Burkina Faso, Côte d'Ivoire, the Democratic Republic of Congo, Gabon, Kenya, Madagascar, Mali, Senegal, Chad, Tanzania, Uganda, and Zimbabwe.

gaps in Sub-Saharan Africa. Furthermore, the gender divide is greater in West and Central Africa than in East and Southern Africa. For instance, men's rate of access to mobile accounts was 22 percent and women's rate of access was 13 percent in West and Central Africa in 2017. The income divide is larger in East and Southern Africa (34 percent for the richest and 15 percent for the poorest) and non-FCV countries (29 percent for the richest and 12 percent for the poorest).

Use of mobile money accounts for agriculture and remittances. A wide array of transactions can be undertaken through a digital platform. The discussion in this area is restricted to the population penetration of mobile payments in two types of activities of utmost relevance in the Africa region: agricultural sales and domestic remittances. Table 3A.3 reports the regional and country-group medians of the percentage of adults in the Africa region who have conducted mobile transactions related to agricultural activities or domestic money transfers.

Mobile money accounts are helping the transition from cash payments for crop income to mobile payments. In this context, setting up the electronic infrastructure that will support or facilitate this transition will play a crucial role in helping small-scale farmers in rural-based economies to meet their savings, credit, and insurance demands (Babcock 2015). Digital technologies may help overcome information problems that restrict market access for many small-scale farmers, improve knowledge through new ways of providing extension services, and enhance the management of the agricultural supply chain (Deichmann, Goyal, and Mishra 2016). The challenge is to scale up these efforts, given the large share of agricultural employment and restricted access to credit markets.

Table 3A.3 reports the percentage of the survey respondents who reported that they received money from any source for sales of agricultural products, crops, or livestock in the past year, as well as those who received the money through a mobile phone. In 2017, one in four adults in the Africa region received payments related to agricultural sales. Payments through mobile phones were received by only 3 percent of African adults, or 10 percent of those who received payment for agricultural sales. These figures represent the employment share and activity in agriculture in Sub-Saharan Africa. The percentage of adults who received agricultural payments in East and Southern Africa (29 percent) was larger than in West and Central Africa (26 percent). The gap is even larger considering the percentage of adults who received payments through mobile phones as a percentage of payment recipients in each region: 16 percent in East and Southern Africa and 9 percent in West and Central Africa. About 27 percent of the adults in FCV-affected African countries received agricultural payments in 2017; however, those who received payment through a mobile phone represented only 6 percent of payment recipients.

Mobile money is increasingly attractive as a channel to send remittances, due to its scope, convenience, and privacy. Data from WorldRemit suggest that mobile money is the preferred way for their customers to send money to rural areas (Scharwatt 2017). Mobile money can play a critical role in formalizing international remittances and elevating the probability of users having access to traditional financial institutions. The success of M-PESA is partly because it made it easier and cheaper to receive remittances (Jack and Suri 2014). GSMA (2017) finds that it is 50 percent cheaper to send remittances using mobile money than using global money transfer operators, and the cost of sending remittances through mobile phones continues to decline.

Table 3A.3 presents the (median) percentage of the population (the adult population or those conducting transactions) that has personally sent money to or received from a different area in their country through a mobile phone. In 2017, 15 percent of adults in the Africa region received domestic remittances through a mobile phone, while the senders represented about 13 percent. These figures imply that more than half of the recipients (senders) of domestic remittances in the Africa region have received (sent) their money through a mobile phone. These statistics reflect the narrative of mobile remittances in Sub-Saharan Africa. The percentage of adult recipients of domestic remittances is even greater in East and Southern Africa (60 percent in 2017), while it is slightly less than half in FCV-affected countries (49 percent in 2017). The leading country in the region is Kenya: more than half the adult population (52 percent) in 2017 received remittances through a mobile phone from another part of the country—this amounted to about 94 percent of the adult recipients in the remittance market. It was followed by Uganda and Tanzania, where about one-third of the adult population (between 80 and 90 percent of the market) received remittances through their mobile phone.

Digital payments. Table 3A.3 reports the percentage of the adult population who made digital payments in Africa during 2017, as well as that of country income groups outside and in the Africa region, classified by their FCV condition and geographic location. It also shows the digital divide in payments, by gender, age, income, and rural areas.[23] About one in four African adults made digital payments in 2017—of which 16 percent made digital payments in North Africa and 27 percent in Sub-Saharan Africa. The percentages of adults making digital payments in North Africa and Sub-Saharan Africa are comparable to those in low-income and lower-middle-income countries outside Africa, respectively. The population's proneness to making digital payments also varies across other African country groups. For instance, one in every three African adults made digital payments in East and Southern Africa and non-FCV countries. In contrast, one in five adults in FCV-affected countries made digital payments in 2017. Less than 10 percent of the adult population made digital payments in fragile countries, such as the Central African Republic and South Sudan. The incidence of the adult population making digital payments in Africa is significantly lower than that of upper-middle-income and high-income countries (42 and 89 percent, respectively).

There is also some variation in the population's propensity to make digital payments in the region by gender, age, income group, and geographical location (rural versus urban). For instance, men are more prone to making digital payments than women. The percentage of the adult population paying digitally is 31 percent among men and 20 percent among women. Furthermore, the share of the population making digital payments is larger among the top 60 percent than the bottom 40 percent of adults in the distribution of income (30 and 16 percent, respectively). The gender and income divides in digital payments exhibited in the Africa region are qualitatively similar to those in Sub-Saharan Africa. For instance, 34 percent of men and 22 percent of women made digital payments in Sub-Saharan Africa during 2017. Within the geographical groups in Sub-Saharan Africa, the gender divide is largest in West and Central Africa (30 percent for men and 18 percent for women). The income divide is greater in East and Southern Africa (44 percent for the top 60 percent and 20 percent for the bottom 40 percent of the income distribution). In FCV-affected African countries, one in five adults made digital

23 The table shows the percentage of the adults surveyed who reported using mobile money, a debit or credit card, or a mobile phone to make a payment from an account or using the internet to pay bills or buy something online, in the past 12 months. It also includes respondents who reported paying bills or sending remittances directly from a financial institution account or through a mobile money account in the past 12 months (Demirgüç-Kunt et al. 2018).

payments in 2017—compared with one in three adults among non-FCV African countries. The gender divide in FCV-affected countries is not as pronounced as that in the region as a whole (24 percent for men, 17 percent for women), and the same can be said about the income divide. The extents of the gender and income divides are greater among non-FCV African countries.

Table 3A.3 also reports the percentage of the adult population making specific types of digital payments, namely, bill payments and online purchases. The table presents the (median) percentage of the surveyed respondents who used the internet to pay bills or purchase something online in 2017. First, a greater percentage of adults in Africa paid bills than made purchases online in 2017 (4.2 and 2.6 percent, respectively). Second, a higher percentage of adults in Sub-Saharan Africa used the internet to pay bills than in North Africa (4.4 and 2.2 percent, respectively), while the opposite was true for making purchases online (2.6 and 2.8 percent, respectively). Third, the percentage of adults paying bills online was double that of those making purchases through the internet in East and Southern Africa (7.6 and 3.8 percent, respectively). FCV-affected African countries had the lowest percentage of the adult population using the internet to pay bills or make purchases online (3.7 and 1.9 percent, respectively).

There is also an important divide in the incidence of the adult population paying bills or making purchases online by gender, age, and income group in the Africa region. A greater share of men vis-à-vis women paid bills using the internet in 2017 (6.1 and 2.8 percent, respectively). The same holds for the gap between the richest and poorest segments (5.7 and 2.3 percent, respectively). Disparities in the proneness to pay bills online by gender and income are more pronounced in East and Southern Africa than in West and Central Africa. Nearly 10 percent of men in East and Southern Africa paid bills using the internet, while that proportion was about 6 percent for women. The rich-poor divide is larger in East and Southern Africa (10 and 4 percent, respectively).

Men were more likely to make purchases online than women (3.5 and 1.7 percent, respectively) in the Africa region in 2017. The richest people were also more prone to buy things using the internet than the poorest people (3.6 and 1.6 percent, respectively). The gender divide is even greater in East and Southern Africa (5.3 and 2.3 percent for men and women, respectively) and non-FCV-affected countries (4.1 and 2.1 percent for men and women, respectively). The same can be said about the income gap, especially in East and Southern Africa (5.4 and 1.7 percent, respectively, for the richest and poorest segments of society).

Digital Economy in Africa: A Scorecard

The progress of Africa's insertion into the digital economy is summarized in a scorecard that illustrates the gaps in the region in the areas of digital infrastructure (fixed and mobile broadband services), digital platforms, and digital financial services—as documented in figures 3.3 to 3.8 and tables 3A.1 to 3A.3. The scorecard captures the gap between the Africa region, geographical country groups, and FCV-affected countries in the region vis-à-vis the top decile of the world excluding African countries. This gap is represented by the ratio of the digital economy indicator (infrastructure, platforms, and financial services) in Africa (or the country group) vis-à-vis the equivalent indicator for the top decile of the rest of the world. If the ratio between these two indicators is lower than 0.25 (that is, the gap is greater than 75 percent), the area is colored in red in table 3.1. The areas in red are the most laggard in the penetration and progress of the

digital economy. The areas in yellow have a ratio that fluctuates between 0.25 and 0.5 (that is, a gap in the digital economy that is greater than 50 percent but less than 75 percent). The groups/areas with a digital economy indicator relative to the benchmark between 0.5 and 0.75 are represented in light green, and those with a ratio greater than 0.75 (a gap smaller than 25 percent) are depicted in dark green. The scorecard for insertion into the digital economy in Africa is presented in table 3.1.

Digital infrastructure. Looking at the Africa region as a whole (captured by country medians in 2015–17) and its groups classified by their geographical location (North Africa, Sub-Saharan Africa, East and Southern Africa, and West and Central Africa) and their condition of fragility, all the country groups have a gap that exceeds 75 percent relative to the top decile of the world sample (excluding Africa) in fixed broadband penetration. The gap might be attributed to: (a) installation costs for fixed broadband are higher in Africa; (b) wireline infrastructure is still in deficit in many low-income countries; (c) the region has less pro-competition regulation in the deployment and provision of fixed broadband services; and (d) the advent of wireless networks provided a lower-cost alternative. The gap in mobile broadband subscriptions is also wide in Africa (more than 75 percent) and the country groups, except North Africa (with a gap that exceeds 50 percent). Large gaps remain to be narrowed in mobile subscriptions despite the fact that the number of subscriptions in Africa during 2015–17 was 15-fold that in 2010–12.

For the quality of internet service, Africa and the majority of the country groups in the region have a gap that exceeds 50 percent (but is lower than 75 percent), with the sole exception of North Africa, where that gap is larger. Fixed broadband connection and monthly subscription charges are costlier in the Africa region relative to the top decile of the rest of the world. However, these costs appear to be more competitive for monthly subscription charges in North Africa.

For mobile broadband services, the rapid expansion of (inexpensive) mobile-cellular phones throughout the world implies that the gap between the Africa region and the efficient benchmark (the top decile of the rest of the world) is not as marked as the one observed for fixed broadband. The gap appears to fluctuate between 25 and 50 percent in Africa, Sub-Saharan Africa, and non-FCV-affected countries, and it is even narrower (below 25 percent) for North Africa. The expansion of mobile phone penetration in Africa (as well as country groups in the region) has not necessarily been accompanied by better quality of services. The efficiency gap, as proxied by the greater ratio of mobile-cellular unsuccessful and dropped calls in Africa vis-à-vis the global benchmark, is still very wide (more than 75 percent) for most country groups in the region, except the gap in dropped calls in North Africa and East and Southern Africa.

For access, the gaps relative to the global benchmark in the percentage of the population covered by a mobile network are not large (below 25 percent) across Africa and all its country groups. However, there are some differences when assessing the gaps in the percentage of the population covered by 3G or LTE/WiMAX (wireless) mobile networks. In general, a greater share of the population is covered by 3G mobile networks (55 percent) than 4G or LTE networks (22 percent). The same qualitative disparities hold for Sub-Saharan Africa, East and Southern Africa, and non-FCV countries. North Africa outperforms Sub-Saharan Africa in the population coverage of 3G and 4G wireless networks.

Digital platforms. Having a digital ID is essential to reap the benefits of the various economic opportunities presented or transmitted through digital platforms. Table 3.1 presents the (median) percentage of the adult population that has a national identity card—a necessary but not sufficient proxy for people having a digital ID. The table shows that the gap is not as wide for the Africa region (less than 25 percent) relative to the global benchmark. However, the gap was wider (between 25 and 50 percent) for West and Central Africa and FCV-affected African countries. The gap in digital payments made or received is also compared vis-à-vis the top decile of the rest of the world. There is a large gap in the percentage of the adult population making digital payments (between 50 and 75 percent) relative to the global benchmark, and this gap is even larger (more than 75 percent) in North Africa and FCV-affected countries. The gap in the percentage of adults paying digitally vis-à-vis the global benchmark is wider for women compared with men, and for the poorest compared with the richest segments of the population.

