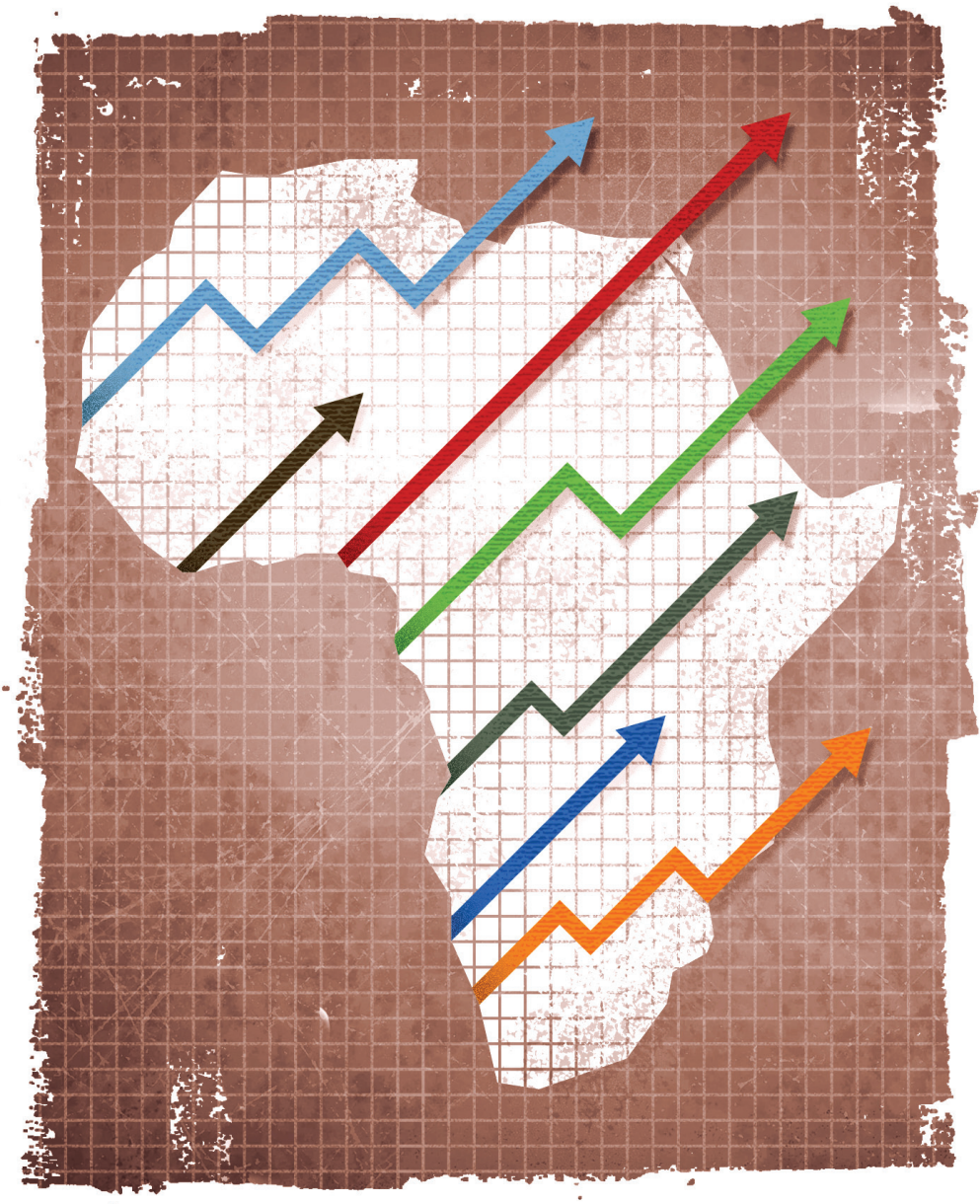


# Africa's Pulse

*An analysis of issues shaping Africa's economic future*



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This document was produced by the Office of the Chief Economist for the Africa region

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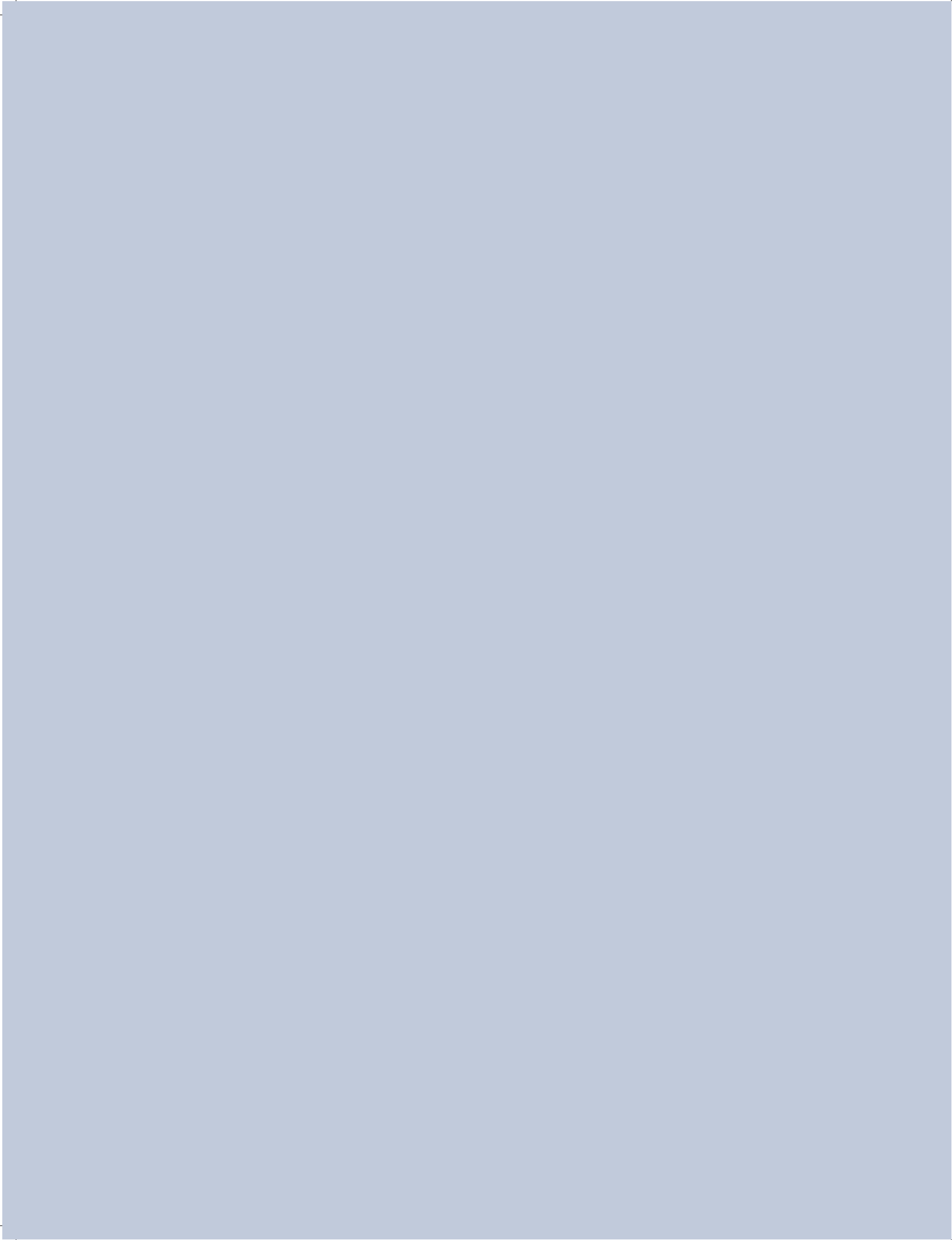
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## Summary

- ▶ After slowing to 3 percent in 2015, economic growth in Sub-Saharan Africa is projected to fall to 1.6 percent in 2016, the lowest level in over two decades. Low commodity prices and tight financial conditions, exacerbated by domestic headwinds from policy uncertainty, droughts, and political and security concerns, continued to weigh on activity across the region. The overall slowdown in Sub-Saharan Africa's growth reflects economic deterioration in the region's largest economies. Economic performance was notably weak across oil exporters. At the same time, in about a quarter of the countries, economic growth is showing signs of resilience.
- ▶ Indeed, the pattern of growth across countries is far from homogeneous, suggesting that Sub-Saharan Africa is growing at diverging speeds. While many countries are registering a sharp slippage in economic growth, some countries—Ethiopia, Rwanda, and Tanzania—are continuing to post annual average growth rates of over 6 percent, exceeding the top tercile of the regional distribution; and several other countries—including Côte d'Ivoire and Senegal—have moved into the top tercile of performers. The “established” and “improved” performers tend to have stronger quality of monetary and fiscal policies, better business regulatory environment, more diverse structure of exports, and more effective public institutions.
- ▶ Commodity prices are expected to remain largely below their 2011–14 peaks, despite a recent pickup, reflecting the weak global recovery. Faced with growing financing needs, commodity exporters have begun to adjust, but the adjustment efforts remain uneven and insufficient. Against this backdrop, a modest rebound is foreseen in Sub-Saharan Africa in 2017. Economic growth is forecast to rise to 2.9 percent, before strengthening somewhat to 3.6 percent in 2018. Again, the regional average hides considerable heterogeneity among countries. The region's largest economies and other commodity exporters are expected to see a modest increase in output growth as commodity prices continue to stabilize and inflationary pressures decline, lifting growth of private consumption and investment. Elsewhere, activity should continue to expand at a robust pace, supported in part by infrastructure investments.
- ▶ Risks to the outlook remain tilted to the downside. On the external front, old risks remain salient and include slower improvements in commodity prices and tighter global financial conditions. On the domestic front, policy makers may not enact the reforms needed to rebuild policy buffers and achieve macroeconomic stability. Uncertainties around upcoming elections, referenda, and policy direction in a number of countries represent risks as well. In some countries, security threats pose an additional source of risk.

- ▶ Adjustments to macroeconomic policy are needed in many countries to address fiscal vulnerabilities, improve domestic resource mobilization, and build adequate buffers to withstand periods of global economic turbulence and tighter external finance conditions. In tandem, as countries look to bolster medium-term growth prospects, accelerating the pace of structural reforms will remain key.
- ▶ Increasing agricultural productivity is central to transforming Sub-Saharan African economies and promoting sustained and inclusive growth. However, agriculture output growth in the region has largely been a result of expanding the area under cultivation rather than productivity gains: the contribution of area expansion accounted for more than three times as much of the growth in agriculture in the region relative to other developing countries.
- ▶ Yet, conditions are in place for boosting the productivity of African agriculture and for sustainable agricultural growth. African regional markets are growing rapidly—driven by population, urbanization, and income growth—providing demand incentives and import substitution potential. On the supply side, the prospects are promising as well, thanks to untapped yield potential and a supportive political environment.
- ▶ Unleashing productivity improvements requires public investments in rural public goods. Although investments to strengthen markets, develop and disseminate improved technologies, promote input use, and build an agricultural information base have increased, they remain well under targets and needs. Addressing the quality of public spending and the efficiency of resource use is even more critical than addressing the level of spending. Sub-Saharan African countries grossly underfund high-return investments, and rebalancing the composition of public agricultural spending could reap massive payoffs. Most importantly, experience teaches us that investments need to tackle constraints on different fronts. For reforms to be sustainable, they need to be anchored in managing political pressures and use external processes as commitment devices.