Table 3.1 also illustrates the gaps in terms of e-government development and e-participation across the African continent. The Africa region—and, notably, Sub-Saharan Africa—are more than halfway toward closing the gap in e-government development and, especially, the readiness and friendliness of online services. The gap for FCV-affected countries in online services is even larger (their scores are less than 25 percent those of the global benchmark), while non-FCV affected countries registered the smallest gap across African groups (between 25 and 50 percent). The performance of e-participation in the continent is also far from stellar: the African continent as well as most country groups in the region have scores that are less than half those achieved by the global benchmark—and it is even lower for FCV-affected countries. Finally, the participation of Africans in virtual professional networks (for example, LinkedIn) is not as extensive as that of other regions or the global benchmark. The extent of use of these networks in the global benchmark is more than four-fold that of the African continent.

Digital entrepreneurship. Having the appropriate entrepreneurial ecosystem will help unlock the potential of digital entrepreneurs in Africa. In terms of the overall GEI, the gap relative to the global benchmark is larger for Sub-Saharan African countries than North African countries. This holds not only for the overall index, but also for all the sub-indexes, namely, attitudes, abilities, and aspirations (table 3.1). Again, the gap relative to the global benchmark is greater among FCV-affected countries (relative to non-FCV affected) and among West and Central African countries (as opposed to East and Southern African countries).

Digital financial services. Africa is the global leader in mobile money, with operators in the telecommunications sector welcoming innovative practices that enable consumers to pay their bills and have access to other products, such as loans, insurance, and savings. Mobile technology has made Africa the global leader in mobile money transfer services, helping millions of unbanked individuals in the region to access financial services. Table 3.1 shows that Africa—notably, Sub-Saharan Africa—not only exhibits the smallest gaps relative to the top decile in the rest of the world in the percentage of the adult population with mobile money accounts, but, in some cases, the medians for certain African subgroups exceed the value of the global benchmark. However, the penetration of mobile money accounts is significantly smaller in North Africa vis-à-vis Sub-Saharan Africa (the ratios vis-à-vis the global benchmark are 8 and 97 percent, respectively). The Africa region also leads the world in the percentage of the adult population sending or receiving domestic remittances through a mobile phone.

TABLE 3.1: Benchmarking the Digital Economy in Africa: A Scorecard

Indicators	Africa Region	Sub-Saharan Africa	North Africa	East & Southern	West & Central	FCV Affected	Non-FCV
I. Digital Infrastructure							
(a) Fixed Broadband Services							
Quantity: Fixed subscriptions (per capita)							
Quality: Activation time for fixed broadband service (days)							
Individuals using the internet (% of population)							
Affordability: Fixed broadband connection charge							
Affordability: Fixed broadband monthly subcription							
(b) Mobile Broadband Services and Mobile Services							
Mobile broadband subscriptions (per capita)							
Mobile-cellular subscriptions (per capita)							
Population covered by a mobile-cellular network (%)							
Percentage of the Population covered by at least a 3G mobile network (%)							
Percentage of the Population covered by at least an LTE/WiMAX mobile network (%)							
II. Digital Platforms							
Has a national identity card (% age 15+)							
e-Government Development Index (0-1 normalized score)							
Online Services Index							
e-Participation Index							
Use of virtual professional networks							
III. Digital Entrepreneurship							
Global Entrepreneurship Index							
Attitudes sub-index							
Abilities sub-index							
Aspirations sub-index							
IV. Digital Financial Services							
4.1 Mobile Money Account Penetration							
Mobile money account (% age 15+)							
Mobile money account, female (% age 15+)							
Mobile money account, male (% age 15+)							
Mobile money account, income, poorest 40% (% age 15+)							
Mobile money account, income, richest 60% (% age 15+)							
Mobile money account, rural (% age 15+)							

TABLE 3.1 *Continued*

Indicators	Africa Region	Sub-Saharan Africa	North Africa	East & Southern	West & Central	FCV Affected	Non-FCV
4.2 Use of Mobile Money Accounts for Agriculture and Remittances							
Received payments for agricultural products (% age 15+)							
Received payments for agricultural products, rural (% age 15+)							
Received mobile payments for agricultural products (% age 15+)							
Received mobile payments for agricultural products (% payment recipients, age 15+)							
Received domestic remittances through a mobile phone (% age 15+)							
Received domestic remittances through a mobile phone (% recipients, age 15+)							
Sent domestic remittances through a mobile phone (% age 15+)							
Sent domestic remittances through a mobile phone (% senders, age 15+)							
4.3 Digital Payments							
Used internet to pay bills (% age 15+)							
Used the internet to buy something online (% age 15+)							
Made digital payments in the past year (% age 15+)							
Made digital payments in the past year, male (% age 15+)							
Made digital payments in the past year, female (% age 15+)							
Made digital payments in the past year, income, poorest 40% (% age 15+)							
Made digital payments in the past year, income, richest 60% (% age 15+)							
Made digital payments in the past year, rural (% age 15+)							
Received digital payments in the past year (% age 15+)							
Received digital payments in the past year, male (% age 15+)							
Received digital payments in the past year, female (% age 15+)							
Received digital payments in the past year, income, poorest 40% (% age 15+)							
Received digital payments in the past year, income, richest 60% (% age 15+)							
Received digital payments in the past year, rural (% age 15+)							

The incidence of bill payments and purchases using the internet in Africa is compared with the global benchmark (the top decile of the rest of the world). Table 3.1 shows that use of the internet to pay bills or purchase goods/services is still very incipient across African countries, compared with the rest of the world. For instance, 4.2 percent of African adults used the internet to pay their bills, while 64.5 percent of adults in the rest of the world did so. The wide gap in internet bill payments and purchases (more than 75 percent) relative to the global benchmark holds across all the country groups in the Africa region and considering gender, age, and/or income divides.

The expansion of mobile money accounts in Africa is partly the result of the region's poor performance in access to more traditional financial services. The percentage of the adult population in Africa with a financial account is considerably smaller than that of the top decile in the rest of the world (30 and 98 percent, respectively). It remains to be seen whether banking institutions will embrace the digital future and insert themselves into the mobile financial sector—thus attracting some of these customers.

The Digital Economy and the level of Development: Correlation Analysis

This subsection examines the association between measures of the digital economy and the level of development. For reasons of space, it focuses only on three digital infrastructure indicators that capture internet services and the internet of things: (a) mobile broadband subscriptions per 100 people, (b) percentage of the population who are internet users, and (c) cell phone subscriptions per 100 people. Each indicator of the digital economy, averaged over 2015–17, is plotted against the level of income per capita.[24] Note that the scatterplots presented in this subsection were restricted to digital infrastructure rather than other dimensions given their greater coverage across countries and over time and the availability of objective rather than subjective indicators.[25]

Level of Income per Capita and the Digital Economy

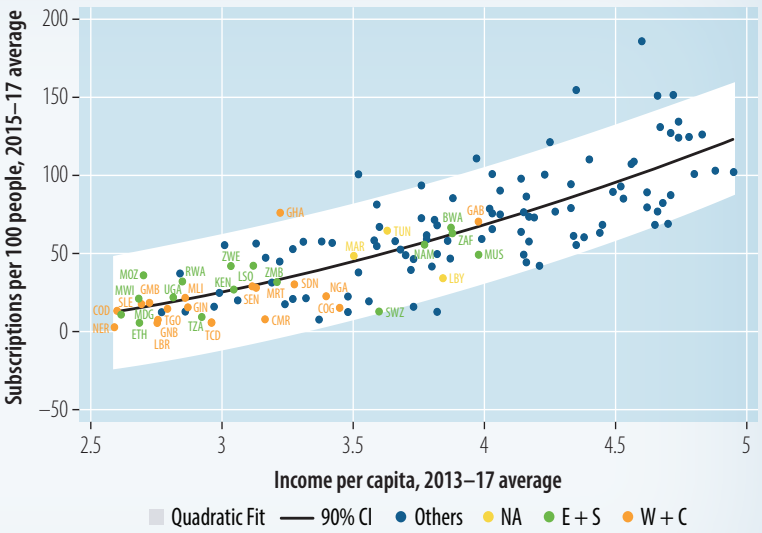
Mobile active broadband penetration (subscriptions per 100 people) has a positive correlation with income per capita (figure 3.10). The African continent is concentrated among lower levels of income per capita and lower penetration of mobile subscriptions (most countries below 50 per 100 people). Most countries in West and Central Africa are close to or below the international norm—except Ghana, which overachieves compared with the international norm. Gabon, with a higher income per capita, has a similar rate of penetration of mobile broadband subscriptions (76 per 100 people) as Ghana and lies close to the international norm. Countries in East and Southern Africa tend to gather around the international norm, except Eswatini, which underperforms relative to the international norm. Morocco and Tunisia perform above the international norm, whereas Libya is below the norm (with 49, 65, and 34 subscriptions per 100 people, respectively).

24 The income per capita indicator is measured by the real GDP per capita averaged over the period 2013–17.

25 The digital economy indicators were also plotted against: (a) complementary assets such as the World Bank's Human Capital Index (HCI) and the World Economic Forum's index of electricity supply reliability, and (b) development outcomes such as the Gini index of income inequality and the poverty headcount ratio. In general, these scatterplots showed that countries with higher human capital and more reliable supply of electricity tend to have a greater penetration of digital infrastructure. Also, an expansion of the digital infrastructure is associated with lower poverty and lower inequality—although the relationship is not as robust for the latter indicator.

Countries with greater income per capita tend to have a higher penetration of mobile broadband.

FIGURE 3.10: Mobile Active Broadband and Income



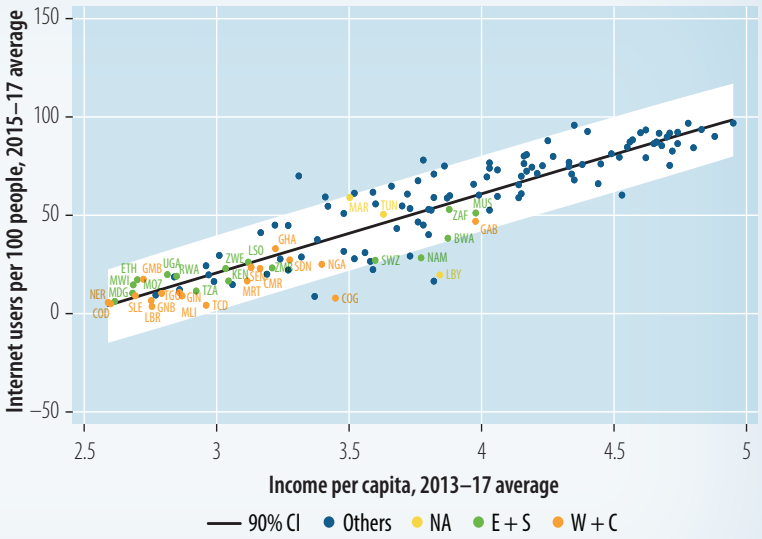
Source: World Development Indicators, World Bank.

Note: Income per capita is measured by the real GDP per capita (in US$ at constant prices) expressed in logs. CI = confidence interval; E + S = East and Southern Africa; GDP = gross domestic product; NA = North Africa; W + C = West and Central Africa.

The population penetration of internet services (measured by the percentage of individuals using the internet) is positively correlated with GDP per capita (figure 3.11). The majority of the African countries have a rate of population penetration below 60 percent. At their level of income per capita, most African countries are underperforming; that is, they are below the international norm (as suggested by the regression line in figure 3.11). The percentage of internet users in the Republic of Congo (7 percent), Libya (20 percent), and Namibia (28 percent) is dismal: they are not only below the international norm, but also outside the confidence interval. A handful of contries outperform the international norm—North African countries (Moroco and Tunisia) and some Sub-Saharan African countries (Ghana, Rwanda, The Gambia, and Uganda, to name some). Interestingly, countries with relatively similar levels of income per capita, such as South Africa and Botswana, show different rates of population penetration of internet services, at 53 and 38 percent, respectively. Yet, from a different perspective, countries with similar proportions of people using the internet (around 19 percent) can have greater disparity in GDP per capita, such as Libya (US$6,952) and Rwanda (US$706), a difference of almost 10 times.

Countries with greater income per capita tend to have higher access to the internet.

FIGURE 3.11: Internet Users and GDP per Capita



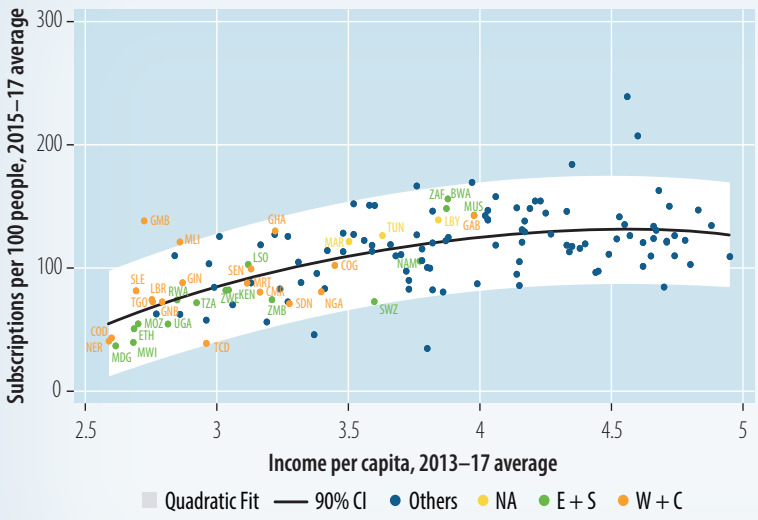
Source: World Development Indicators, World Bank.

Note: Income per capita is measured by the real GDP per capita (in US$ at constant prices) expressed in logs. CI = confidence interval; E + S = East and Southern Africa; GDP = gross domestic product; NA = North Africa; W + C = West and Central Africa.

Mobile-cellular subscriptions are positively correlated with the level of income per capita (figure 3.12). African rates of cell phone penetration are comparable to those of other countries in the world—in contrast with the other two digital economy indicators.

South Africa has the greatest number of subscriptions (156 subscrtiptions per 100 people). Along with South Africa, Botswana and Gabon outperform the international norm and have similar levels of cell phone penetration and income per capita. Despite its lower income per capita, Ghana has a comparable number of cellular subscriptions (per 100 people) as Gabon and Botswana—and Ghana significantly outperforms the international norm. At lower levels of income per capita, some countries outperform the international norm (for example, The Gambia and Mali), while others underperform (for example, Chad and Sudan).

FIGURE 3.12: Cell Phone Subscriptions and GDP per Capita



Mobile cellular subscriptions are positively related to income per capita, although it is nonlinear.

Source: World Development Indicators, World Bank.

Note: Income per capita is measured by the real GDP per capita (in US$ at constant prices) expressed in logs. CI = confidence interval; E + S = East and Southern Africa; GDP = gross domestic product; NA = North Africa; W + C = West and Central Africa.

3.4 DIGITAL ECONOMY AS A DRIVER OF DEVELOPMENT

The potential benefits of reaching the targets set by the Digital Economy Moonshot are computed under three scenarios: (a) reaching the digital economy (DE) target using a linear growth regression (columns [1] for growth and [4] for poverty in table 3.2), which uses the coefficient of PCA1 in regression [5] in table 3.A1; (b) reaching the DE target while keeping the current level of human capital using a regression that interacts digital infrastructure and human capital (columns [2] for growth and [5] for poverty in table 3.2), which uses the coefficient of PCA1 and its interaction with human capital in regression [7] in table 3A.1; and (c) reaching the DE target while allowing changes in human capital from a regression that interacts digital infrastructure and human capital (columns [3] for growth and [6] for poverty in table 3.2), which uses the coefficient of PCA1 and its interaction with human capital in regression [7] in table 3.A1. Reaching the DE Moonshot targets implies (a) rapid expansion of fixed broadband services, (b) universal access to internet services, and (c) universal penetration of mobile cellular phones. In the case of human capital, the target is to increase the secondary years of schooling for women.[26]

Reaching the targets set by the Digital Economy Moonshot renders the following results: first, growth per capita in the Africa region will increase by 1.5 percentage points per year. Second, the potential growth benefits are greater in Sub-Saharan Africa (1.95 percentage points (pp)) than in North Africa (0.4 pp). This implies that the distance to the benchmark is farther for Sub-Saharan Africa in terms of the digital infrastructure indicators. Third, FCV-affected countries

26 The expansion of fixed broadband services corresponds to an increase to the levels of each country group's leader. In the case of human capital, this implies the increase of years of schooling for female students to three years.

TABLE 3.2: Potential Growth Impact and Poverty Reduction Effects of Reaching the Digital Moonshot Targets

	Growth effects			Poverty effects		
	[1]	[2]	[3]	[4]	[5]	[6]
Africa	1.48	3.80	4.02	-0.72	-1.86	-1.97
North Africa	0.35	0.93	0.95	-0.17	-0.45	-0.47
Sub-Saharan Africa	1.95	4.99	5.31	-0.96	-2.45	-2.60
East and Southern	1.50	3.87	4.09	-0.73	-1.90	-2.00
Central and West	1.23	3.13	3.34	-0.60	-1.53	-1.64
FCV-affected	1.54	3.93	4.19	-0.76	-1.92	-2.05
Non-FCV affected	1.30	3.38	3.56	-0.64	-1.66	-1.74

Note: The estimations are all extracted by using results from table 3B.1. Column [1] is calculated based on the results from regression [5] of table 3B.1. Similarly, estimation for [2] uses the coefficient for the PCA from regression [7], while column [3] uses the PCA coefficient and the interaction coefficient from regression [7]. The poverty effects are calibrated using the growth semi-elasticity of poverty estimated in World Bank (2018b).

registered the largest potential growth benefits from closing the digital infrastructure gap (1.54 pp), which is faster than that of non-FCV countries by more than 20 basis points per year. Fourth, the growth benefits from closing the gap in digital infrastructure are larger in the model that includes an interaction with human capital. Keeping the level of human capital constant, Africa's growth per capita will increase by 3.8 pp (more than double with respect to the scenario without the human capital interaction). If the level of human capital is allowed to change (to the level of the benchmark), growth per capita in the Africa region increases by 4 pp. In sum, developing the digital infrastructure fosters growth, and this effect is amplified by having the appropriate complementary assets, such as human capital.

Table 3.2 also computes the potential poverty reduction effects of developing the digital infrastructure in Africa. This effect is calibrated using the estimates of the responsiveness of poverty to growth per capita available in the economic literature. With traditional elasticities, poorer countries have a lower percentage poverty reduction from 1 percent growth compared with richer countries, because the elasticities are the percent reduction in poverty for countries that start with higher poverty rates (Ravallion 2012). However, semi-elasticities measure absolute percentage point change in poverty per percent income growth (Cuaresma, Klasen, and Wacker 2016). They do not take into account initial levels of poverty, so countries with different initial poverty rates that experience similar declines in poverty would have a similar semi-elasticity.

The analysis presented in table 3.2 uses the growth semi-elasticity of poverty estimated for African countries in World Bank (2018a). This coefficient relates the poverty headcount ratio and the rate of growth per capita, and its estimate is -0.49. There are four main takeaways from reaching the Digital Moonshot targets. First, the poverty headcount ratio declines 0.7 percentage point per year in the Africa region. Second, poverty reduction is greater in Sub-Saharan Africa than in North Africa, with decreases of 0.96 and 0.2 percent per year, respectively. Third, the largest poverty reduction would be potentially attained by FCV-affected countries (0.76 percent per year). Fourth, the poverty reduction effects could be higher, taking into account the interaction between the digital economy and human capital. Poverty reduction effects when accouting for the expansion of analog complements more than double for almost all regions.

Digital Technologies and Development: Reviewing the Microeconomic Evidence

Information and communication technologies (ICTs) support the development objectives of a country by (Deichmann, Goyal, and Mishra 2016): (a) being more inclusive (expanding market access to individuals and firms), (b) improving efficiency (thus, boosting the productivity of the different inputs), and (c) fostering innovation (through the creation of new business models). This subsection presents existing evidence at the individual, farm, or firm level that documents the impact of digital technologies on development (growth, poverty reduction, and job creation) through different channels. It focuses on the insertion of digital technologies into agricultural practices, financial services, and the government.

Digital Technologies in Agriculture[27]

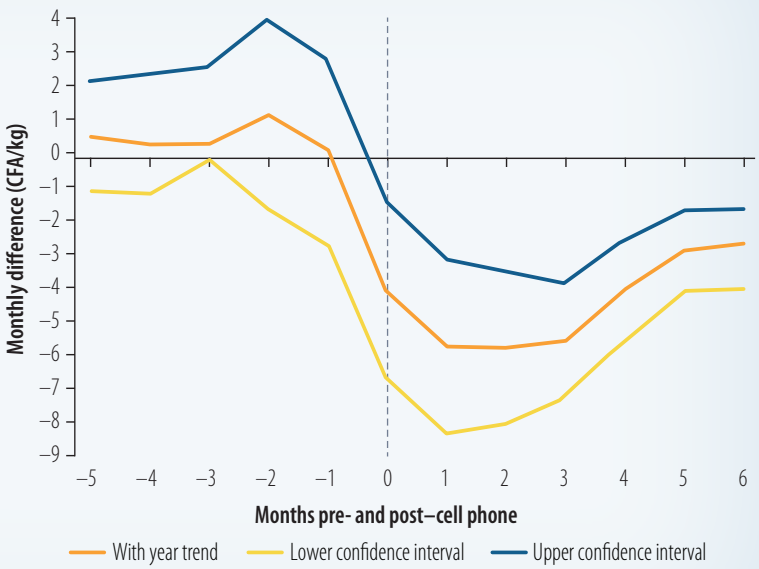
ICTs are facilitating the diffusion of information and knowledge in agriculture. They are lowering transaction costs by cutting the pecuniary and time costs of accessing and exchanging information. ICTs can help improve agriculture in developing countries—notably, in Africa—through three mechanisms (Diechmann, Goyal, and Mishra 2016). First, ICTs can help promote market transparency. For instance, access to mobile phones would help overcome information problems: they reduce information asymmetries resulting from market intermediaries with market power. ICTs also elevate the capacity to evaluate market information. Inexpensive mobile technology has enabled rural and often marginalized farmers to join regional and national markets. Second, increasing demand for timely and high-quality information on inputs is helping to boost farm productivity. Agricultural education and extension services have the potential to play a key role in technology-transfer processes, by assisting farmers in problem solving and becoming more inserted within agricultural knowledge and information systems (Asenso-Okyere and Mekonnen 2012). The delivery of information about better agricultural practices, new seeds, or new tools is helping to raise the productivity of other factors of production, and thus boosting the efficiency of the production process. Third, major innovations in ICT can help agriculture by reducing logistic costs in the different stages of the agricultural supply chain, including platforms that connect buyers and sellers along the production chain, coordinate product delivery, and facilitate secure payments, among others.

The rapid expansion of digital technologies—as captured by the massive uptake of mobile phones and the internet—has improved market transparency by reducing farmers' and traders' search costs, even in environments with poor roads or wireline infrastructure. Hence, the use of ICTs to access knowledge and information can potentially raise rural incomes. Mobile phone coverage is correlated with greater market efficiency, as measured by the price dispersion of agricultural goods. For instance, mobile phones helped reduce grain price dispersion across markets in Niger by at least 6.5 percent and intra-annual price variation by 10 percent. The lower price dispersion is partly attributed to reduced search costs, as grain traders with cell phone coverage had information and access to more markets. Figure 3.13 shows the changes in price dispersion before and after mobile phone coverage across Niger's grain markets. The largest decline in price dispersion took place in the first four months after coverage, and the marginal impact has decreased over time (Aker 2008, 2010).

27 This subsection builds on the evidence summarized by Diechmann, Goyal, and Mishra (2016).

After the increase in mobile phone coverage, price dispersion dropped sharply across Niger's grain markets.

FIGURE 3.13: Changes in Price Dispersion Pre– and Post–Mobile Phone Coverage in Niger's Grain Market



Source: Aker 2008.

Note: Price dispersion is regressed on a series of dummy variables pre– and post–mobile phone coverage. Upper and lower confidence intervals are shown. CFA = CFA franc; kg = kilogram.

Mobile phone coverage is more likely to reduce the spatial price dispersion of agricultural products that are more perishable (for example, cowpeas), and this reduction is strongest for remote markets in certain periods of the year. In contrast, mobile phone coverage has a negligible impact on (producer) price dispersion of less perishable products that are typically stored by farmers—say, millet and sorghum (Aker and Fafchamps 2015). Additionally, mobile phone coverage increases the market participation of farmers located in remote areas and producing perishable goods. After the expansion of cellular phone coverage, the share of Ugandan farmers selling bananas increased in communities located more than 20 miles from district centers (Muto and Yamano 2009). Other examples of increasing mobile phone coverage reducing price dispersion include the sardine fishers and wholesalers of Kerala (Jensen 2007) and smallholder farmers in Ghana, through multiple data sources, including open government data provided by Esoko (Schalkwyk, Young, and Verhulst 2017), among others.

Having access to digital technologies can help in connecting with agents and traders to estimate market demand and the selling price of their products. However, the impact of having access to digital technologies on farm gate prices is not conclusive. On the one hand, there is evidence that access to market information—through radio or mobile phone—is related to higher farm gate prices in Uganda (Svenson and Yanagizawa 2009), especially for more perishable goods (Muto and Yamano 2009). On the other hand, others have found that access to information did not significantly change average produce prices (Fafchamps and Minten 2012), although the effect could be restricted to specific products (Aker and Fafchamps 2015; Tadesse and Bahiigwa 2015). Differences in the extent of information asymmetry, type of information or platform used for delivery, and presence of other market failures may explain the non-robust evidence (Diechmann, Goyal, and Mishra 2016).

The provision of information may incentivize farmers—including poor smallholders—to invest in new technologies. Agricultural extension is the traditional way to communicate information related to technology adoption. It deploys specialists to provide information on technology transfer and advisory services, among others. Farmers are more receptive to readily-accessible, tailor-made information. Digital technology has re-energized advisory services. For instance,

Digital Green, the Grameen Foundation, and TechnoServe deliver timely and actionable information and advice to farmers in South Asia and Sub-Saharan Africa (Nakasone, Torero, and Minten 2014). The transaction costs associated with traditional agricultural extension services are reduced through a mix of voice, text, videos, and the internet. Governments have partnered with mobile operators to coordinate the distribution of better seeds and subsidized fertilizers in remote areas through e-vouchers (for example, Nigeria's large-scale e-wallet initiative).