## Section 1: Recent Developments and Trends

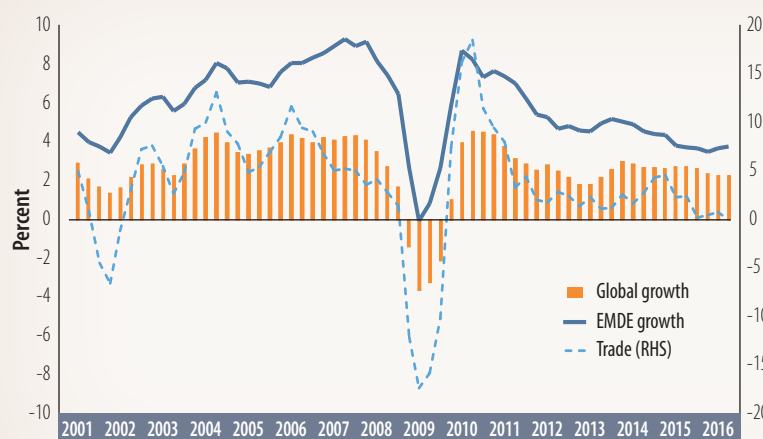
- ▶ Against a backdrop of stalling global trade, weak productivity performance, and rising policy uncertainty, global growth is expected to remain lackluster, falling to a projected 2.3 percent in 2016 from 2.6 percent in 2015. Growth in advanced economies is expected to slow to 1.5 percent, and that across emerging market and developing economies (EMDEs) is projected to stay flat at 3.5 percent, as activity remains depressed among commodity-exporting EMDEs.
- ▶ Economic growth in Sub-Saharan Africa is projected to decelerate to 1.6 percent in 2016, pulled down by unfavorable external conditions and domestic headwinds, and the outlook for 2017 and beyond is only slightly favorable. Countries are growing at diverging speeds, with the region's largest economies and oil exporters experiencing notably weak performance, and about a quarter of countries growing at a robust pace. The challenge for countries across the region is to adjust their monetary and fiscal policies so as to address mounting macroeconomic vulnerabilities and rebuild policy buffers. Yet, this adjustment has been uneven and insufficient so far.

### THE GLOBAL ECONOMY

The global economy remains fragile. World growth in 2016 looks set to be softer than anticipated, reflecting in large part further evidence of weak underlying momentum in major advanced economies (figure 1.1). In particular, growth prospects in the Euro Area, the United Kingdom, and the United States, major destinations for Sub-Saharan Africa's exports, have deteriorated since June. In addition, commodity-exporting emerging market and developing economies (EMDEs) continue to struggle to adjust to low commodity prices and domestic headwinds. Growth in these economies is likely to be near zero again this year. In contrast, commodity importers are generally proving to be resilient. In particular, growth in India remained robust, with consumption bolstered by low commodity prices and sentiment lifted by the government's efforts to implement its reform agenda. In China, growth continues to slow gradually toward more sustainable levels, as private investment decelerates and rebalancing toward more domestically-oriented sectors continues.

Repeated downgrades of global growth forecasts suggest that the headwinds facing advanced economies and EMDEs have a significant structural component. Potential output growth estimates have been consistently reduced since the global financial crisis.

FIGURE 1.1: Growth of Global GDP and Trade



Source: CPB Netherlands Bureau for Economic Policy Analysis (CPB); World Bank.  
Note: Global trade is world import volumes adjusted seasonally.

Global growth remains fragile. Commodity-exporting emerging market and developing economies (EMDEs) continue to struggle. In contrast, commodity importers are generally showing resilience.

Beyond demographic pressures, productivity growth has slowed in the post-crisis period, most noticeably in advanced economies, but also among large emerging markets. Failure to reverse this trend could have far-reaching implications for the outlook for the global economy. Productivity is the main driver of growth over the medium term, and is a key factor affecting expected returns and current investment decisions.

Global trade has remained stagnant. Weak aggregate demand in advanced economies, the transition to slower and more domestically-oriented growth in China, and contraction in major commodity exporters continued to weigh on global trade in the first half of the year. These factors compounded more structural forces such as a slower pace of trade liberalization and global value chain integration. Global goods trade stagnated throughout the first half of 2016, its weakest pace since the Euro Area crisis in 2012. Goods imports from major advanced economies as well as EMDEs were subdued, especially from commodity-exporting regions such as Africa, Latin America, and the Middle East. Available quarterly national accounts data suggest that goods and services trade continued to grow in the first half of the year, suggesting that services trade showed greater resilience.

Capital flows declined noticeably in 2015, driven by concerns about slowing activity in large emerging economies, continued declines in commodity prices, a significant appreciation of the U.S. dollar, and fragile liquidity conditions. Capital flows, especially portfolio investment flows, have stabilized in recent months, as persistently low long-term interest rates in major advanced economies, as well as a bottoming out in commodity prices helped drive investors back into emerging market assets. However, a sustained recovery in capital flows might prove elusive in the absence of improving economic fundamentals. The low commodity price environment has negatively impacted the creditworthiness of commodity-exporting EMDEs, and reduced the attractiveness of investment in mining and exploration that supported foreign direct investment flows in the past. Crude oil prices are projected to average \$43/bbl in 2016, which is close to prevailing levels, but down 15 percent from 2015. The oil market is gradually rebalancing, which is expected to drive prices to an estimated \$53/bbl average in 2017.

Orderly adjustments to the unexpected Brexit vote in June, and tentative signs of stabilization among systemically large commodity exporters (Brazil and the Russian Federation) have somewhat reduced tail risks in the short term. However, the global economy is fragile and facing pronounced downside risks. Short-term risks include a sharper-than-expected slowdown in China; monetary policy tightening by the U.S. Federal Reserve that surprises markets; uncertainty around upcoming elections, referenda, and policy direction in several countries; as well as security challenges. Borrowing costs remained low during the summer, but financial market conditions are fragile and subject to sudden bouts of volatility, especially given the perceived erosion of the monetary policy space that would be available to counteract further negative shocks. Emerging markets with preexisting vulnerabilities as a result of external imbalances, large financing needs, and unsustainable debt dynamics would likely be the most affected by financial market disruptions. Unstable security conditions in the Middle East continue to present the risk of a renewed wave of refugees, further protectionist tendencies, and policy uncertainty. Medium-term risks include those arising from mounting populist sentiment and slowing potential growth, including due to declining productivity growth and aging populations. Unless these challenges are addressed by robust policy actions, a broad-based slowdown in productivity growth amid rising

demographic pressures could further hamper global growth potential. The materialization of some of these risks could set back efforts to reduce poverty.

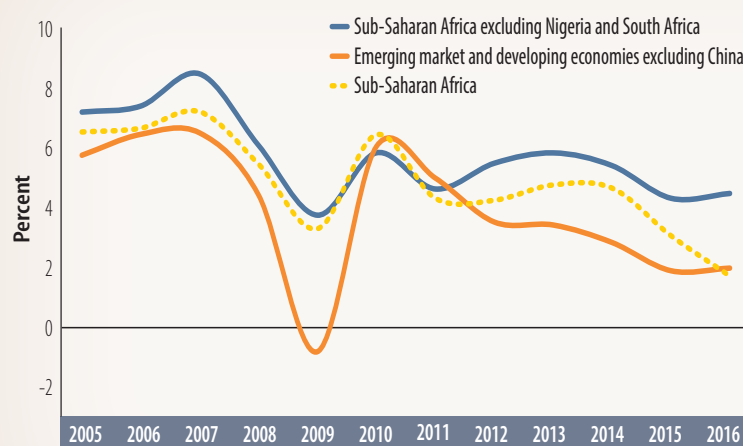
The latest economic indicators are, on balance, consistent with a slowdown in global activity in 2016 and a modest pickup in 2017. Against a backdrop of stalling global trade, weak productivity, and rising policy uncertainty, global growth is projected to fall to 2.3 percent in 2016 from 2.6 percent in 2015. Prospects across most advanced economies have continued to deteriorate, with growth expected to slow to 1.5 percent from 2.1 percent in 2015. Growth across emerging market and developing economies (EMDEs) is expected to stay flat in 2016, at 3.5 percent, as activity remains depressed among commodity-exporting EMDEs. For 2017, global growth is projected to reach 2.7 percent, reflecting mainly a pickup of growth in EMDEs. Growth in EMDEs is forecast to rise to 4.4 percent as a gradual recovery in commodity prices helps boost activity in commodity-exporting EMDEs. Growth in advanced economies is projected to rise slightly to 1.7 percent in 2017, reflecting a modest strengthening of activity in the United States. Global activity is expected to continue to expand at a moderate pace of 2.9 percent in 2018, as growth in advanced economies remains muted.

## SUB-SAHARAN AFRICA

### *Recent developments in Sub-Saharan Africa*

After falling to 3 percent in 2015, real gross domestic product (GDP) growth in Sub-Saharan Africa is set to slow further in 2016 (figure 1.2). Shocks from collapsed commodity prices and tighter financial conditions, exacerbated by domestic pressures arising from policy uncertainties, adverse weather conditions, and political and security concerns, have continued to weigh on activity in the region. But the economic performance of countries in the region is far from homogeneous. While many countries have registered a sharp slippage in economic growth, a handful of countries have continued to post annual average growth rates that exceed the top tercile of the regional distribution in the pre-financial crisis period and more recently; and several other countries have moved into the top tercile of performers. Section 2 of the report assesses this divergent growth pattern in the region and examines whether the more resilient performers --“established” and “improved”--tend to have stronger quality monetary and fiscal policies, better business regulatory environment, more diverse structure of exports, and more effective public institutions.

**FIGURE 1.2: Trends in GDP Growth**



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

Challenging macroeconomic conditions in Nigeria and South Africa in the first half of the year are underlying weak aggregate regional performance.

Underlying the weak aggregate regional performance is deteriorating economic performance in Sub-Saharan Africa's largest economies: Nigeria and South Africa—which together account for 50 percent of the region's output. Both countries faced challenging macroeconomic conditions in the first half of the year. In Nigeria, the region's largest oil exporter, GDP contracted by 2.1 percent (year-over-year, y/y) in the second quarter, following a 0.4 percent contraction in the first quarter. Low oil revenues, disruptions to oil production, delayed implementation of the 2016 budget, and a fall in manufacturing combined to push the economy into recession. South Africa's GDP contracted by 0.1 percent (y/y) in the first quarter, weighed down by a deterioration in the mining sector and the effect of drought on agricultural production. Owing to an increase in manufacturing output and sustained growth in commerce and finance, which more than offset weaker retail sales, GDP growth rebounded to 0.6 percent (y/y) in the second quarter.