Electronic extension systems not only vary in their complexity, but also in the range of tools, platforms, and devices used to communicate information. For example, the Digital Project used a participatory process to enable farmers' access to agricultural advice by linking them with experts through local social networks in India and Ethiopia. Reducing the distance between instructors and farmers led to greater adoption of agricultural practices, compared with non-ICT approaches (Gandhi et al. 2009).

Digital technologies can also connect farmers with capital goods—especially for those smallholder farmers in remote rural areas who can use farm machinery to improve productivity but cannot afford to purchase it. A digital solution to this problem emerged with Hello Tractor in Nigeria, an Uber-like service that enabled farmers to request, schedule, and prepay for tractor services form nearby owners through SMS and mobile money. The smart two-wheel tractors are equipped with GPS antennae that collect and transfer necessary data. The prepayment is released to the owner once the service is completed.

Digital technologies are also used to implement early warning systems (EWS), particularly climate models that provide public information on flood alerts, drought warnings, wild fires, and pest outbreaks. This type of information is demanded frequently by farmers. If the information is provided on a timely basis, farmers can manage these climate shocks. EWS utilize data from a wide array of sources, including satellite images and surveys. Satellite images can provide a range of climatic parameters in almost real-time (rainfall, temperature, evaporation, vegetation, and land cover) that can reach remote areas that lack measurement stations and enable farmers to manage the growth of their crops. Automated systems provide early warnings if there are deviations from normal growth or other factors. Zenvus, a Nigerian precision farming startup, measures and examines soil data (temperature, nutrients, and vegetative health) to help farmers to apply fertilizers optimally and irrigate their farms. These data-driven farming practices—even among small-scale farmers—are improving farm productivity and reducing waste. The Kenyan startup UjuziKilimo uses big data and analytics to transform farmers into a knowledge-based community and boost productivity through identification of the needs of individual crops. Finally, SunCulture, founded in Kenya and with operations across the region, sells affordable and high-efficiency drip irrigation kits that use solar energy to pump water from any source (Ekekwe 2017).

Delivering timely production advice and EWS information at a large scale requires developing and maintaining content. The associated cost is particularly high in low-productivity agricultural areas populated by smallholder farmers with poor infrastructure and low skills. Hence, there is a dire need to develop low-cost tools to improve the efficiency of delivery of agricultural production advice. Evidence shows that ICT developments that reduced costs for farmers in rural areas that lacked appropriate infrastructure improved the efficiency of the

delivery of extension services; however, the returns from ICT for farmers in poorer countries were about half those in richer countries (Lio and Liu 2006).

Digital technologies also improve agricultural supply chain management. They may enhance the coordination of transportation and delivery of products, secure food safety in global agricultural production chains, and facilitate secure payments (Diechmann, Goyal, and Mishra 2016). For reasons of space, the discussion here focuses on food safety and digital payments.

The nature of food production worldwide, along with heightened awareness of food-borne diseases, has stressed the need to guarantee food safety in the global food supply chain. Technological products that can effectively trace products from farm to market are currently being put in place, especially among farmers in developing countries looking to reach or expand to new export markets (Karippacheril, Rios, and Srivastava 2011). For instance, radio frequency identification chips are being placed on crates of produce or in the ear of livestock to collect data on motion, temperature, spoilage, density, and light, among others. The Namibian Livestock Identification and Traceability System implements a traceability system that facilitates the control, risk management, and eradication of bovine disease. The system's use of radio frequency identification instead of paper-based recording has improved data accuracy and its speed of dissemination. This system has contributed to a more dynamic livestock market (World Bank 2012).

Technology may also significantly improve food safety in value chains. For example, IBM, Walmart, and the Chinese retailer JD.com together with Tsinghua University have announced a blockchain food safety alliance to improve food tracking and safety in China. Decentralized ledger technology will be able to trace back the origin of food products in shorter intervals of time, making it easier to prevent food scandals and build trust among domestic food producers and distributors (Aitken 2017).

Financial innovations such as mobile money have had an impact on the ability of households to diversify risks and have played a crucial role in facilitating the transfer of purchasing power through SMS-based technology. This technological innovation has significantly lowered the cost of sending money across large distances (Mbiti and Weil 2016). But securing agricultural finance to rural smallholder farmers poses several challenges. Operators need to provide cost-effective platforms that minimize the risk of fraud and maximize accountability and transparency. Aligning the agriculture and mobile money sectors is benefitting smallholder farmers by providing a convenient and safe ecosystem for mobile payments and receipts after the sales of their products to other businesses. It also provides smallholder farms with a financial identity and the ability to participate in an open and transparent formal economic activity (Babcock 2015). Having available financial records (on their mobile phones) would raise the profile of farmers and possibly make them more attractive to banks as customers. In this context, farmers' access to financial products, such as credit and insurance, among others, would help them build resilience against shocks.

Kenya is the leader of mobile payments and mobile finance in the region. M-PESA, a platform of Safaricom, started as a mechanism for the distribution and repayment of microfinance credit. It

then became a peer-to-peer payments platform. Additionally, M-PESA has joint ventured with the Commercial Bank of Africa (CBA) to offer M-Shwari banking products through the mobile money infrastructure. M-Shwari is a combined savings-and-loan product issued by the CBA and linked to an M-PESA mobile money account. Deposits or withdrawals from M-Shwari can only be done through the M-PESA wallet. M-Shwari also computes the credit scores of poor and unbanked segments of the population, using their telecommunications data, including airtime (call credit), top purchases, mobile finance transactions, and SMS messaging patterns, among others (Cook and McKay 2015).

Non-banking financial institutions in Kenya, like Musoni and Umati Capital (UCAP), are using the M-PESA infrastructure (as well as that of other mobile network operators) for distribution and repayment of loans. The Musoni core banking system is providing a platform that allows microfinance institutions and agricultural suppliers to manage their clients and loans. This system is integrated with M-PESA and Airtel Money, and transactions can be made using mobile money. Client registration, loan applications, and (portfolio and financial) report reviews can be submitted and accessed through the Musoni digital application.

UCAP focuses on the provision of supply chain finance—particularly, financing to SMEs that supply to larger firms.[28] UCAP currently lends to the Kenyan dairy sector: it has set up mobile apps throughout each stage of the value chain to capture data to inform the disbursement of smallholder farmer loans via mobile wallets. The technology used by UCAP accounts for different levels of digital literacy. For instance, farmers can use text messaging, and milk processors may use more complex web applications to track daily milk deliveries. Small-scale farmers can access their payments after 24 hours for milk delivered to dairy companies, as opposed to the 30 days using nondigital solutions (Babcock 2015).

Zimbabwe's largest telecommunication company, Econet Wireless, is leading a data revolution in the agriculture sector. The company is offering network connections, mobile banking, and the EcoFarmer mobile platform. This platform is providing farmers membership in the Zimbabwe Farmers' Union, as well as crop and livestock farming tips, index-based crop insurance, and funeral insurance coverage, all at US$1 per month and accessible through a basic mobile handset. Currently, more than 700,000 farmers are registered with EcoFarmer, but Econet is expanding its service offerings to include Dial-a-Mudhumeni (for agricultural advice) and give farmers access to loans (Dinesh et al. 2017).

Providing ICT platforms to large segments of the rural population engaged in agriculture has significant potential benefits, but it also poses challenges. ICT platforms should guarantee authentic information and verifiable knowledge provided to users. Governments should promote competition among ICT providers to boost efficiency and reduce costs to customers (Asenso-Okyere and Mekonnen 2012). Rolling out mobile finance to rural areas may face certain barriers, such as illiteracy, financial and digital illiteracy, lack of trade, and limited agent/network coverage (Backcock 2015).

28 UCAP provides working capital for small business suppliers of medium-size to large corporates and a supplier financing program tailor-made to the supplier's payment cycles (Babcock 2015).

Digital Technologies in Finance[29]

Mobile money services. Mobile money services have constituted an innovation that is increasing financial inclusion in Africa: they are bringing unbanked people into the formal financial system. Kenya's M-PESA has been one of the most successful deployments of mobile money. Its mobile money services have been adopted by nearly 70 percent of Kenya's adult population only four years after its launch. The fast adoption of M-PESA in Kenya is attributed to: (a) the rapid expansion of mobile phone networks, and (b) the rapid deployment and growth of a dense network of agents (the end distributors of the service), which are small business outlets that convert cash into e-money and vice versa for customers (Jack and Suri 2014). The rapid uptake of mobile finance in Kenya is also attributed to the dominant position of Safaricom in the mobile market, a progressive financial regulator, and multiple densely-populated areas (Babcock 2015).

Access to mobile money services has enhanced risk-sharing mechanisms among Kenyan households. They have been able to strengthen their informal risk-sharing networks and respond better to shocks by using mobile money services. For instance, consumption declined by 7 percent by nonusers of M-PESA in response to income shocks, while the consumption of users remained invariant to these shocks (Jack and Suri 2014). The consumption-smoothing abilities of M-PESA users are attributed to their being more likely to receive remittances in response to shocks—and they tend receive not only more but from more different types of people. In turn, greater risk-sharing ability was followed by increased saving, higher consumption, and occupational changes for user households.

Mobile money services have led to changes in the composition of household assets. In countries and/or areas with an increased network of agents, total financial savings have increased, especially among female-headed households.[30] M-PESA accountholders tend to be less prone to using informal saving mechanisms (such as rotating savings and credit associations) and are more likely to access formal banking services. M-PESA improves individual outcomes by promoting banking and increasing transfers (Mbiti and Weil 2016). Additional evidence shows that M-PESA–registered users are more likely to save than those who are not registered (Demombynes and Thegeya 2012). Recent evidence from Burkina Faso shows that even if mobile money users do not tend to save for predictable events, they are more prone to save for health emergencies, especially among the rural population, women, and less educated individuals. The possibility of transferring money within subregions of the country associated with mobile money using a secure platform may explain the greater incidence of mobile money users saving for health emergencies (Ky, Rugemintwari, and Sauviat 2018). Changes in access to mobile money services have also raised the probability of using a bank account rather than other financial products. This effect may reflect that banking institutions started collaborating or competing with M-PESA, for instance, M-Shwari accounts.

Savings can help microentrepreneurs raise their ability to cope with unexpected shocks and finance lumpy investments. Gautam et al. (2018) examine a policy intervention that promotes access to new mobile savings technology among female microentrepreneurs with or without business and financial literacy training in Tanzania. In partnership with TechnoServe, the Business

29 This section partly builds on the evidence summarized in Karlan et al. (2016).

30 Total financial savings include self-reported cash plus balances in bank accounts, savings clubs—savings and credit cooperatives or rotating savings and credit associations—and mobile money accounts.

Women Connect program is evaluated through two interventions. One is a training session on M-Pawa and registration with the product. M-Pawa, a mobile finance product designed by Vodacom, enables customers to save money in an interest-bearing mobile savings account. It also allows users to access microloans based on good savings performance. The other intervention is intensive business skills training. One year post-intervention, the results show that women save substantially more through the mobile account. They also have greater access to microloans through the accounts, expand their business portfolio through the creation of new businesses, and report higher levels of empowerment and well-being. The business and financial literacy training further bolstered the usage of the mobile savings accounts, and it led to greater capital investment, labor effort, new products, and better business practices. Although these short-term impacts have yet to translate into higher profits, the evidence suggests that without relaxing the complementary human capital constraints that women might face, access to mobile savings accounts per se is no silver bullet.

The Kin Networks, Forced Solidarity, and Women's Employment project examines forced redistribution as an impediment to increased productivity in the context of formal, off-farm female employment in Côte d'Ivoire. In partnership with Caisse Nationale des Caisses d'Epargne, the largest savings bank in Côte d'Ivoire, and OLAM, a leading transnational agro-processing firm, Carranza et al. (2018) test a financial innovation among workers in cashew-processing plants: a direct-deposit commitment savings account designed to make it easier for workers to convert productivity increases into long-term savings, which cannot be accessed by others. Their research will provide evidence on the impact of redistributive pressure on workers' labor supply and earnings. The first phase of this project evaluated the impact on productivity. Workers who were offered a direct-deposit commitment savings account increased their labor productivity and earnings by 10 percent, which translates into an 18 percent increase for workers who opened an account. The effect appears to be driven by workers increasing effort while on the job. The preliminary evidence suggests that the visibility of an account to one's social network and the degree of redistributive pressure a worker faces are strong determinants of account take-up. The second phase of the project, currently underway, focuses on providing causal evidence that redistributive pressure is the channel. This would provide evidence that tackling the underlying cause of redistributive norms—the lack of consumption-smoothing mechanisms—could improve output and growth in developing countries, by tackling the root cause of the high demand for commitment savings products.