More generally, oil exporters (Angola, Chad, Gabon, Equatorial Guinea, and South Sudan) have been severely affected by the decline in commodity prices, reflecting the limited diversification of their economies. In addition to the pullback in economic activity in Nigeria, Chad, Equatorial Guinea and South Sudan remained in deep recession in 2016. Although other commodity exporters are struggling as well, they have fared relatively better than the region's oil exporters. While remaining positive, growth in Mozambique has decelerated significantly in the first half of the year. The discovery of previously undisclosed information on external debt guarantees of the government led to a significant deterioration in investor sentiment toward the economy. GDP rebounded in Botswana and Namibia, following a contraction in the fourth quarter of 2015, as the decline in mining production moderated. In many commodity-importing countries, activity has been resilient. In Rwanda, economic activity was strong in the first quarter, supported by growth in fixed investment, although it eased in the second quarter. Kenya and Mauritius also experienced sustained rates of GDP growth in the same period. Some commodity importers, such as Uganda, had a slow start to the year, with GDP growth decelerating in the first quarter due to weaker agricultural output as El Niño-related drought conditions resulted in a poor harvest.

Growth remained under pressure in commodity-exporting countries in the third quarter of the year. In Angola, production has slowed as the national oil company continued to restructure its operations and revise its investment plans. In Nigeria, the composite Purchasing Managers' Index (PMI) fell to a record low 46.3 in August, remaining below the 50-mark—which denotes contraction—for the sixth consecutive month (figure 1.3). The low PMI reading signaled that the economic contraction that Nigeria experienced in the first half of the year may continue. Following a brief recovery in July, oil production fell sharply in August, owing in part to security problems in the oil-producing region. Foreign exchange shortages persist across the country as the adjustment toward a more flexible regime continues. Although the wedge between the official and parallel market rates has declined, it is still large as some administrative controls have remained in place. The foreign exchange shortages, coupled with delays in budgetary execution and intermittent electricity outages, continue to hamper activity in the country's non-oil sector. In South Africa, manufacturing production increased by just 0.4 percent (y/y) in July, compared with 4.7 percent in June, while mining output decreased by 5.4 percent (y/y) following a 3.0 percent contraction in June. The PMI dropped by 6.2 points to 46.3 in August, driven by

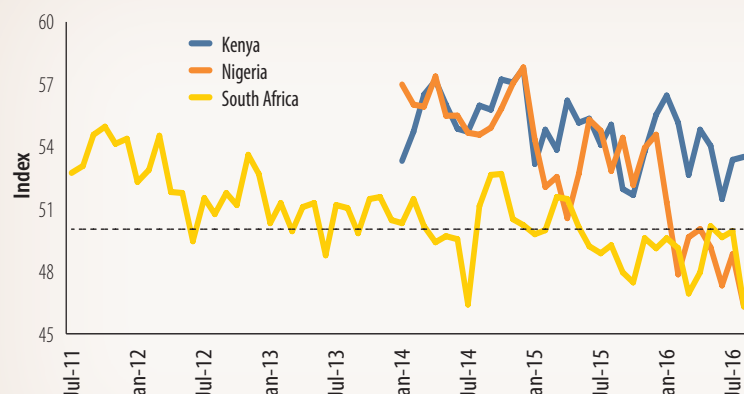
a steep decline in new sales orders and as business activity continued to fall. Despite some improvements, business confidence has stayed low. Meanwhile, Kenya's PMI edged higher to 53.5 in August from 53.3 in July, indicating that private sector growth continues at a steady pace.

Despite a strengthening trend, global commodity prices remain low. Improvements in commodity prices moderated following a solid rebound in the second quarter. After rising 37 percent above the first quarter average to an average of \$47.70 a barrel in June, oil prices eased substantially in July on recovery of disrupted oil supply. Against this backdrop and the expected reduction in inventories in the second half of the year, the World Bank slightly raised its oil price forecast for 2016, from \$41 per barrel in the April assessment to \$43 per barrel, a 15 percent decline from 2015 levels. Meanwhile, non-energy commodity prices rose 7 percent in the second quarter, led by agriculture. Compared with 2015, they are expected to fall further in 2016, but less than initially forecast. Agricultural prices are expected to be marginally lower in 2016. Metal prices are projected to decline 11 percent in 2016, following last year's 21 percent fall due to weak demand and new capacity coming online.

### Mounting vulnerabilities

While commodity prices have begun to recover, the improvements are insufficient to allow commodity exporters to begin to rebuild substantially their eroded policy buffers. With internal and external imbalances remaining large, there continues to be pressure on currencies, reserve positions, and inflation.

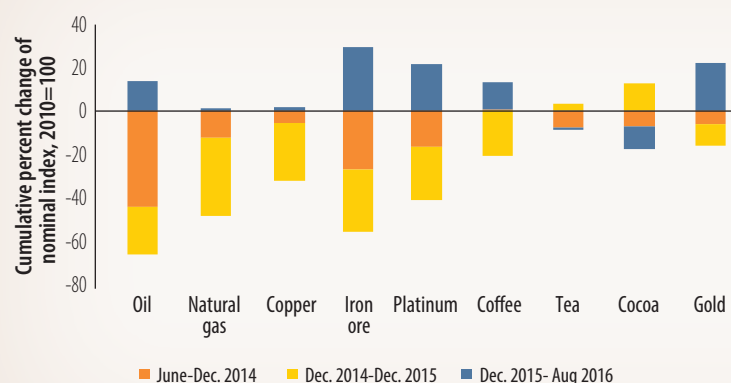
**FIGURE 1.3: Regional PMI**



Source: Haver Analytics.  
Note: PMI = Purchasing Managers' Index.

In Nigeria, the composite Purchasing Managers' Index (PMI) fell to a record low 46.3 in August. This signaled that the economic contraction that Nigeria experienced in the first half of the year may continue.

**FIGURE 1.4: Commodity Prices**

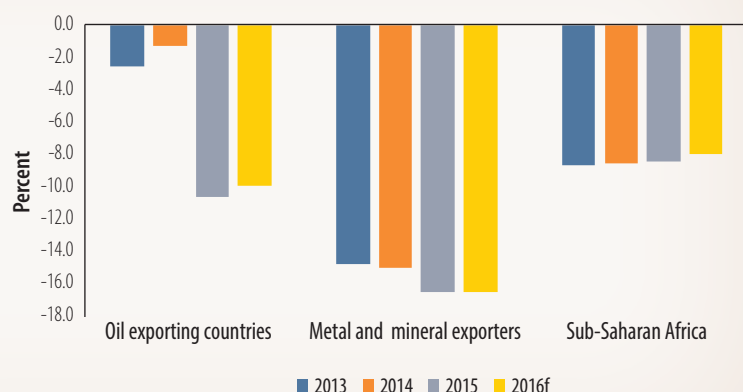


Source: World Bank.

Despite a strengthening trend, global commodity prices remain low.

Current account deficits remain elevated across country groups.

**FIGURE 1.5: Current Account Balance in Sub-Saharan Africa**  
(% GDP, median)



Source: World Bank staff estimates.

Current account deficits are expected to stabilize across the region in 2016, with the median projected at 8.0 percent of GDP, compared with 8.5 percent of GDP in 2015 (figure 1.5). In a number of oil-exporting countries, including Chad, Equatorial Guinea and Nigeria, current account deficits have narrowed, despite lower exports, but remain elevated. The economic slowdown in these countries led to a significant fall in imports that more than

offset the decline in oil exports. However, Angola saw a sharp contraction in export earnings that is expected to widen its current account deficit to over 11 percent of GDP in 2016 from 8.5 percent of GDP in 2015. Other oil exporters such as Cameroon and Gabon are also facing a deterioration of their current account deficits as production declines compound the impact of oil prices. Among non-oil commodity exporters, Mozambique is expected to see its current account deficit widen slightly, despite a significant contraction in imports. In South Africa, an upswing in export growth in the second quarter, helped in part by a weak rand, pushed the trade balance into surplus from a deficit in the first quarter. However, outflows, including foreign direct investment (FDI) related dividend payments, and weak factor income from operations of South African companies kept the current account deficit at more than 4 percent of GDP in the first half of the year. Current account deficits are also expected to remain elevated in most commodity importers in 2016, as the growth of imports of capital goods stays strong to meet the demands of infrastructure investments. This is the case in Rwanda, where the current account deficit is projected to edge up above 2015 levels of 13.6 percent of GDP, and in Togo, where the current account deficit is expected to ease in 2016 but remain elevated at around 10 percent of GDP.

At the same time, capital inflows in the region have slowed, indicating that external financing has become more challenging. In Nigeria, sharp declines in portfolio investment and FDI pulled capital inflows down by 55 percent in the first quarter of the year, and outflows more than doubled. FDI flows into Mozambique slowed on weakening investor sentiment, putting pressure on the country's balance of payments.

Eurobond issuance in the region has also dropped sharply (figure 1.6). So far this year, only Ghana and South Africa have tapped the international bond market. Investors' demand for higher yields has forced other countries to postpone plans to issue Eurobonds. Yet, in contrast to developments observed at the beginning of 2016, global financial markets experienced a period of relative tranquility between early March and early June, following improvements in the global economy. Reflecting these developments, sovereign bond spreads in the region fell from their February-March high (figure 1.7). Nevertheless,

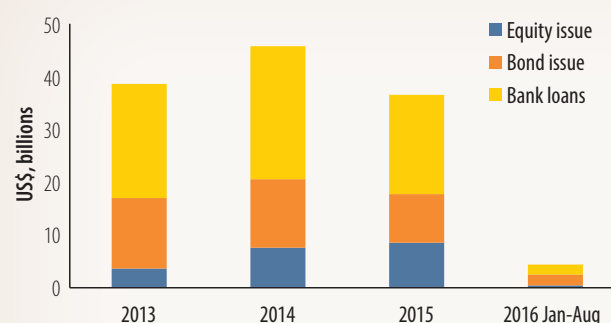
compared with other emerging markets, spreads in the region remain elevated. Rising debt burdens, difficult economic conditions, and rising risks were reflected in a spate of sovereign credit rating downgrades by the big three rating agencies—Moody's, S&P, and Fitch. In the first six months of this year alone, Angola, Gabon, Lesotho, Mozambique, the Republic of Congo, and Zambia saw downgrades. The pace of downgrades has accelerated over the past year, keeping the relative cost of borrowing high for these countries.

In the immediate aftermath of the United Kingdom's vote to leave the European Union (Brexit), equity prices fell abruptly in South Africa, but have since recovered. Box 1.1 shows that the initial impact of the Brexit turned out to be short-lived, with the impact peaking in the first two post-Brexit days of trading. With investors perceiving the Brexit Surprise to be as much a real shock as a financial one, the transmission of the real shock was

via the trade channel—affecting countries with stronger trade links with the European Union and, to a lesser extent, with the United Kingdom. Overall, the effect of the Brexit was generally milder on African economies than on other regions, because of the Africa region's relatively weaker trade links with the European Union and the United Kingdom, as well as the region's relatively lower financial integration with the rest of the world.