In collaboration with the North Volta Rural Bank, Buehren et al. (2018) assess the impact of savings products for salaried workers in Ghana who receive pay via direct deposit, in which they commit to having a fixed amount taken directly from their salary and put in a commitment savings account for an 18-month period. At the end of 18 months, all contributions, plus a "completion bonus" equal to one month's contribution, are released to the saver. Workers face a penalty equal to one month's contribution if they withdraw before the end of 18 months. Overall, the product significantly increased savings with the bank without increasing overdrafts. However, after accounting for other sources of savings, the study finds that clients with above-median baseline overdraft histories do not accrue new savings during the commitment period. Rather, they draw down other savings to offset the committed amount and take on new debt. In contrast, individuals with below-median overdraft histories significantly increase savings during

and after the commitment period. Another evaluation currently in the design phase will evaluate the impact of mobile phone–based bank savings accounts to customers, including one with a hard, fixed, and mandatory withdrawal restriction ("hard commitment") and one with a soft, flexible, optional withdrawal restriction ("soft commitment").

Mobile money may have facilitated occupational choice in Kenya. Individuals living in areas with larger increases in mobile money agents were more likely to work in business or sales and less likely to work in farming or have a secondary occupation. Expansion of M-PESA enabled women to graduate from subsistence agriculture, reduced their reliance on multiple part-time jobs, and led to a reduction in the average household size (Suri and Jack 2016). Access to mobile money has had a long-term impact on the economic welfare of households in Kenya.[31] There has been a substantial increase in consumption per capita among households living in areas with increased access to mobile money agents—and this effect was twice as large for female-headed households. Extreme poverty also declined in areas with increased agent access. The diffusion of mobile money services in Kenya helped lift about 194,000 households out of extreme poverty and induced 185,000 women to change their main occupation to business or retail (Suri and Jack 2016).

Digital credits. Digital credits are emerging as an alternative to short-term banking for micro-finance loans. Mobile operators partner with a financial institution to grant small, short-term loans directly to customers through an existing mobile money ecosystem. M-PESA partnered with the CBA to launch M-Shwari products in November 2012. M-Shwari users were able to earn interest on savings products and qualify for loans backed by CBA. The successful uptake of M-Shwari in Kenya led to the emergence of similar products in other countries in the region. In Tanzania, M-PAWA (a product that resulted from the partnership of Vodacom Tanzania and CBA) serviced 4.9 million borrowers in its first two years (Aglionby 2016). MoKash (a joint product of MTN Uganda and CBA) registered one million users in the first three months of its launch.

Digital credit has some advantages relative to traditional loans. Transactions costs are reduced with digital loans (for example, there is a shorter span of time from loan process to approval), and they are readily available to customers without requiring an in-person vetting by a financial institution. Digital loan providers use telecommunications data to develop alternative credit scores, thus facilitating the extension of loans to users without collateral or traditional scores calculated by a credit bureau.[32] Digital-based credit scores may grant financial inclusion to individuals without credit scores in environments that lack verifiable financial history or have inexistent or ineffective credit bureaus. At the same time, digital credit poses some challenges. The scale of these loans is large, and they are extended for short periods of time. For instance, the average M-Shwari loan is about US$12 with maturity of no more than 30 days (Cook and McKay 2015). Consumers are charged a fixed facilitation fee (rather than an interest rate). These fees are typically high: for instance, a monthly fee of 7.5 percent for M-Shwari (138 annual percentage rate) or 10 percent per week for some Malawian digital loans (1,000 annual percentage rate). Repaying digital loans on time increases the likelihood of the customer being

31 Suri and Jack (2016) evaluate the effects on household welfare of changes in access to mobile money. Access to services is proxied by the geographic proximity of households to M-PESA agents.

32 Further penetration of digital credit may reduce the problem of adverse selection for the creditor, as information on the borrower comes digitally, via machine learning or other scoring algorithms. Low-cost investments should be made in experimenting with credit score algorithms (Jack and Suri 2014; Suri and Jack 2016).

granted larger loans with lower fees and longer maturity. It remains an open question whether the uptake of digital loans would decline if borrowers had more information on these products or were already fully informed about their costs (Francis, Blumenstock, and Robinson 2017).

Female entrepreneurs have less access to credit than their male counterparts, due to inequality in the ownership of fixed assets (for example, land or a house), which can serve as collateral to secure loans. Developments in the fintech industry can be harnessed to unlock the collateral challenge facing Ethiopia's female entrepreneurs. Alibhai et al. (2018) tested psychometric technology that predicts the likelihood that an entrepreneur will be able to repay a loan, as an alternative to traditional collateral. Psychometric loan appraisal technology assesses the ability (business skills and intelligence) and willingness (ethics, honesty, attitudes, and beliefs) to repay a loan. Borrowers take an interactive, tablet-based test consisting of games, puzzles, and questions. If they score above a certain cutoff, they can obtain an uncollateralized loan of up to US$7,500. Customers scoring at a high threshold on the psychometric test were seven times more likely to repay their loans compared with lower-performing customers. This pilot is now being scaled up in Zimbabwe and Madagascar, with more to follow in Nigeria, Zambia, and Côte d'Ivoire. In the absence of collateral, and with limited information available on the creditworthiness of women borrowers, psychometric testing is a promising solution.

Finally, cash still dominates the transactions of many of the world's poor despite the increased use of digital financial services. In this context, efforts to foster digital literacy would help potential users to understand the interface with digital financial systems. Training sessions to understand the benefits of digital financial products and, more importantly, how to use them will increase the uptake of digital accounts and deposits (Holloway, Niazi, and Rouse 2017).

Use of Digital Technologies by the Government

Governments have contributed to the information revolution by providing citizens access to government portals via the internet. Government portals should be spaces for interaction between the government and potential users (for example, citizens and businesses). The portals should meet the needs of the users through enhanced service delivery. The interactive nature of the government's digital platforms can potentially raise the efficiency and reduce the cost of government operations. It can also foster public sector transparency and accountability (Gil-Garcia and Helbig 2007). However, the introduction of digital technologies into government operations may produce unexpected results to the extent that they are constrained and/or conditioned by organizational and institutional arrangements (Fountain 2009).

Digital platforms may help reduce bureaucracy and improve access to government services. The eCitizen digital platform in Kenya provides individuals access to various services through a series of portals—including obtaining business licenses, permits, and registration; driver's licenses; applying for a passport; and searching for official land titles, among others. Kenyans can pay for these citizen services using mobile money, debit cards, and eCitizen agents.

Digital tools have raised the efficiency of targeted social protection programs by facilitating secure channels of payment to and from the government. Introducing mobile money systems

has created new ways to distribute cash transfers. An experiment of a mobile money cash transfer program in Niger shows that households receiving mobile transfers had 9-16 percent higher diversity in their diets, and their children consumed a third of a meal per day more. These better outcomes are partly attributed to time savings related to mobile transfers. Program recipients spend less time waiting for their transfer, and the transfers tend to increase women's intrahousehold bargaining power. Investments in the payment infrastructure are needed to scale up these programs (Aker et al. 2016). Digital tools have created more efficient social protection programs in Kenya targeted at the young people (Youth Enterprise Development Fund), female population (Women Enterprise Fund), physically disadvantaged (Uwezo Fund), devolved funds for constituencies (Constituency Development Fund), and marginalized areas (the Equalization Fund, which is 0.5 percent of all revenue raised nationally). Transferring these funds to the targeted people and areas has been facilitated by electronic payments systems. These systems not only ensure the identification of the recipients, but also minimize leakages (Ndung'u 2018).

The Indian State of Andhra Pradesh (randomly) rolled out biometrically authenticated cards (smart cards) for beneficiaries of the National Rural Employment Guarantee (NREG) and Social Security Pension (SSP) programs. The programs have benefited more than 19 million people in 157 sub-districts. The system, although not fully implemented, delivered a faster and less corrupt NREG payment process without jeopardizing access to the program (Muralidharan, Niehaus, and Sukhtankar 2016). Time savings for NREG beneficiaries were equal to the cost of the intervention, and there was an important reduction in the "leakage" of funds between the government and beneficiaries in the NREG and SSP programs. The beneficiaries of the programs strongly preferred the new system (Muralidharan, Niehaus, and Sukhtankar 2016).

The use of digital systems for government-to-person transfers has had implications for public expenditure management systems. Banerjee et al. (2017) evaluate an experimental assessment of an ICT-based reform of the fiscal transfer system underlying the rural workfare program in the state of Bihar in India. The system of advanced payments to local bodies (authorized by intermediate administrative tiers and backed only ex post by documentation of fund utilization) was replaced by a system of local bodies paid upon direct transmission of an electronic invoice documenting who they hired and for how long. The short-term effects of the treatment showed that expenditures declined by 17 percent, program participation increased, and no significant effects were found on wages received. There was a 5 percent reduction in fake households as the program was rolled out. A gradual rollout of the system—implemented nationwide in 2015—finds an 18 percent reduction in program spending from the scale-up program, which is persistent over time (Banerjee et al. 2017).

As governments continue investing in the digital revolution, they need to train civil servants on how to operate and optimize these innovations. The rising automatization of government tasks will release resources to improve service delivery. Capacity building for civil servants is required to embrace innovation and propel their role as change agents in the public sector space (Abdella 2016). In addition, investing in safe payments infrastructure would improve states' capacity to implement welfare programs in developing countries (Banerjee et al. 2017).

3.5. POLICY DISCUSSION

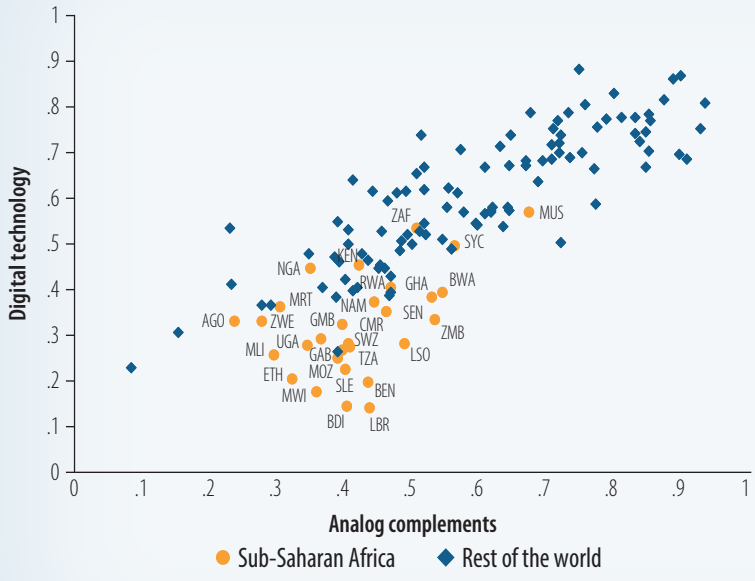
Closing the digital divide relative to other developing countries and advanced countries is needed for Africa to take advantage of the opportunities that ICTs are providing. However, narrowing the gaps in the digital economy is not sufficient. Countries need to have a strong analog foundation—for instance, regulations that foster connectivity and competition, digital skills that are technology-augmenting, labor and product market policies that facilitate labor reallocation as technological opportunities emerge, and policies and institutions that enforce cybersecurity (World Bank 2016b). This subsection discusses three complementary foundations to the digital economy: (a) the role of complementary assets and policies to enhance the impact of the digital economy, (b) implementation of regulatory frameworks that foster competition, and (c) robust legal frameworks to address cyber risks.

Complementary Assets and Policies to Boost the Growth Effects of the Digital Economy

Africa's digital revolution is not just a matter of connectivity and access, it is about implementing meaningful policies that allow the public and private sectors to participate in the new economy. Governments need to implement policies that support the adoption, diffusion, and use of digital technology, including policies that support high-quality and competitively priced internet rollouts. For instance, tariff and tax cuts on digital technology business tools could be considered among the measures used to increase usage (Dutz, Almeida, and Packard 2018). Figure 3.14 shows the need to continue implementing policy measures that enhance the "analog" complements (say, business climate, skills, and institutions) to accelerate the rate of adoption of digital technologies.

Education, skills, and labor market policies play a key role in securing that the available skills of individuals in the labor market support the adoption and use of digital technologies. As digital technologies continue to become more sophisticated, the skills mix necessary to succeed in the labor market will change dramatically. It is imperative that education and training systems keep up with the rapid pace of innovation. Labor market policies are also

FIGURE 3.14: Adoption of Technology and the Much-Needed Analog Complements



Source: World Bank 2016b.

Note: "Technology" is measured by the Digital Adoption Index (DAI). DAI is based on three sectoral sub-indexes covering the adoption rate for businesses, people, and governments, with each sub-index being normalized and assigned an equal weight. Similarly, "complements" is the average of three sub-indicators: starting a business, years of education adjusted for skills, and quality of institutions.

Rapid adoption of digital technologies requires adequate "analog" complements.

important for inclusion. Evidence shows that stringent labor regulation restricted the flexibility of firms in hiring low-skilled workers to perform routine and manual tasks (Dutz, Almeida, and Packard 2018). Business-relevant education and training programs should enhance workers' reallocation across tasks, as technological opportunities expand or change, and workers' mobility across firms and industries.

Product market policies may expand opportunities and enhance incentives for raising economic activity in response to productivity increases that result from the adoption of digital technology. Supportive product market policies include fostering local market competition (that is, cutting costs of entry into and exit from industry and implementing adequate bankruptcy laws to guard investors' interests), enhancing access to finance, and improving the quality of management, among others.

Regulatory Framework That Fosters Competition

Africa's insertion into the digital economy and the continent's ability to reap the associated benefits should rely not only on developing the required digital infrastructure, platforms, and skills, but also providing the necessary "analog complements" which includes strengthening regulatory frameworks that ensure competition among businesses. First-generation ICT policies involving market competition, private participation, and light touch regulation led to near-universal access and affordability of mobile telephony. Market competition, public-private partnerships, and effective regulation of internet and mobile operators encourage private investment that can help achieve the goal of universal and affordable access.

African countries are characterized by some of the most concentrated market structures and highest prices in the world (World Bank 2019c). Africa has 33 countries with a dominant wireless operator (more than 50 percent market share), of which three countries have a monopoly and an additional five countries have an operator's market share that exceeds 70 percent. Thirty-two of 39 reporting countries in the region have a dominant fixed broadband operator (more than 50 percent market share), of which three countries have a monopoly and an additional 15 countries have an operator's market share that exceeds 70 percent. Six of 40 reporting countries have fully implemented local loop unbundling, allowing other operators to use a given operator's fixed broadband connections from the local exchange to the customer's premises, a regulatory process that typically increases competition and reduces prices. Twenty-three of the 25 most expensive countries for mobile-cellular, 21 of the 25 most expensive for mobile broadband, and 21 of the 25 most expensive for fixed broadband are in Africa. And five of the top 10 countries and eight of the top 20 with the highest ratio of telecommunication revenues to GDP in 2016 are in Africa (ITU 2018).[33]

All the foundational dimensions of the digital economy (infrastructure, platforms, financial services, skills, and entrepreneurship) require effective competition. Firms operating within the digital economy—whether to offer digital connectivity, payment solutions, or digital platforms—require a level playing field. Competition can help reduce prices and expand usage. All aspects of the digital economy need to be inclusive and reduce the digital divide in gender, income, and rural areas. Evidence shows that the digital economy (and particularly mobile money) can be instrumental in reducing the gender divide.

33 Seven of the eight countries are in Francophone Africa, with the same pan-African operator as the dominant operator in five countries. Telecommunication revenue includes transaction charges from mobile money, with these charges varying substantially between operators and countries.

The analysis of regulation and competition in the digital economy as well as their impact on market development will be thoroughly examined in World Bank (2019a). In this context, the African Regulatory Watch Initiative (ARWI) report provides evidence on the regulatory impact on market development in ECOWAS (World Bank 2018e): first, the countries with the highest penetration of broadband (Nigeria, Cabo Verde, Ghana, Senegal and Côte d'Ivoire) have a modern and transparent license framework or strong enforcement of the regulatory framework. Second, the countries with the lowest internet penetration rate and low growth rates (Benin, Burkina Faso, Guinea, Guinea-Bissau, Niger, Sierra Leone, and Togo) have a restrictive license regime with severe restrictions on entry to the market. Third, the report argues that the openness of the licensing regime and its enforcement fosters competition and the development of broadband markets.

Regulations are essential to create an environment that fosters the innovative and bold use of technology. However, policy makers need to strike a balance between the free flow of data and information and privacy policies. In the Information Age, data has emerged as the new currency, and it is creating singular opportunities for workers and entrepreneurs. As governments continue to decentralize decision making and increase responsiveness, they are looking to empower their citizens by providing them meaningful data. The democratization of information plays a key role in leveling the playing field. In this context, efforts at the regulatory level need to be strengthened to increase affordable internet access and guarantee the participation of more people in the information economy.

Legal Frameworks to Address Cyber Risks

As African countries become more integrated into the digital economy, the role and importance of information and cybersecurity increase. Few governments in the region have implemented national cyber strategies and, hence, most are in a weak position to deal with the challenges posed by cyber threats. Only 20 percent of the African states have implemented a legal framework for cybersecurity, and only 11 countries have enacted substantial laws to fend off cybercrime (African Union Commission 2016). The Computer Misuse and Cybercrimes Act in Kenya aims to combat financial losses that primarily result from banking malware and card skimmers—which amounted to US$208 million in 2017 (Serianu 2017). In countries where laws and procedures are already in place, legislative cycles are always playing catch-up with the fast pace of innovation in the digital economy.

Cybercrime in Africa is becoming more sophisticated and creating significant financial losses. In 2017, the cost of cybercrime was estimated at US$3.5 billion, with US$649 million in losses for Nigeria. This situation is exacerbated by the lack of technology and skills to stave off those attacks. Over 90 percent of African businesses—and, particularly, SMEs—are operating below the cyber security poverty line. That is, these businesses do not have the skills and resources to protect, detect, and respond to cybersecurity threats. Many enterprises lack a holistic understanding of their cyber risks and an effective strategy to address them (Serianu 2017).

Building a resilient cyberspace is a challenging task. Security functions need to be reinforced to protect critical information and infrastructure—whether it is for digital platforms, financial services, transport, or energy.[34] The privacy of people's information across sectors similarly

34 In 2017, the Kenyan IT services and business consulting firm Serianu opened technical coaching centers in Kenya and Mauritius to train individuals in cybersecurity skills.

requires robust safeguards, particularly data protection and privacy laws. Additional areas, including taxation, trade, and intellectual property rights, are important for a digital economy and depend on the development maturity and needs of the country. Strengthened capacity of leaders, institutions, policies, and regulations will be essential in the context of a single digital market to protect Africa against the risk of digital exploitation, ensure that the digital economy is truly inclusive, and ensure that Africa is in position to curb possible risks.

BOX 3.1: How Far Is Africa from Reaching Universal Access to the Internet?

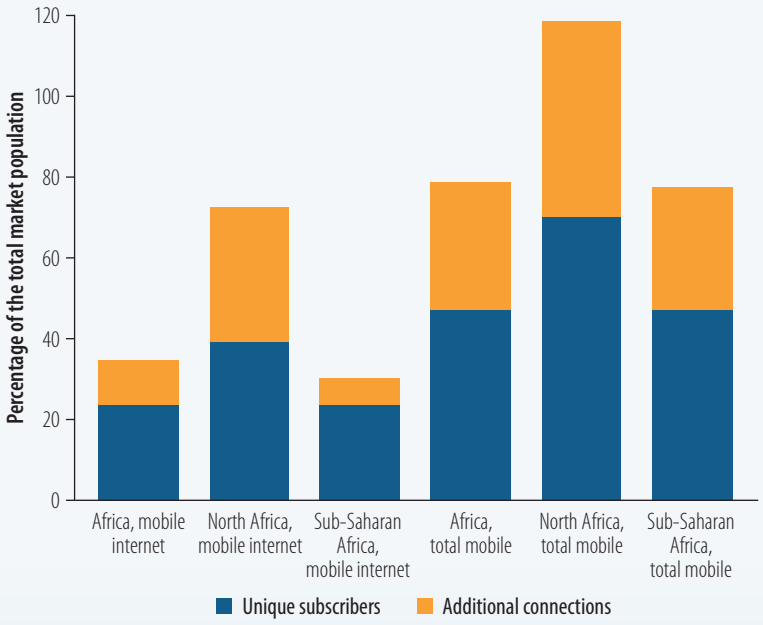
As argued throughout this section, the digital economy is a potential tool to boost productivity and reduce extreme poverty. Hence, the Digital Moonshot for Africa initiative is an ambitious and strategic policy to improve overall living conditions in the Africa region. Yet, African countries are still plagued with low access to the internet, partly due to concentrated market structures. Subsection 3.3 shows that, although the numbers are improving, Africa still has significantly fewer mobile phone subscribers and lower internet access than other regions. In 2018, about one in every five people lacked a cellular mobile subscription in Africa, while no more than one in four people had access to the internet (TeleGeography).

This section emphasizes the size of mobile phone and internet markets in Africa. If the Digital Moonshot is to be reached by 2030, a closer look should focus on indicators that better capture "universality." In this context, ensuring universality of access requires an examination of the trends in the number of "unique" subscriptions rather than the number of connections—as a unique subscriber can have multiple connections.

Figure B3.1.1 depicts the gaps in universality for the unique subscribers to mobile services ("total mobile") and unique users who have used internet services on their mobile device(s) (mobile internet) and their corresponding gaps to the number of connections (captured by "additional connections" or additional SIM cards). By the end of 2018, the number of connections in the Africa region represented 78.5 percent of the population, while the number of unique subscribers amounted to 47.1 percent of the population. These findings imply that to reach universality in the Africa region, more than half of the population in the continent still needs subscriptions to mobile services. The gap toward universal access in terms of unique subscribers in the

To reach universal access to mobile services in Africa, more than half of the population still needs to be served.

FIGURE B3.1.1: Universality Gap: Unique Subscribers and Number of Connections, 2018
(percentage of the total market population)



Source: GSMA 2017, 2018.

Africa region is similar to that in Sub-Saharan Africa. However, the narrative is different in North Africa. The number of total connections by the end of 2018 exceeded the total population (118.1 percent), while the number of total subscribers represented 70 percent of the total population. That is, the gap toward universality is lower in this region (about 30 percent).

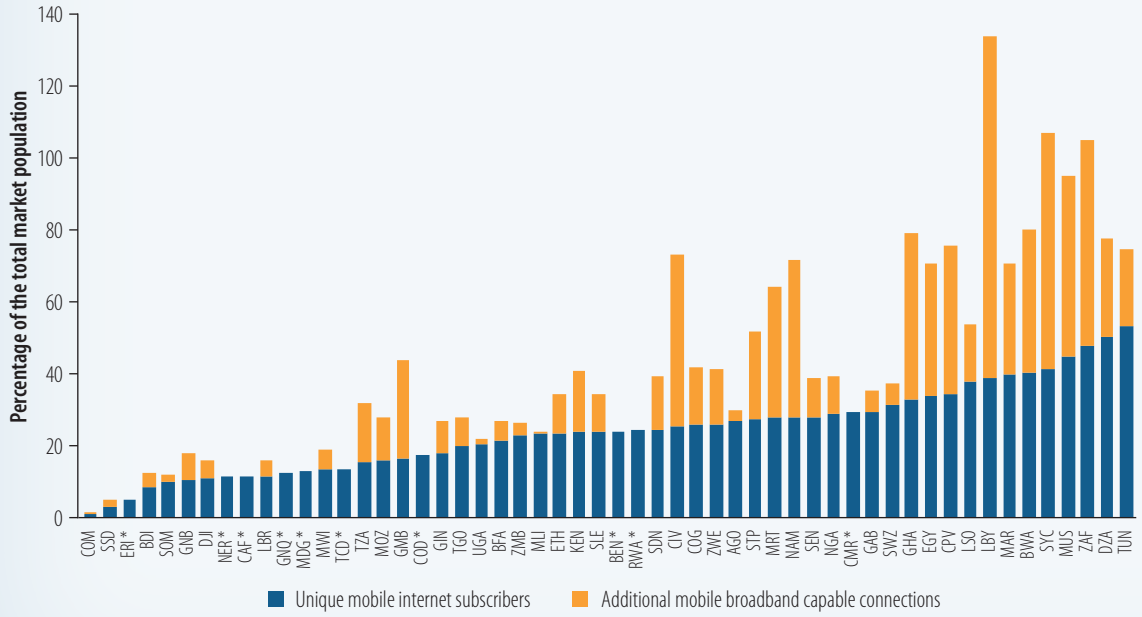
BOX 3.1
Continued

The gap in universal access to the internet is even wider for the African continent. The number of unique subscribers to mobile internet is about 24 percent of the population, whereas the number of mobile broadband capable connections is 34 percent. That is, reaching universality of internet access requires connectivity of about three-quarters of the population in the continent (a deficit that is similar to that of Sub-Saharan Africa). In the case of North Africa, 60 percent of the population needs to be connected to the internet to reach universal access.

Figure B3.1.2 depicts the number of unique mobile internet subscribers and the gap relative to the corresponding number of mobile broadband capable connections across African countries by the end of 2018. The countries are sorted by the number of unique subscribers as a percentage of the population. There are many underperforming countries in the African continent, where the share of unique mobile internet subscribers does not exceed 10 percent of the population, including South Sudan and Eritrea, among others. In contrast, in some countries in the region, the share of unique mobile internet subscribers is greater than or equal to 40 percent of the population, such as Morocco, Botswana, the Seychelles, Mauritius, South Africa, Algeria, and Tunisia. In sum, these figures reflect that North African countries have made greater strides than Sub-Saharan African countries toward closing the universal internet access gap.

FIGURE B3.1.2: Unique Mobile Internet Subscribers and Number of Mobile Broadband Capable Connections in Africa, by Country, 2018
(percentage of the total market population)

North African countries have made greater progress than Sub-Saharan African countries toward closing the universal internet access gap.



Source: GSMA 2017,2018.
Note: * indicates unavailability/irregularity of data on mobile broadband capable connections.

Annex 3A: The Digital Economy: Stylized Facts

This annex presents the median values of the digital economy for African countries along four dimensions: (a) digital infrastructure, (b) digital platforms, (c) digital entrepreneurship, and (d) digital financial services. The medians are computed not only for the African continent but also for country groups classified by their geographic location (say, North Africa, Sub-Saharan Africa, East and Southern Africa, and Central and West Africa) and their condition of fragility. They are compared to the medians of country groups classified by their income level excluding the Africa region, say, low-, lower-middle, upper-middle, and high-income countries.