The large current account deficits put pressure on currencies. Amid tight financing conditions, increased external strains were met in part with reserve drawdowns to support currencies, especially among oil-exporting countries. The cumulative decline in international reserves in these countries was more than 30 percent between end-June 2014 and March 2016 (figure 1.8). Over this period, reserves decreased by around 24 percent in Angola and 26 percent in Nigeria. Reserves also declined in other commodity exporters, including by over 35 percent in Mozambique and the Democratic Republic of Congo as export receipts and FDI flows fell sharply. Among commodity importers, the decline in reserves was most pronounced in Tanzania (15 percent) and Uganda (over 19 percent). Weaker reserve positions mean less room for monetary authorities to respond to foreign currency pressures.

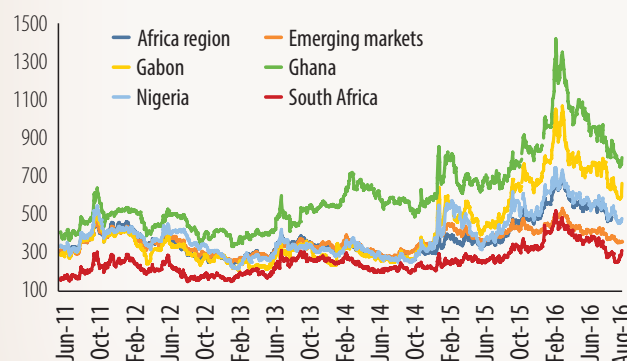
**FIGURE 1.6: Capital Flows**



Sources: JP Morgan; Haver Analytics; World Bank.

Eurobond issuance in the region has also slowed significantly.

**FIGURE 1.7: Sovereign Bond Spreads (EMBIG), Basis Points**



Sources: JP Morgan; Haver Analytics; World Bank.

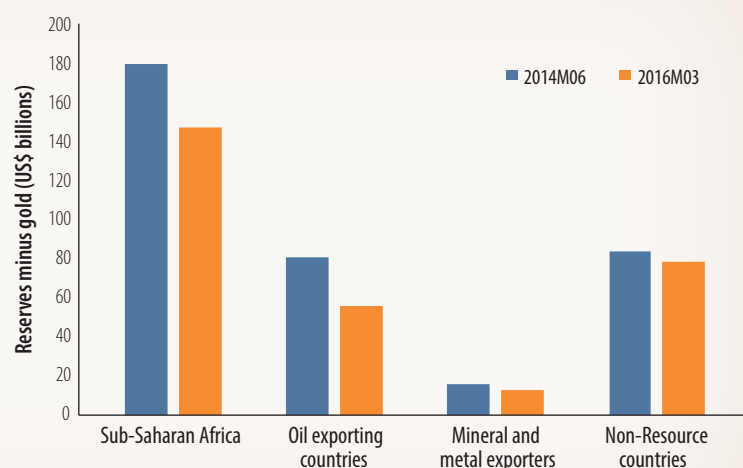
Note: EMBIG= Emerging Markets Bond Index Global; the last observation is September 1, 2016.

Sovereign bond spreads in the region remain high compared with other emerging markets.



Reserve drawdowns have been supporting currencies amid tight financing conditions, especially in oil-exporting countries.

**FIGURE 1.8:** International Reserves (June 2014 to March 2016)



Sources: IMF, Central Bank data.

Note: Chad, Ethiopia, Lesotho, Namibia, Rwanda, and Sierra Leone are excluded due to insufficient data.

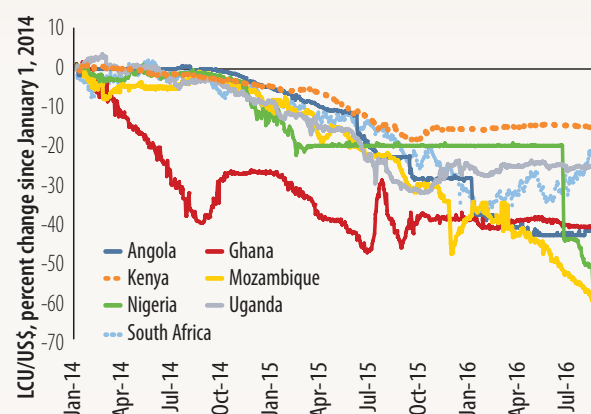
Reflecting these developments, currencies in the region have continued to exhibit a wide divergence in performance since the start of the year (figure 1.9). The currencies of Angola and Mozambique have weakened substantially against the U.S. dollar, reflecting their large current account deficits. The Nigerian naira fell by 40 percent against the U.S. dollar after the Central Bank of Nigeria abandoned the peg in June, and continues to face downward pressures as Nigeria's financing

needs continue to rise. In contrast, South Africa saw the rand rebound on the back of solid export growth that helped improve the trade balance. Export growth has also remained resilient in Kenya, helping to keep the Kenyan shilling stable. In real effective terms, most currencies have remained relatively stable. With abandonment of the peg, the Nigerian naira has been depreciating in real terms, which should help support some economic restructuring and boost exports.

Pass-through of deep currency depreciations contributed to a surge in inflation in Angola, Mozambique, and Nigeria. In August, headline inflation reached 17.6 percent (y/y) in Nigeria, 38 percent (y/y) in Angola, and over 20 percent (y/y) in Mozambique (figure 1.10). The surge in inflation in these countries has forced central banks to tighten monetary policy aggressively. In Nigeria, the central bank raised the

Currencies have continued to show a wide divergence in performance. The currencies of Angola and Mozambique have weakened substantially. Deep currency depreciations contributed to a surge in inflation in Angola, Mozambique, and Nigeria.

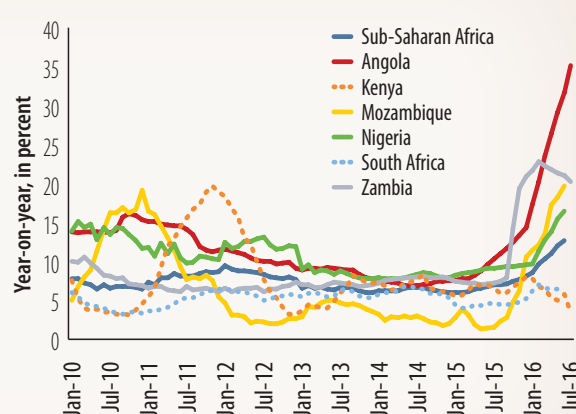
**FIGURE 1.9:** Exchange Rate



Sources: Haver Analytics; World Bank; Bloomberg.

Note: LCU = Local currency unit.

**FIGURE 1.10:** Inflation





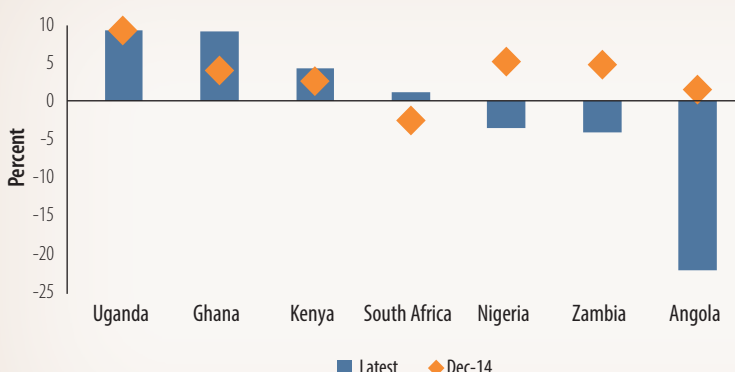
monetary policy rate by 200 basis points to 14 percent in June. In Angola, the benchmark lending rate was also raised by 200 basis points to 16 percent in July. However, in Angola and Nigeria, real interest rates remain negative (figure 1.11). This suggests that further policy tightening may be necessary to anchor future expectations and relieve pressure on their currencies. In contrast, currency stability has helped keep inflation within the central

bank target in Kenya and Uganda. In recent months headline inflation has eased in Ghana and Zambia, and moved within the central bank target in South Africa. Elsewhere, inflation continued to stay low in CFA franc zone countries in West and Central Africa, reflecting the stable peg to the Euro. In September, the Central Bank of Kenya cut its key interest rate by 50 basis points to 10 percent, while the Central Bank of Nigeria left the monetary policy rate unchanged. The South African Reserve Bank also kept its benchmark repurchase rate steady at 7 percent, despite an improvement in the inflation outlook and the weak growth outlook for the economy.

Government finances have remained under pressure across the region. The median fiscal deficit is expected to be just shy of the 2015 level of 4.5 percent of GDP (figure 1.12). Not surprisingly, government finances are particularly strained among oil exporters. In Nigeria, the fiscal deficit is projected to widen by more than a third from the 2.8 percent of GDP recorded in 2015. Excluding Nigeria, fiscal deficits in oil exporters are expected to deteriorate noticeably in 2016. In

many of these countries (Angola, Chad, Equatorial Guinea) the fiscal consolidation efforts that began in 2015 slowed in 2016, even though oil revenues remained depressed (figure 1.12). In 2015, in response to the decline in oil prices, Angola reduced fuel subsidies, raised taxes and cut expenditures. However, the country undertook no significant adjustment this year. As a result, the fiscal deficit is projected to rise sharply, driven by a large public sector wage bill. In other countries (Cameroon, Chad, South Sudan),

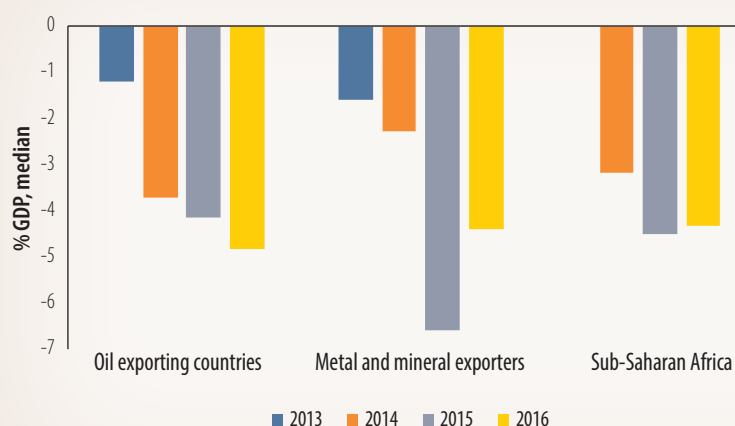
**FIGURE 1.11: Real Interest Rate**



Sources: Bloomberg; Haver Analytics; World Bank.

Higher inflation has forced central banks to tighten monetary policy. However, in Angola and Nigeria, real interest rates remain negative.

**FIGURE 1.12: Fiscal Balance in Sub-Saharan Africa**



Sources: World Bank staff calculations.

Government finances are under pressure across the board, but particularly among oil exporters.

public expenditure rose, with no commensurate increase in government revenue. In South Sudan, a collapse in revenues and sharp rise in military spending amid a political conflict are expected to result in an exceptionally large fiscal deficit in 2016.