Table 3A.1 reports the evolution of two different groups of digital infrastructure indicators, fixed broadband services, and mobile broadband and other broadband services. Table 3A.2 benchmarks the status of Africa in terms of digital platforms and digital entrepreneurship. Digital platforms include information on the percentage of people with ID, the readiness and friendliness of government-supported digital platforms, and the participation of the population in virtual networks, especially professional networks such as LinkedIn. Digital entrepreneurship is captured by indicators that assess the quality of entrepreneurship and the depth of the supporting entrepreneurial ecosystem. Finally, Table 3A.3 shows the penetration of digital financial services in Africa vis-à-vis other regions in the world. The indicators can be classified in three broad groups: (a) penetration of mobile money accounts in the adult population, (b) use of mobile money accounts for agricultural payments and domestic remittances, and (c) digital payments captured by the percentage of the adult population making/receiving digital payments, and the percentage of the adult population that uses the internet to make payments or purchase things online.

TABLE 3A.1: Digital Infrastructure in Sub-Saharan Africa, 2010–12 and 2015–17

		Fixed Broadband Services				Mobile Broadband Services and Mobile Services				
				Affordability Fixed Broadband Charge				Access		
		Quantity Fixed Broadband Subscriptions (per capita)	Quality Activation FB Services (days)	Connection Charge	Monthly Subscription	Quantity Mobile Broadband Subscriptions (per capita)	Quantity Cellular Subscriptions (per capita)	% of population covered by: A mobile network	At least 3G network	At least LTE/WiMax
Africa	2010-12	0.06	10.7	57.6	56.5	1.49	58.2	89.6	36.5	5.3
	2015-17	0.27	4.5	41.8	28.2	21.87	81.1	93.0	55.3	21.6
North Africa	2010-12	1.65	12.3	58.1	13.6	8.34	103.1	98.9	77.3	..
	2015-17	3.58	17.3	50.5	12.5	49.09	118.2	99.0	81.7	64.9
Sub-Saharan Africa	2010-12	0.06	9.0	56.1	59.5	1.48	52.2	86.3	35.0	5.3
	2015-17	0.20	3.8	38.0	29.9	21.33	80.4	92.9	52.0	21.5
East & Southern Africa	2010-12	0.06	11.0	57.6	71.0	1.49	47.0	90.0	42.5	5.3
	2015-17	0.27	3.5	35.8	27.8	24.38	71.8	93.0	66.1	21.0
West & Central Africa	2010-12	0.06	9.0	60.1	55.6	1.17	56.2	79.8	25.0	..
	2015-17	0.11	4.0	42.5	30.5	16.55	82.2	92.0	43.8	21.4
Africa, by FCV incidence										
FCV affected	2010-12	0.04	15.0	68.3	128.7	0.69	32.0	77.9	20.0	22.0
	2015-17	0.07	5.0	88.5	38.6	12.67	55.6	86.0	43.8	16.3
Non-FCV affected	2010-12	0.17	9.0	49.6	50.7	3.16	65.6	96.0	43.5	5.2
	2015-17	0.43	3.8	37.7	24.0	30.00	88.1	96.8	73.1	30.9
Benchmarks: Income groups excluding Africa										
Low-Income	2010-12	0.11	..	..	..	5.46	45.4	59.7	59.9	..
	2015-17	0.02	7.0	..	..	13.22	62.5	87.2	54.0	20.1
Lower-Middle Income	2010-12	0.93	3.0	25.4	21.5	3.89	87.6	98.5	50.8	8.4
	2015-17	2.83	5.0	14.7	11.1	34.62	104.8	98.3	80.3	39.3
Upper-Middle Income	2010-12	6.23	1.3	29.8	20.1	14.23	102.1	99.1	77.7	9.8
	2015-17	11.45	2.5	23.2	17.0	61.70	113.2	100.0	94.9	68.6
High-Income	2010-12	22.76	6.4	..	..	41.49	119.6	99.7	95.7	50.0
	2015-17	28.48	7.0	..	..	91.20	126.3	99.8	99.3	98.0

Sources: International Telecommunications Union; and TeleGeography.

TABLE 3A.2: Digital Platforms, 2017
(regional and group medians)

	Africa Region	North Africa	Sub-Saharan Africa	Central & West SSA	East & Southern SSA	FCV-Affected	Non-FCV Affected	World (excluding Africa)			
								Low-Income	Lower-Middle	Upper-Middle	High-Income
Has National ID Card (% age 15+)	76.2	92.8	70.7	68.1	82.7	59.3	83.9	71.4	90.3	97.8	94.9
e-Government Development Index (0-1)	0.33	0.46	0.31	0.28	0.37	0.26	0.40	0.30	0.53	0.66	0.83
Online Services Index	0.32	0.41	0.32	0.26	0.41	0.21	0.48	0.31	0.57	0.70	0.93
e-Participation Index	0.33	0.40	0.33	0.28	0.39	0.19	0.43	0.37	0.62	0.71	0.92
Use of virtual professional networks	5.2	5.7	5.1	5.1	5.0	4.4	5.3	4.8	5.4	5.6	6.1
Use of virtual social networks	31.5	63.1	28.5	30.0	27.8	10.8	43.5	14.4	57.2	133.3	325.8
Global Entrepreneurship Index	18.3	25.9	16.0	15.7	18.3	14.0	19.4	25.0	20.1	29.4	57.4
Attitudes Sub-Index	16.6	28.3	16.6	17.3	14.4	14.1	19.0	20.9	17.9	28.9	54.2
Abilities Sub-Index	18.0	23.5	16.0	15.3	18.3	15.3	19.3	25.7	22.8	29.1	60.9
Aspirations Sub-Index	16.6	36.6	15.4	13.7	17.8	13.7	18.1	28.5	21.2	28.8	62.2

Sources: Demirgüç-Kunt et al. 2018; United Nations 2018; GEDI 2018.

TABLE 3A.3: Digital Financial Services: Money Accounts and Digital Transactions, 2017
(regional and group medians)

	Africa Region	North Africa	Sub-Saharan Africa	Central & West SSA	East & Southern SSA	FCV-Affected	Non-FCV Affected	World (excluding Africa)			
								Low-Income	Lower-Middle	Upper-Middle	High-Income
(a) Mobile Money Accounts											
Total (% age 15+)	20.57	1.79	21.46	17.10	27.64	20.30	21.87	7.22	3.74	4.74	15.44
By Gender: Male (% age 15+)	23.87	1.67	24.61	21.63	29.10	22.83	24.61	8.41	4.69	5.89	16.95
By Gender: Female(% age 15+)	17.55	0.54	18.34	13.41	25.82	15.99	18.64	6.09	2.96	3.81	13.03
By Age: Young adults (% age 15-24)	21.96	1.77	24.71	18.18	27.52	20.58	25.04	6.01	5.82	5.33	6.90
By Age: Older adults (% age 25+)	19.50	1.37	19.92	17.31	27.06	19.47	19.92	7.90	3.09	4.54	16.45
By Income: Poorest 40%(% age 15+)	12.32	0.30	13.51	12.83	15.23	11.66	12.48	3.43	1.95	2.96	9.66
By Income: Richest 60%(% age 15+)	24.22	2.23	26.54	20.79	34.06	23.62	28.67	9.73	5.05	5.05	19.28
Rural (% age 15+)	19.09	0.75	20.47	15.62	25.51	19.05	19.14	5.72	3.38	3.96	6.83
(b) Use of Mobile Money Accounts in Agriculture and Remittances											
Received payments for agricultural products in the past year (% age 15+)											
Total (% age 15+)	25.64	5.87	26.31	25.82	29.34	26.70	25.45	23.33	13.74	6.19	4.97
Rural (% age 15+)	28.39	9.86	30.89	30.38	32.02	28.40	28.37	25.61	20.15	9.21	6.43

TABLE 3A.3: *Continued*

	Africa Region	North Africa	Sub-Saharan Africa	Central & West SSA	East & Southern SSA	FCV-Affected	Non-FCV Affected	World (excluding Africa)			
								Low-Income	Lower-Middle	Upper-Middle	High-Income
Received payments for agricultural products through a mobile phone											
Total (% age 15+)	2.70	0.10	2.73	2.15	3.13	1.71	3.05	1.31	0.17	0.25	..
Total (% payment recipients, age 15+)	9.74	0.91	10.17	9.43	15.58	5.78	13.72	6.34	0.89	2.37	..
Received domestic remittances: through a mobile phone											
Total (% age 15+)	14.61	0.22	15.43	14.43	17.26	13.41	14.79	2.27	1.34	1.39	1.17
Total (% recipients, age 15+)	52.83	1.61	55.95	52.80	61.59	46.23	52.87	10.82	7.19	7.46	7.90
Sent domestic remittances: through a mobile phone (% age 15+)											
Total (% age 15+)	13.09	0.60	14.12	12.27	15.97	10.49	14.34	2.63	1.98	1.96	1.44
Total (% senders, age 15+)	52.49	3.86	55.83	48.46	60.05	49.32	55.66	13.51	10.70	12.43	9.13
Digital Payments											
Made digital payments in the past year											
Total (% age 15+)	24.7	15.6	27.3	24.1	33.9	20.3	32.3	15.9	25.1	42.2	89.0
By Gender: Male (% age 15+)	30.9	20.4	33.8	29.6	38.9	23.7	36.5	18.6	27.4	43.2	91.4
By Gender: Female (% age 15+)	19.9	10.8	21.9	17.9	32.5	17.3	25.3	13.5	16.7	39.2	87.0
Rural (% age 15+)	22.5	9.9	25.7	19.3	31.9	16.9	29.6	13.5	21.6	36.5	88.4
Received digital payments in the past year											
Total (% age 15+)	20.0	18.0	22.8	17.7	28.9	15.7	26.0	14.8	20.1	41.2	69.4
By Gender: Male (% age 15+)	24.7	21.8	25.0	22.1	33.6	19.4	29.2	17.7	22.2	42.8	73.1
By Gender: Female (% age 15+)	16.0	14.0	16.6	11.3	24.5	10.6	22.5	12.8	17.2	36.7	69.8
Rural (% age 15+)	19.0	19.3	18.6	15.1	27.4	13.6	24.5	13.5	17.4	40.2	70.6
Used the internet to pay bills in the past year											
Total (% age 15+)	4.22	2.15	4.43	4.02	7.59	3.70	4.90	3.99	4.49	11.61	49.68
By Gender: Male (% age 15+)	6.08	2.95	6.30	5.01	9.65	4.94	6.99	4.97	6.24	12.60	54.22
By Gender: Female (% age 15+)	2.83	1.61	3.00	2.26	5.70	2.40	3.13	3.12	3.35	10.29	46.01
Rural (% age 15+)	3.22	0.91	3.33	2.35	6.74	2.11	4.25	3.62	3.79	8.40	47.03
Used the internet to buy something online in the past year(% age 15+)											
Total (% age 15+)	2.61	2.80	2.61	2.22	3.82	1.88	3.21	2.13	3.95	14.57	51.12
By Gender: Male (% age 15+)	3.47	3.94	3.47	2.85	5.34	2.76	4.14	2.08	4.80	16.29	54.55
By Gender: Female (% age 15+)	1.71	1.82	1.64	1.60	2.28	1.32	2.11	2.26	3.49	13.28	48.76
Rural (% age 15+)	1.66	1.58	1.73	1.45	3.32	1.46	2.30	1.67	3.08	12.42	51.65

Source: Demirgüç-Kunt et al. 2018.

Annex 3B: Impact of the Digital Economy on Growth and Poverty

This annex estimates the causal effect of the digital economy variables on growth for a pooled time-series and cross-section data set that includes 52 African countries. The estimation method used is the generalized method of moments (GMM-IV) system estimator for dynamic models of panel data developed by Arrellano and Bover (1995) and Blundell and Bond (1998). It is suited for panel data analysis, deals with dynamic regression specification, controls for unobserved time- and country-specific effects, and accounts for the likely endogeneity in the explanatory variables.

The econometric technique deals with unobserved time effects through the inclusion of period-specific intercepts. Dealing with unobserved country effects is not trivial, given that the model is dynamic and contains endogenous explanatory variables. The method therefore uses differencing and instrumentation to control for unobserved country effects and likely endogeneity and reverse causality. Specifically, it lifts the assumption of strong endogeneity of the explanatory variables by allowing the explanatory variables to be correlated with current and previous realizations of the error term. Parameter identification is achieved by assuming that future realizations of the error term do not affect current values of the explanatory variables, the error term is serially uncorrelated, and the changes in the explanatory variables are uncorrelated with the unobserved country-specific effect. This set of assumptions generates moment conditions that allow the estimation of the parameters of interest.[35]

The variable of interest is the digital economy, which is proxied by three indicators of the digital infrastructure: (a) fixed broadband subscriptions per 100 habitants, (b) growth of internet users as a ratio of the population, and (c) cell phone subscriptions per 100 people. The first two indicators capture the internet, and the last one is a variable that is highly correlated with mobile broadband. The selection of indicators for the digital economy meets two conditions: relevance and time-series availability. The emergence of this technology over the past two decades reduces the time coverage relative to other growth studies on the impact of infrastructure. Given the likely collinearity of the three indicators, we also construct two synthetic indicators of the digital economy using principal components analysis: the first indicator (PCA1) agglomerates all three variables (fixed broadband, internet users, and cellular subscriptions), whereas the second indicator (PCA2) captures information from the last two indicators (internet users and cellular subscriptions).

The growth regression estimation controls for a standard set of growth determinants that capture transitional convergence, stabilization, and structural policies (Loayza, Fajnzylber, and Calderón 2005). Transitional convergence is one of the main implications of the neoclassical growth model. This factor depends on the initial position of the economy, and states that, all things equal, poor countries would tend to grow faster than those in favorable conditions because of the decreasing marginal returns to factors of production. To account for this effect, we use the initial level of gross domestic product (GDP) per capita in the set of explanatory variables. The stabilization variable accounted for in this analysis is inflation. It proxies for the lack of price stability, as the average annual percentage change in consumer prices.

35 A more detailed discussion of the econometric methodology can be found in Calderón and Cantú (2019).

For the structural variables considered in this investigation, we first look at financial development. According to the literature, it is an important driver of growth at the country, industry, and firm levels. It is proxied by the ratio of private credit provided by financial institutions to GDP, and it is the second indicator in our set of structural factors. Financial depth is supposed to facilitate risk diversification, help identify profitable investment, and mobilize savings.[36] Next, we look at the distortions the government may impose on private sector industry, also known as the government burden. This variable uses the ratio of government consumption to GDP. A high government burden will affect taxes and thus the private sector. Another structural factor is the quality of governance in the country. The level of institutional discipline and its effectiveness reflect on growth. The variable is built on the principal component analysis of four measures from the International Country Risk Guide: prevalence of law and order, quality of bureaucracy, absence of corruption, and accountability of public officials. Finally, we look at human capital, which is proxied by education and usually measured by gross secondary school enrollment, as estimated by Barro and Lee (2013). This factor plays a direct role in the endogenous growth literature and compliments other factors, such as physical capital (see Bravo-Ortega and De Gregorio 2002).

Digital Economy and Economic Growth: Regression Analysis

This subsection discusses the estimation of the empirical relationship between the digital economy indicators and growth for an unbalanced panel data sample that includes 52 African countries.[37] The data are organized in nonoverlapping, five-year periods. Table 3B.1 reports the results from the GMM-IV system estimation. The first three columns explore the relationship between different proxies of the digital economy and growth. The other columns explore the impact on growth of the two synthetic indicators of digital infrastructure (PCA1 and PCA2) as well as their interaction with human capital (as proxied in the regression analysis by the enrollment rate in secondary schooling). The dependent variable is the average annual growth rate of GDP per capita.

The GMM-IV estimation results in all the columns report a negative and significant coefficient for the initial level of GDP per capita (in logs). These results provide evidence of conditional convergence in GDP per capita. Due to the likelihood of collinearity between fixed broadband subscriptions and cell phone subscriptions, the digital economy variables are inserted in the regression separately or jointly. Column [1] reports the baseline estimation including only the fixed broadband subscriptions (per 1,000 people). Fixed broadband penetration alone has a positive and causal relationship with growth per capita. Column [2] includes individually the growth of internet users and the number of cell phone subscriptions (per 1,000 people). Both measures of digital infrastructure included in this regression, cellular subscriptions and growth of internet users, also have a positive and significant impact on real GDP growth per capita. Column [3] includes all three indicators of digital infrastructure. The lack of statistical significance may signal the presence of multicollinearity.

To address the likely issue of multicollinearity, columns [4] and [5] include the synthetic indicators PCA1 and PCA2, respectively. Each one summarizes the information of the individual

36 Manzano and Rigobon (2001) find that the negative effect of natural resources disappears when the growth regression includes the initial ratio of foreign debt to GDP.

37 East Asia and the Pacific has 17 countries; Europe and Central Asia, 42; Latin America and the Caribbean, 24; the Middle East and North Africa, 18; North America, two; South Asia, six; and Sub-Saharan Africa, 44. From this sample, 52 observations are from the Africa region.

digital infrastructure indicators. Both synthetic indicators display a positive and significant coefficient. This result corroborates the evidence of a positive and causal relationship between the digital economy and economic growth. Finally, column [6] includes PCA1 and the interaction of the growth of PCA1 and human capital, and column [7] adds PCA2 and the growth of PCA1 and human capital. In both columns, digital infrastructure has a positive and significant effect on growth, and the returns of the digital infrastructure depend positively on the country's level of human capital. In sum, the findings show that developing the digital infrastructure of a country—an important foundation of the digital economy—would increase long-term growth, especially in countries with higher skills (as proxied by the rate of enrollment in secondary schooling).

Comparative Statics: Estimating the Potential Growth Benefits of the Digital Economy

A series of comparative statics exercises are conducted to compute the potential growth effects of the penetration of the digital economy in Africa (more specifically, the development of the digital infrastructure). The exercises compute the potential growth per capita effects of closing the digital infrastructure gap of the Africa region vis-à-vis two distinct benchmarks: the targets of the Moonshot Initiative and the top decile (90th percentile) of the world excluding Africa. In the context of this analysis, the back-of-the-envelope calculation implies closing the gap in the synthetic indicator of the digital economy, PCA1, relative to that of the benchmarks. PCA1 is the first principal component of three indicators: fixed broadband subscriptions per 100 people (FB), the percentage of the population using the internet (IU), and mobile-cellular subscriptions per 100 people (CP). The weights for this principal component are: PCA1 = 0.6074 FB + 0.5682 IU + 0.5551 CP, and it explains about 84 percent of the variance of these indicators.

The comparative statics exercises computed in this subsection are illustrative rather than conclusive. The calculations use many simplifying assumptions—including that changes in the digital economy indicators do not lead to changes in other determinants of growth. To estimate the potential growth benefits of narrowing the gaps in the digital economy (as defined in PCA1), we use the formula:

$$Growth\ benefit = \beta_{from\ regression}\ (z_{benchmark} - z_{Africa}).$$

TABLE 3B.1: Digital Economy and Economic Growth: Regression Analysis

Dependent variable: Growth of real GDP per capita (average annual percentage rate)
Estimation method: GMM-IV system estimator (Arellano and Bover 1995; Blundell and Bond 1998)
Sample: 1980–2017 (nonoverlapping, five-year period observations)

Variable	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Initial GDP per capita	-0.742***	-0.661***	-0.551***	-0.834***	-1.004***	-0.812***	-0.778***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lag financial depth	-0.184*	-0.239**	-0.293**	-0.318***	-0.113**	-0.460*	-0.512**
	(0.044)	(0.002)	(0.005)	(0.000)	(0.009)	(0.014)	(0.004)
Lag government burden	0.0368	-0.0837**	-0.0323	0.0256	-0.0054	0.0022	-0.007
	(0.506)	(0.003)	(0.585)	(0.498)	(0.812)	(0.975)	(0.934)
Inflation	0.0121	-0.0659	-0.0071	-0.005	0.201***	-0.0046	0.0162
	(0.881)	(0.103)	(0.922)	(0.952)	(0.000)	(0.962)	(0.885)
Secondary schooling	1.676***	0.692***	0.977**	1.317***	0.720***	0.612	1.111
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.494)	(0.172)
ICRG index	0.0518	0.152**	0.101	0.0469	0.0368	0.0303	0.0501
	(0.268)	(0.002)	(0.220)	(0.390)	(0.183)	(0.791)	(0.650)
Fixed broadband subscriptions (a)	0.119***		-0.0801				
	(0.000)		(0.225)				
Internet users' growth (b)		0.0190***	0.0154				
		(0.000)	(0.136)				
Cell phone subscriptions (c)		0.202***	0.259				
		(0.000)	(0.112)				
PCA1 of (a), (b), and (c)				0.416***		0.773***	
				(0.000)		(0.000)	
PCA2 of (b) and (c)					1.265***		0.846***
					(0.000)		(0.001)
PCA1 growth * HK						0.0788***	0.0943***
						(0.000)	(0.000)
Observations	119	142	119	119	160	82	82
AR (1)	0.001	0.007	0.004	0.002	0.010	0.187	0.169
AR (2)	0.378	0.405	0.375	0.331	0.503	.	.
Hansen	0.291	0.169	0.230	0.335	0.534	0.420	0.342

Note: The regressions include a constant and period-specific effects. p-values are in parentheses. GDP = gross domestic product; HK = human capital; ICRG = International Country Risk Guide; PCA1 = synthetic indicator, agglomerates fixed broadband, internet users, and cellular subscriptions; PCA2 = synthetic indicator, agglomerates internet users and cellular subscriptions.

** p < 0.05, ** p < 0.01, *** p < 0.001.*

Appendix

TABLE A.1: Country Classification by Resource Abundance in Sub-Saharan Africa

Resource-rich countries		Non-resource-rich countries		
Oil	Metals & minerals			
Angola	Botswana	Benin	Ghana	Senegal
Chad	Congo, Dem. Rep.	Burkina Faso	Guinea-Bissau	Seychelles
Congo, Rep.	Guinea	Burundi	Kenya	Somalia
Equatorial Guinea	Liberia	Cabo Verde	Lesotho	Sudan
Gabon	Mauritania	Cameroon	Madagascar	Eswatini
Nigeria	Namibia	Central African Republic	Malawi	Tanzania
South Sudan	Niger	Comoros	Mali	Togo
	South Africa	Côte d'Ivoire	Mauritius	Uganda
	Sierra Leone	Eritrea	Mozambique	Zimbabwe
	Zambia	Ethiopia	Rwanda	
		Gambia, The	São Tomé and Príncipe	

Note: Resource-rich countries are those with rents from natural resources (excluding forests) that exceed 10 percent of gross domestic product.

TABLE A.2: Country Classification by Income in Sub-Saharan Africa

Low-income countries		Lower-middle-income countries	Upper-middle-income countries	Higher-income countries
Benin	Malawi	Angola	Botswana	Seychelles
Burkina Faso	Mali	Cabo Verde	Equatorial Guinea	
Burundi	Mozambique	Cameroon	Gabon	
Central African Republic	Niger	Congo, Rep.	Mauritius	
Chad	Rwanda	Côte d'Ivoire	Namibia	
Comoros	Senegal	Ghana	South Africa	
Congo, Dem. Rep.	Sierra Leone	Kenya		
Eritrea	Somalia	Lesotho		
Ethiopia	South Sudan	Mauritania		
Gambia, The	Tanzania	Nigeria		
Guinea	Togo	São Tomé and Príncipe		
Guinea-Bissau	Uganda	Sudan		
Liberia	Zimbabwe	Eswatini		
Madagascar		Zambia		

Note: The list is from the World Bank list of economies, June 2018 (FY19).

TABLE A.3: Sample of Countries

Country code	Country name	Natural resource abundance	FCV condition
AGO	Angola	Oil abundant	No
BDI	Burundi	Non abundant	Yes
BEN	Benin	Non abundant	No
BFA	Burkina Faso	Non abundant	No
BWA	Botswana	Mineral abundant	No
CAF	Central African Republic	Non abundant	Yes
CIV	Côte d'Ivoire	Oil abundant	Yes
CMR	Cameroon	Oil abundant	No
COD	Congo, Dem. Rep.	Mineral abundant	Yes
COG	Congo, Rep.	Oil abundant	Yes
COM	Comoros	Non abundant	Yes
CPV	Cabo Verde	Non abundant	No
ERI	Eritrea	Non abundant	Yes
ETH	Ethiopia	Non abundant	No
GAB	Gabon	Oil abundant	No
GHA	Ghana	Mineral abundant	No
GIN	Guinea	Mineral abundant	No
GMB	Gambia, The	Non abundant	Yes
GNB	Guinea-Bissau	Non abundant	Yes
GNQ	Equatorial Guinea	Oil abundant	No
KEN	Kenya	Non abundant	No
LBR	Liberia	Mineral abundant	Yes
LSO	Lesotho	Non abundant	No
MDG	Madagascar	Non abundant	No
MLI	Mali	Mineral abundant	Yes
MOZ	Mozambique	Mineral abundant	Yes
MRT	Mauritania	Mineral abundant	No
MUS	Mauritius	Non abundant	No
MWI	Malawi	Non abundant	No
NAM	Namibia	Mineral abundant	No
NER	Niger	Non abundant	No
NGA	Nigeria	Oil abundant	No
RWA	Rwanda	Non abundant	No
SDN	Sudan	Non abundant	Yes
SEN	Senegal	Non abundant	No
SLE	Sierra Leone	Mineral abundant	Yes
SOM	Somalia	Non abundant	Yes
SSD	South Sudan	Oil abundant	Yes
STP	Sao Tome and Principe	Non abundant	No
SWZ	Eswatini	Non abundant	No
SYC	Seychelles	Non abundant	No
TCD	Chad	Oil abundant	Yes
TGO	Togo	Non abundant	Yes
TZA	Tanzania	Mineral abundant	No
UGA	Uganda	Non abundant	No
ZAF	South Africa	Non abundant	No
ZMB	Zambia	Mineral abundant	No
ZWE	Zimbabwe	Non abundant	Yes

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