However, efforts to reduce spending and increase revenue to stabilize government debt are helping to bring the fiscal deficit down in some countries. In Ghana, for example, where the fiscal deficit reached over 10 percent of GDP in 2014, adjustment under an International Monetary Fund program is expected to bring the deficit down further in 2016, after it was cut to 5 percent of GDP in 2015. Fiscal deficits are also expected to narrow in commodity exporters such as Botswana, Guinea, Namibia, and Niger. In South Africa, policy makers' efforts to mobilize revenues are expected to narrow the fiscal deficit. Where remedial actions have been limited (Sierra Leone and Zimbabwe), fiscal deficits have deteriorated. By contrast, fiscal balances have improved in a few commodity importers (Benin and Senegal), helped by a slowdown in the pace of fiscal spending. However, in several commodity importers where growth has been robust, fiscal policies have not been sufficiently countercyclical (box 1.2). As a result, in these countries, fiscal deficits have remained elevated (Kenya and Togo) or increased (Ethiopia, Mali, Rwanda, and Uganda). Fiscal deficits are also expected to rise in some fragile countries (the Central African Republic and the Comoros) because of the government's increased spending to improve security conditions.

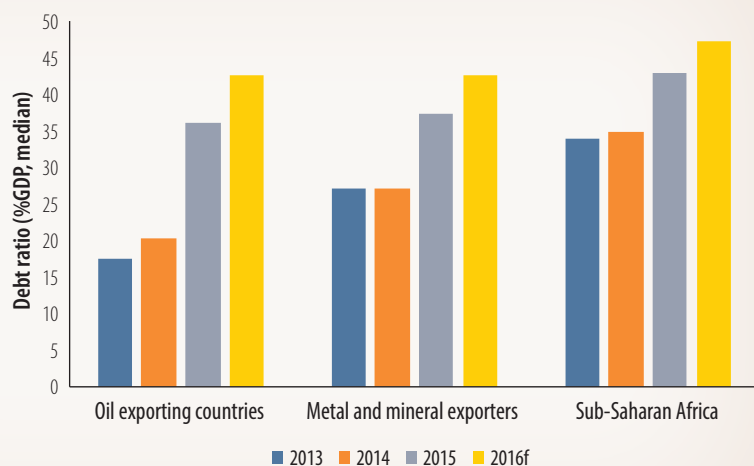
Government debt has continued to rise in the region amid large fiscal deficits (figure 1.13). There are wide variations across countries, however. Excluding Nigeria, where debt ratios have remained low, government debt indicators in oil exporters are expected to worsen in 2016. In this group, the largest rise in government debt relative to GDP is expected in Angola. Among other commodity exporters, Mozambique is expected to see its public debt exceed 100 percent of GDP after new information exposed government guarantees on debt by several state-owned enterprises. Angola, Mozambique, and the Republic of Congo saw their credit ratings cut because of concerns about debt sustainability. By contrast, reflecting ongoing efforts to stabilize the economy, government debt is expected to increase only slightly in Ghana. Among commodity importers, Ethiopia could see a notable increase

in government debt, as the government continues to borrow to finance an ambitious infrastructure program under the second phase of the Growth and Transformation Plan (GTP II).

Large fiscal deficits and sizeable debt burdens have eroded fiscal space in several countries. The challenge for these countries is to bolster fiscal buffers so as to be able to respond to adverse shocks and to spend on worthwhile infrastructure projects and social programs.

Government debt has continued to rise, with wide variations across countries.

**FIGURE 1.13: Debt to GDP in Sub-Saharan Africa**



Sources: International Monetary Fund; World Bank.

## OUTLOOK

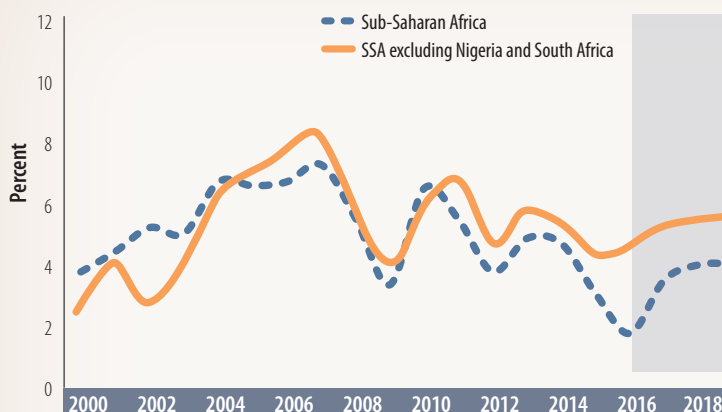
After slowing in 2015, GDP growth in Sub-Saharan Africa is expected to weaken further in 2016. Growth is projected to fall to 1.6 percent, from 3 percent in 2015, reflecting the effects of an unfavorable external environment and domestic headwinds (figure 1.14). This represents a downward revision from the growth projection of 3.2 percent for the region in the April issue of *Africa's Pulse*. The less favorable forecast reflects the disappointing economic activity in the first half of the year (see earlier discussion) and continued headwinds since then. This is the slowest pace of GDP growth in over two decades, and implies a decline in GDP per capita in real terms this year.

The outlook for 2017 and beyond is only slightly favorable. Despite a recent uptick, commodity prices are expected to remain at low levels, reflecting continuing weak global demand (figure 1.15). Although commodity

exporters across the region have begun to adjust to lower commodity revenues, the adjustment remains incomplete and at varying speeds. Against this backdrop, a modest recovery is expected in the region. Real GDP in Sub-Saharan Africa is forecast to grow 2.9 percent in 2017, before rising moderately to 3.6 percent in 2018. However, these aggregate growth rates will continue to hide considerable heterogeneity across the region—continuing the pattern of divergent growth speeds. While the larger economies and other commodity exporters are expected to see a modest uptick in growth, activity is expected to continue to expand at a solid pace in the rest of the region.

Private consumption growth in commodity exporters, which weakened significantly over the past two years, is expected to improve gradually. The increase in headline inflation and hike in the interest rate by the Central Bank of Nigeria, which have accompanied the shift to a more flexible exchange rate, have weighed on private consumption in the country. However, the exchange rate policy adjustment,

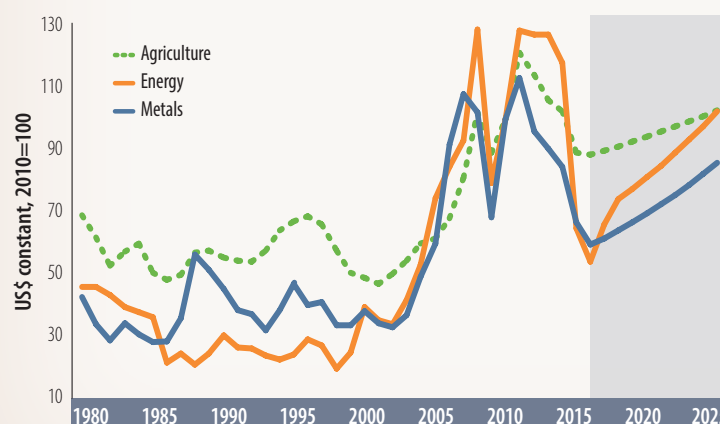
**FIGURE 1.14: Growth Prospects of Sub-Saharan Africa**



Source: World Bank.

After slowing in 2015, growth in Sub-Saharan Africa is expected to weaken further in 2016. This reflects the challenges facing Nigeria and South Africa.

**FIGURE 1.15: Commodity Price Forecasts**



Source: World Bank.

Commodity prices are expected to remain at low levels, reflecting weak global demand. A modest recovery is expected in the region against this backdrop.

coupled with the modest improvement in oil prices, should help boost oil revenues in naira terms. This, in turn, should enable the federal and state governments to meet their financial obligations, including the clearance of salary arrears, and help boost demand. In South Africa, the easing of inflationary pressures and a moderate improvement in employment should help improve consumer confidence. Stable currencies, lower inflation, and improved agricultural production should support real incomes and consumer spending in commodity importers. However, food price inflation due to droughts in several countries, high unemployment as in South Africa and Nigeria, and the price-level impact of currency depreciation, combined with interest rate increases, could moderate these effects.

Investment growth is also expected to pick up gradually in commodity exporters in 2017, following a sharp slowdown in 2016. In Nigeria, policy reforms are helping to improve the environment for private investment. The fuel shortages that had severely impacted activity in the first half of 2016 have eased following an increase in fuel prices. The tightening of monetary policy should help stabilize the naira, strengthen real interest rates, and encourage a return of international investment in the economy. Meanwhile, the move toward looser monetary policy in advanced economies has helped bolster the rand. This has tempered import price pressures in South Africa and prompted the Reserve Bank to pause the interest rate hiking cycle, which should help improve investor sentiment. In several low-income, non-oil commodity exporters, governments are expected to continue their program of infrastructure development, with a large number of projects beginning construction this year and in 2017 in Ethiopia, Kenya, Rwanda, Tanzania, and Uganda. For example, the construction of the oil pipeline between Uganda and Tanzania is scheduled to begin in early 2017. To finance these projects, these countries continue to draw on public-private partnerships (Rwanda), donor aid (Rwanda and Tanzania), and financing from Chinese entities (Ethiopia and Tanzania).

A prudent fiscal policy stance in commodity exporters is expected to underpin a gradual shift toward growth-enhancing public spending, as the continued stabilization of commodity prices helps improve fiscal balances. Nigeria's shift to a more flexible exchange rate regime, coupled with the stabilization of oil prices, is expected to give a boost to government revenue and alleviate public investment cuts, while phasing out fuel subsidies should help contain current expenditures. In South Africa, the 2016/17 budget introduced fiscal measures that should strengthen consolidation efforts. Ongoing efforts across the region to rein in public spending while boosting domestic revenue so as to stabilize public debt are also expected to continue.

However, net exports will continue to exert a drag on growth in the region. Low commodity prices, despite recent improvements, will continue to weigh on export revenues. External demand from advanced economies is expected to remain subdued, given their moderate prospects for medium-term growth. In commodity importers, private consumption will boost demand for imported products, including food and fuels, while investment spending will keep capital goods imports high. However, the drag on growth should ease gradually as commodity prices rise and import growth slows on the back of maturing investment projects.

Against this backdrop, the following trends are expected across the region:

- Among the region's three largest economies, Nigeria is expected to endure an economic contraction in 2016, as declining oil production and manufacturing weigh on activity. Although challenges

remain, the economy is expected to rebound moderately in 2017 as the long-delayed expansionary budget begins to be implemented, oil prices stabilize, and oil production increases. The shift to a more flexible exchange rate regime is also expected to encourage some FDI to return. In South Africa, GDP is expected to grow marginally in 2016 and pick up moderately in 2017. Private consumption is expected to remain weak owing to rising unemployment, high household indebtedness, and elevated inflation. Investment growth is expected to remain sluggish because of policy uncertainty and long-standing structural issues, including unstable power supplies. Angola will continue to struggle with slow economic growth, as a combination of low oil prices, high inflation, and tight policy weighs on private consumption and investment.

- ▶ In the region's frontier markets, the outlook is relatively more favorable. Growth in Ghana could slow in 2016 due to oil production outages. However, the outlook for 2017 is largely positive. The launch of a new oil field in the second half of 2016 should help improve fiscal and external positions. Investment is expected to rise as macroeconomic conditions continue to improve and energy supply increases. Private consumption should benefit from falling inflation as policy becomes more accommodative. Economic activity will bottom out in Zambia in 2016 and begin a modest recovery in 2017. Improving rainfall, as El Niño abates, will help support an increase agricultural output and hydroelectricity production. Copper mining sector activity is also expected to begin to pick up gradually as improving copper prices encourage companies to raise production. By contrast, growth will remain strong in Côte d'Ivoire in 2016 and 2017, boosted by government investment projects. Activity in Kenya is also expected to continue to expand at a steady and robust pace, driven by private consumption and public infrastructure investment. As a large commodity importer, Kenya continues to benefit from low oil prices, which have helped stabilize the Kenyan shilling and keep inflation within the target.
- ▶ The outlook for the region's low-income countries includes a modest pickup in growth in oil and mineral exporters as they continue to adjust to low commodity prices. Growth will remain weak among oil exporters over the next two years. Declining production due to maturing oil fields will compound low oil prices in Chad, while conflict will reduce consumption and investment in South Sudan. Many other non-oil exporters will continue to struggle, with activity expanding at a moderate pace. In Mozambique, after slowing in 2016 on the back of declining investment and weak commodity prices, activity is expected to rebound gradually in 2017 as recent progress in developing the nascent energy sector helps boost investment in the country's huge gas sector. Growth will remain below trend in the Democratic Republic of Congo, as weak investment due to political tensions compounds the effects of low copper prices, and as inflation driven by a weakening exchange rate weighs on private sector demand. A slow post-Ebola recovery is foreseen in Guinea, Liberia, and Sierra Leone, as low commodity prices weigh on growth, pushing back investment plans and reducing exports. Political uncertainties will continue to exert a drag on economic growth in Burundi, the Comoros, and Zimbabwe. For most other low-income countries, including Rwanda, Senegal, and Tanzania, growth is expected to remain robust, supported by public investment. In Ethiopia, the government's commitment to the second phase of its Growth and Transformation Plan will see continued state infrastructure buoy growth despite adverse weather conditions.

## RISKS TO THE OUTLOOK

*The balance of risks to the outlook remains heavily tilted to the downside.*

- ▶ On the external front, an earlier-than-anticipated tightening cycle in the United States or the Euro Area could trigger a strong decline in capital flows to emerging and frontier markets in Sub-Saharan Africa. The environment of lower-for-longer yields in advanced economies has seen a surge of capital flows into the region in recent years. A sustained reversal of such flows could likely hit hard the more heavily traded currencies, such as the South Africa rand. This would also have significant adverse corporate balance sheet effects as well as repercussions for banking systems.
- ▶ The baseline assumes a smooth transition to sustainable growth in China. However, a sharper-than-expected slowdown in China could weigh on demand for export commodities and undermine their prices. Slower-than-expected improvements in commodity prices will affect revenue growth, which would continue to strain fiscal and current account balances, forcing deeper expenditure cuts that could weaken the growth recovery. The Democratic Republic of Congo and Zambia stand out as the most vulnerable to a significant slowdown in Chinese growth.
- ▶ The uncertainty surrounding the United Kingdom's vote to exit the European Union has introduced a new downside risk to growth across Sub-Saharan Africa. Recent activity data appear to suggest that the impact of the Brexit vote has been so far mild and localized in the United Kingdom. However, in an environment of increased uncertainty and rising risks to growth, investment flows from European firms could slow, which would exacerbate the adverse impact of the decline in commodity prices on FDI flows into the region. Weaker tourist arrivals could hurt the economies of some countries, such as Mauritius and the Seychelles, which benefit significantly from tourism as a major driver of employment and growth.

These risks would be exacerbated if, on the domestic front, policy makers do not adjust to the commodity price shock, policy uncertainties deepen, severe weather conditions continue, political uncertainties persist, and security conditions deteriorate.

- ▶ Although several commodity exporters have begun to adjust to low commodity revenues, the adjustment has been limited even as vulnerabilities have mounted. With commodity prices remaining low, deeper adjustment would be needed to contain fiscal and current account deficits and rebuild policy buffers. The risk is that this adjustment may not be forthcoming if economic conditions continue to deteriorate. This would likely extend the period of weak growth across the region, especially among oil exporters. Weak fiscal management will keep borrowing requirements high, making financing fiscal deficits challenging. In some countries, credit downgrades remain a significant risk if ongoing fiscal consolidation efforts are not sustained. In some countries, political divisions present an added risk, as they may prompt the adoption of populist policies by the governing party or lead to a protracted legal and political crisis, hampering efforts to tackle important fiscal challenges.

- ▶ The adjustment to the commodity price shock will need to include stronger efforts to strengthen domestic resource mobilization, to reduce overdependence on revenue from the resource sector. In particular, resource-rich countries would benefit from improving their non-resource tax systems. Stronger efforts to broaden the tax base, strengthen tax administration, and boost efficiency would help increase domestic revenue.
- ▶ Meanwhile, continued severe weather conditions would undermine food security in the region and exacerbate inflationary pressures. After severe drought decimated crop harvests and curtailed hydroelectricity generation in parts of Southern and Eastern Africa, a return to normal weather conditions is expected in 2017. However, a stronger-than-expected La Niña weather cycle could bring severe flooding that would be as damaging as the recent droughts were.
- ▶ Among other risks, an increase in militant insurgencies and terrorist attacks would adversely affect activity in several countries, including Burkina Faso, Côte d'Ivoire, Kenya, Mali, and Nigeria.

As countries look to rebuild growth momentum, urgent attention is needed to accelerate structural reforms that will boost productivity and provide the basis for sustainable and inclusive growth. In this context, increasing agricultural productivity is central to transforming African economies and improving livelihoods. Section 3 of the report includes a focus on enhancing agricultural productivity through improving the quality of public spending on agriculture, complemented by an enabling policy environment.



**BOX 1.1:**  
Short-Run  
Impact of the  
Brexit

**Brexit Surprise**

In a previous note in *Africa's Pulse*, we analyzed the impact of the Taper Tantrum on emerging economies, and particularly on African economies.<sup>a</sup> The note showed that the effect of the Taper Tantrum was mostly financial; it affected the countries (through larger exchange rate depreciation and steeper decline in the stock market) that had received large capital inflows in the preceding period and had large and liquid financial markets from which international investors could easily withdraw. African economies were largely insulated from the turmoil by virtue of their low integration in international capital markets and shallower and less liquid financial markets.

The Brexit Surprise (the surprise outcome of the United Kingdom's European Union membership referendum) was initially perceived to be an event analogous to the tapering talk. The Brexit similarly rattled the financial markets in emerging countries when international investors seemed to have switched to a flight to safety mode. In this note, we ask whether the Brexit Surprise had effects similar to the Taper Tantrum, and whether the effects on African economies differed from those on emerging countries in other regions.

The initial impact of the Brexit seemed remarkably similar to that of the Taper Tantrum, in that stock markets declined and exchange rates depreciated in a substantial number of emerging markets. But the impact of the Brexit turned out to be shorter-lived—the impact peaked in the first two post-Brexit days of trading. In addition, the Brexit Surprise was seemingly perceived by investors to be as much a real shock as a financial shock. The real shock transmitted mainly via trade—affecting countries with stronger trade links with the European Union and, to a lesser extent, with the United Kingdom. Just like the Taper Tantrum, the effect of the Brexit was milder on African economies. This time around it was not just because of their lower financial integration with the rest of the world, but also their weaker trade links with the United Kingdom and particularly the European Union.

**Short-Run Impact of the Brexit on Emerging Economies**

We follow Eichengreen, Gupta, and Ospino Rojas (2016) in understanding the impact of the Brexit. We extend their sample of about 50 emerging markets to include several African countries. The main criterion for including countries in the analysis is the availability of daily data for exchange rates and stock markets around the Brexit episode. Consistent data are available for eight countries from the Africa region (Ghana, Kenya, Mauritius, Nigeria, South Africa, Tanzania, Uganda, and Zambia).

Figures B1.1.1 and B1.1.2 depict stock market return change and exchange rate depreciation, respectively, for the two trading days after the Brexit, from June 23 to 27, 2016. Significant heterogeneity is visible in the impact across emerging markets, as well as across African economies.

The impact of the Brexit was greatest for the Central, Eastern, and Southeastern European (CESEE) countries—the average impacts were -4.1 percent on stock markets and 2.4 percent on exchange rates for these countries. In comparison, the average impacts on stock markets and exchange rates were -2.1 and 0.9 percent for non-African non-CESEE countries, and -1.8 and 1 percent for African countries in the sample.<sup>b</sup> These effects are statistically the same for African countries and non-African non-CESEE countries, but different for CESEE countries from the other two groups.

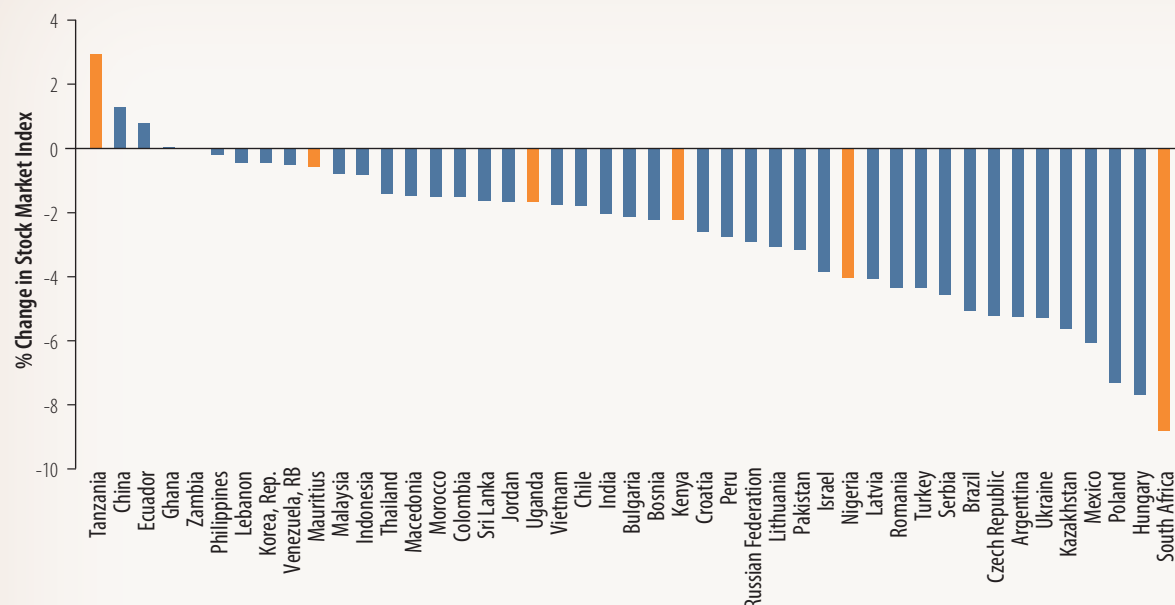
**Who Was Hit and Why?**

Here we explore the variables with which the impact of the Brexit on equity and foreign exchange markets is correlated. We first ask whether the countries with a recent deterioration in growth outlook experienced larger exchange rate depreciations or stock market corrections. Using data on the revision in the growth forecast for 2016 for each country from the World Economic Outlook, comparing the April 2016 and October 2015 editions, Eichengreen, Gupta, and Ospino Rojas (2016) show that there is no evidence of a link between the change in the growth outlook and the impact of the Brexit Surprise.



FIGURE B1.1.1: Percent Change in Stock Prices Following the Brexit Surprise, June 23–27, 2016

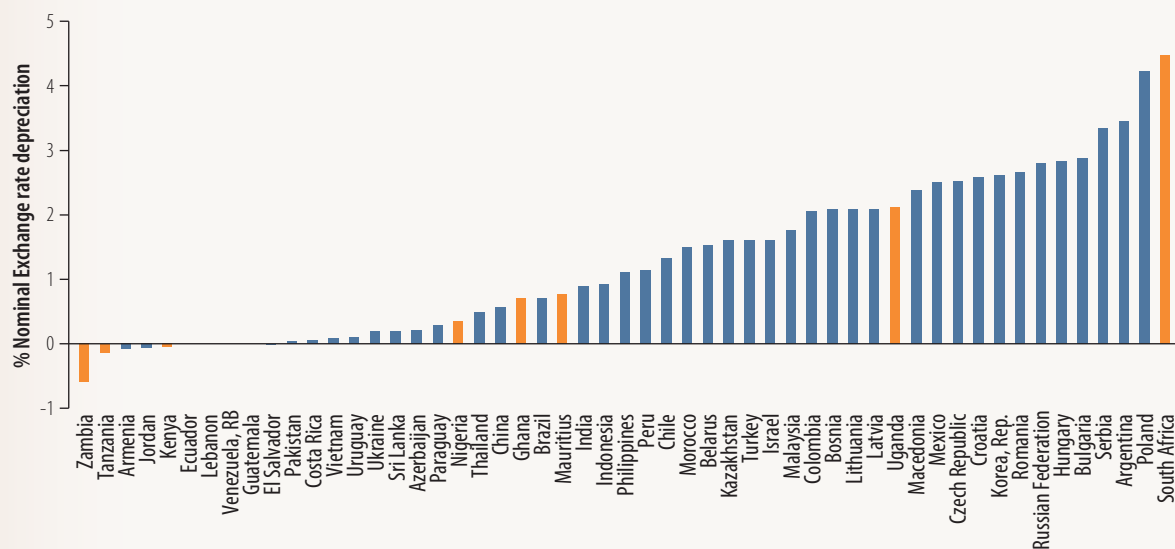
BOX 1.1  
Continued



Source: Data are from DataStream, except for Ghana, Kenya, Tanzania, Uganda, and Zambia, which are extracted from Bloomberg.

Note: Stock market prices are in domestic currency.

FIGURE B1.1.2: Percent Exchange Rate Depreciation Following the Brexit Surprise, June 23–27, 2016



Source: Data are from DataStream, except for Ghana, Kenya, Tanzania, Uganda, and Zambia, which are extracted from Bloomberg.

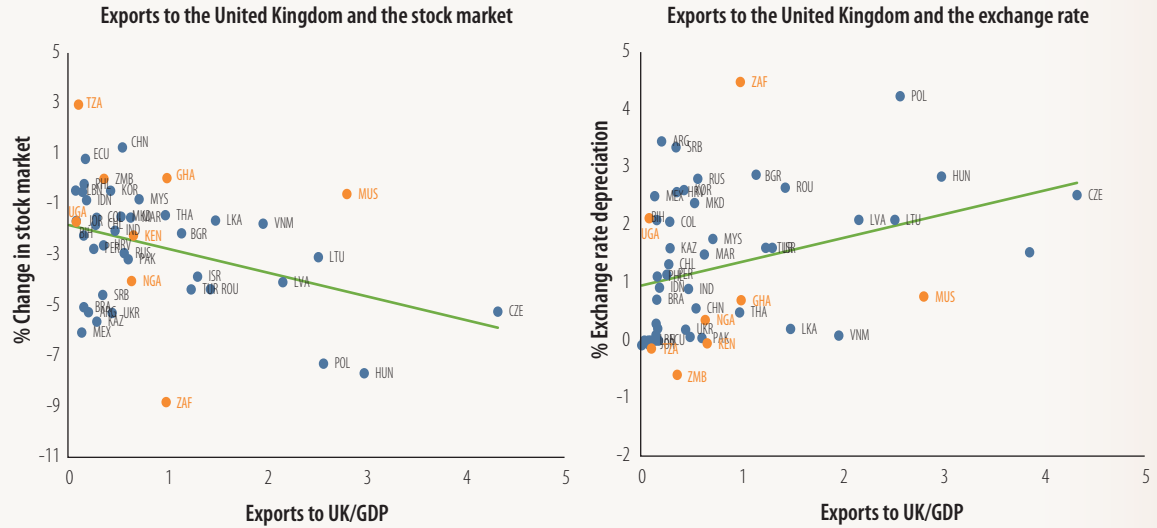
Note: Exchange rates are against the U.S. dollar. Depreciation is denoted with a positive sign.

Since the Brexit surprise was accompanied by a decline in the price of oil, we test whether the Brexit affected financial markets in resource-dependent economies more strongly. Interestingly, it does not appear that countries with greater resource dependence felt a larger impact.

**BOX 1.1**  
Continued

However, we find supportive evidence for the next hypothesis: the countries with larger trade links with the United Kingdom and/or the European Union were affected more strongly (figures B1.1.3 and B1.1.4).

**FIGURE B1.1.3: Trade with the United Kingdom**

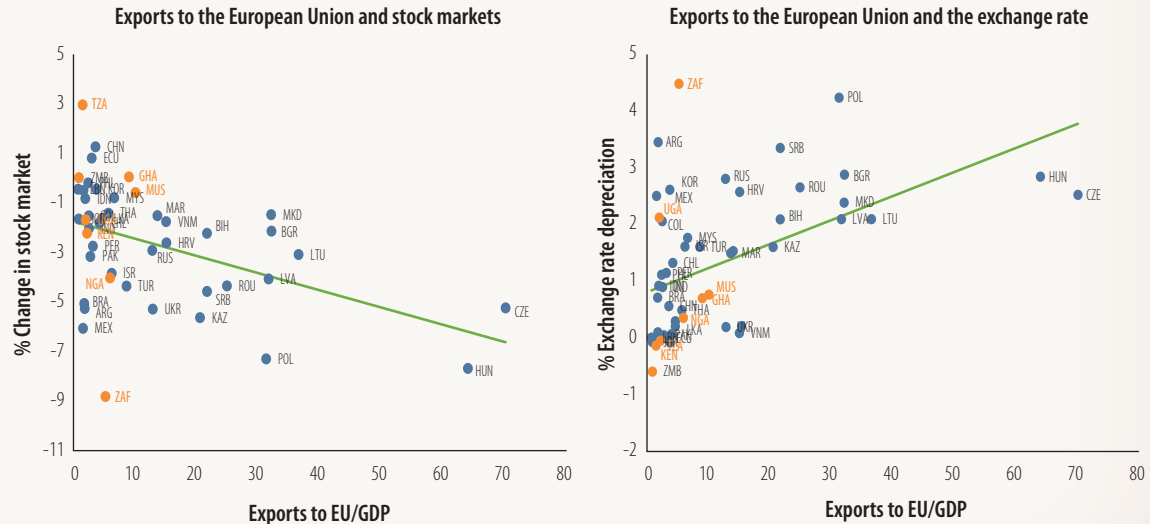


Source: Data are from the International Monetary Fund's Direction of Trade Statistics.

Note: The variable is exports destined for the United Kingdom as a share of gross domestic product. Both relationships are significant at the 5 percent level.

Interestingly, trade with the European Union seemed to matter more than trade with the United Kingdom. When we include both values in the regressions (table B1.1.1), it is trade with the European Union that has significant coefficients. When it comes to emerging markets, evidently, the fears investors had were for the economic prospects of Europe as much as just the United Kingdom. Since the European Union is a more important market than the United Kingdom for CESEE economies, this possibly explains the larger impact on CESEE countries.

**FIGURE B1.1.4: Trade with the European Union**



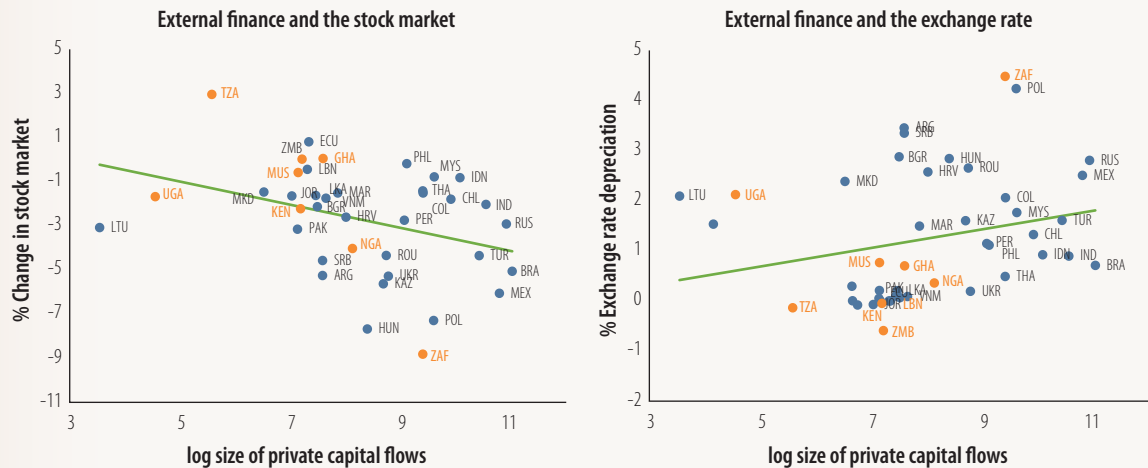
Source: Data are from the International Monetary Fund's Direction of Trade Statistics.

Note: The variable is exports destined for the European Union as a share of gross domestic product. Both relationships are significant at the 1 percent level.

We also find some evidence that emerging markets with larger capital inflows or larger financial markets were affected more strongly, albeit the effect of the Brexit is weaker than in our earlier analysis of the Taper Tantrum (figure B1.1.5).

**BOX 1.1**  
*Continued*

**FIGURE B1.1.5: Private External Finance**



Source: Data are from IMF 2015.

Note: Private external finance includes loans, bonds, and equities received during 2012–14. Following Eichengreen and Gupta (2014), private external finance is considered here as a proxy for the size of financial markets. The coefficients for stock market response are significant at the 5 percent level.

Table B1.1.1 summarizes our main results: export exposure—to the European Union more than just the United Kingdom—consistently helps explain which emerging markets reacted most negatively to the Brexit Surprise. In addition, external financial exposure, as measured by capital inflows in the prior period or the stock of external liabilities, helps to explain which emerging stock and foreign exchange markets declined most sharply, although these results are less robust than in our earlier analysis of the tapering episode.

Extrapolating from the empirical findings, the reason for the relatively mild impact of the Brexit on African countries seems to be their weaker trade links with the United Kingdom and European Union, as well as that the size of the financial markets and extent of foreign capital is relatively small in African countries.

**BOX 1.1**  
*Continued*

**TABLE B1.1.1: Impact on Emerging Countries during the Brexit: Role of Trade with the United Kingdom or European Union and Size of Financial Markets**

Measure	Change in stock markets (%)				Exchange rate depreciation (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exports to UK/GDP	-0.94**		-0.12		0.41***		-0.07	
	[2.62]		[0.23]		[2.87]		[0.44]	
Exports to EU/GDP		-0.07***	-0.06**	-0.09***		0.04***	0.05***	0.04**
		[3.95]	[2.07]	[3.93]		[4.30]	[4.05]	[2.10]
Private external financing (size)				-0.72***				0.26**
				[2.79]				[2.69]
Dummy for Central, Eastern, and Southeastern European countries				-0.43				0.97*
				[0.56]				[1.97]
Dummy for African countries				-0.79				0.46
				[0.60]				[0.76]
Constant	-1.80***	-1.75***	-1.71***	4.55*	0.95***	0.81***	0.83***	-1.54*
	[3.90]	[3.97]	[3.73]	[1.89]	[4.71]	[4.14]	[4.07]	[1.78]
Observations	45	45	45	38	53	53	53	46
R-squared	0.133	0.200	0.201	0.378	0.108	0.251	0.253	0.424
Adj. R-squared	0.113	0.182	0.163	0.302	0.091	0.237	0.223	0.367

Source: Data on exports in 2014 to the United Kingdom and the European Union are from the International Monetary Fund's Direction of Trade Statistics database. Private external financing includes loans, bonds, and equities received during 2012–14; the data are from IMF 2015.

Note: The dependent variable is the percent change in stock markets in the first four columns, and percent change in exchange rate in the last four columns, in the two days after the Brexit. Robust t-statistics are in parentheses. Following Eichengreen and Gupta (2013), here external financing is considered a proxy for the size of financial markets.

Prepared by Poonam Gupta and Anderson Ospino Rojas.

- a. The Taper Tantrum refers to the correction in financial markets following U.S. Federal Reserve Chair Bernanke's allusion in May 2013 that the U.S. central bank may soon start reducing its rate of security purchases.
- b. Here we report means. Relative medians are of similar magnitudes. The CESEE economies in our sample are Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, the Russian Federation, Serbia, Turkey, and Ukraine.

This box studies the cyclical aspects of fiscal policy in Sub-Saharan Africa compared with other developing regions (such as Latin America and developing Asia) and high-income countries during 1970–2014, and explores whether there has been a change in the cyclical nature of fiscal policy in recent years. The focus is on the expenditure side, in particular, the cyclical properties of real government final consumption expenditure. Government investment (developing expenditure) is not analyzed, as public investment is different from other types of expenditures, since its services are spread over many years.<sup>a</sup>

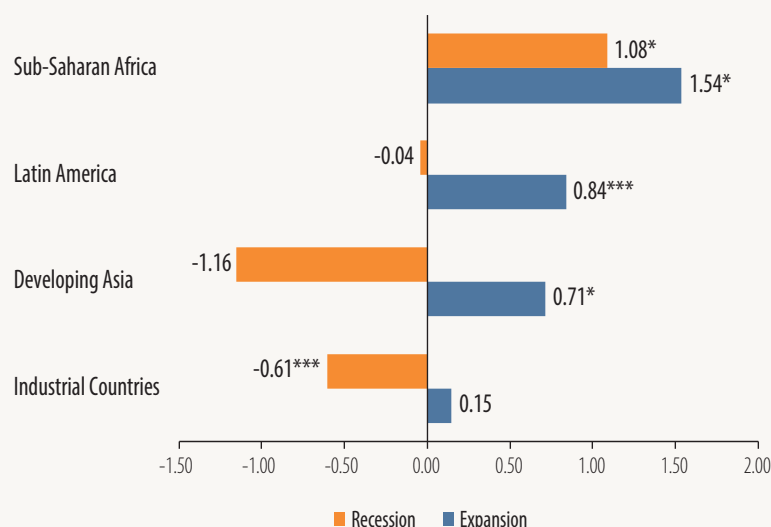
In general, countercyclical fiscal policy is a desirable feature to counterbalance economic cycles. In other words, during “bad times” (recessions), an above-the-trend increase in government consumption expenditure might be a useful tool to boost the economy. However, the other side of countercyclical behavior is often forgotten, that is, during “good times” (expansion), government consumption expenditure should increase below the trend, not only as a mechanism to avoid overheating the economy, but also to gain room by saving the extra income for future smoothing of adverse demand-side shocks.

Regression analysis covering the period 1970–2014 finds that Sub-Saharan Africa has a positive relationship between the cyclical components of government consumption and GDP, and the size of the coefficient is larger than that for Latin America, the other region with a statistically significant pro-cyclical coefficient. Although developing Asia has a positive coefficient, it is not statistically significant. The coefficient for high-income countries is slightly negative and statistically significant, which is preliminary evidence that this group of economies has implemented more countercyclical fiscal policies than other groups during the past 45 years.

To analyze the fiscal policy stance during expansions and recessions in 1970–2014, the sample is split based on the sign of the cyclical component of GDP, positive (expansion phase) and negative (recession phase). Figure B1.2.1 depicts the asymmetric behavior of the cyclical component of government consumption during expansions and recessions. Fiscal policy tends to be pro-cyclical in the expansion periods in all groups, although for high-income countries the coefficient is not statistically significant. Sub-Saharan Africa has the largest (and greater than one) coefficient of pro-cyclicality, suggesting that fiscal policy overreacts in good times. However, during bad times, Sub-Saharan Africa is the only region that has a positive

**BOX 1.2:**  
Is the cyclical  
nature of fiscal  
policy in Sub-  
Saharan Africa  
changing?

**FIGURE B1.2.1: Coefficient of cyclicity during expansions and recessions, 1970–2014**



Source: Calderon, Chuhan-Pole, and Lopez-Monti 2016.

Note: Government final consumption expenditures and gross domestic product (GDP) are in real local currencies (source: UN-Statistics database) filtered using the Hodrick-Prescott (HP) filter. The HP cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports (source: International Monetary Fund Direction of Trade Statistics database) to each of its trading partners; each country's weighted-trade-partner growth is multiplied by the country's average ratio of exports to GDP. Lagged values of the public debt/GDP and dependent variable were included. All regressions include country fixed effects.

\*\*\*significant at 1%, \*\* significant at 5%, \* significant at 10%.

Dependent variable: HP cyclical component of government consumption expenditure

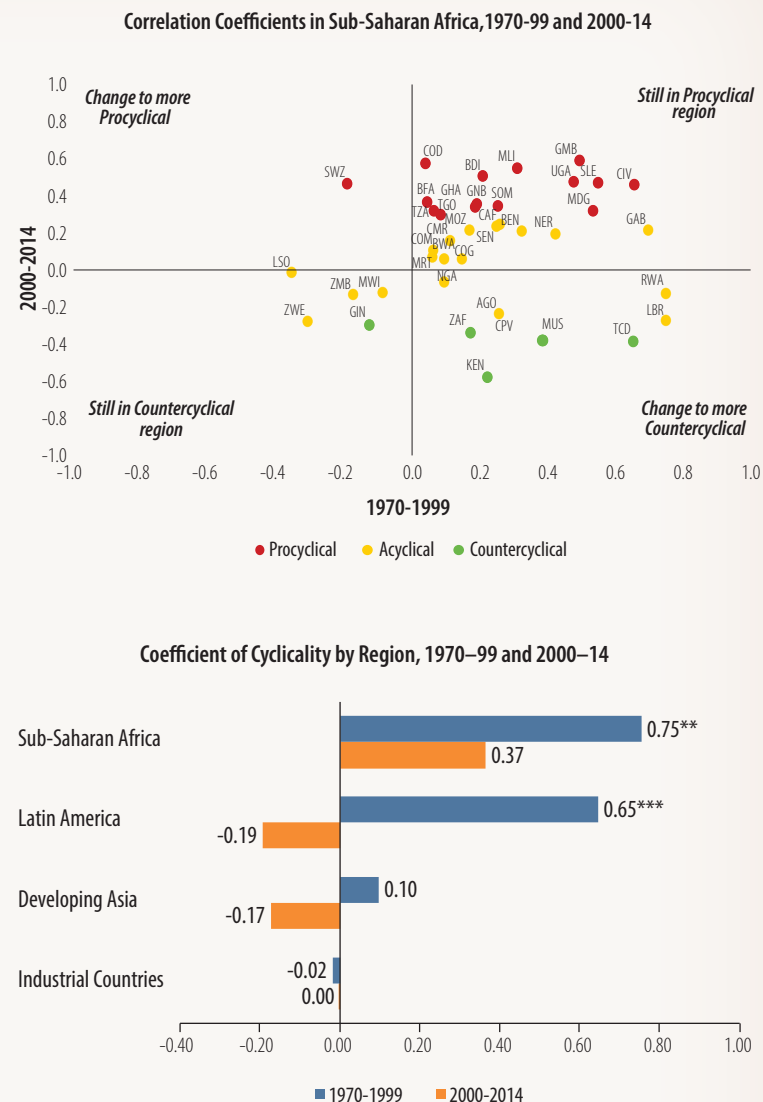
**BOX 1.2**  
Continued

and statistically significant coefficient. In other regions, during the recession phase, the coefficients are consistent with countercyclical fiscal policies, but statistically significant only in high-income countries.<sup>b</sup>

Pro-cyclical fiscal policies during expansions and recessions respond for different reasons. During expansions, political pressures and social needs lift government expenditures, particularly in those countries with low levels of development. However, during recessions, to conduct countercyclical fiscal policies in a context of declining revenues, the government needs some kind of financial support, either from its own savings, donors, or more frequently from financial markets. The pattern of fiscal policy cyclicity in the Sub-Saharan Africa region might respond to higher demands during expansion periods and non-negligible borrowing constraints in recessions.

Has the cyclical nature of fiscal policy changed over time? A closer look at the correlation coefficient dynamics in countries in Sub-Saharan Africa before and after 2000 indicates incipient signs of a shift toward more countercyclical and acyclical fiscal policies in recent years. Figure B1.2.2, shows that 9 of 40 countries in the region

**FIGURE B1.2.2: Evolution in the Cyclical Behavior of Government Consumption Expenditure**



Source: Calderon, Chuhan-Pole, and Lopez-Monti 2016.

Note: Government final consumption expenditures and gross domestic product (GDP) are in real local currencies (source: UN-Statistics database), filtered using the Hodrick-Prescott (HP) filter. Countercyclical means that the correlation coefficient is negative and statistically significant at 5%, pro-cyclical when it is positive and significant, and acyclical when the coefficient is not statistically different from zero. In government final consumption expenditures and GDP are in real local currencies (source: UN-Statistics database), filtered using the HP filter. The HP cyclical component of GDP is instrumented with its own lags and the weighted average of the GDP growth of each country's export partners. Trade-partner growth is weighted by the share of the country's total exports (source: International Monetary Fund Direction of Trade Statistics database) to each of its trading partners; each country's weighted-trade-partner growth is multiplied by the country's average ratio of exports to GDP. Lagged values of public debt/GDP and the dependent variable were included. All regressions include country fixed effects.

\*\*\*significant at 1%, \*\* significant at 5%, \* significant at 10%.

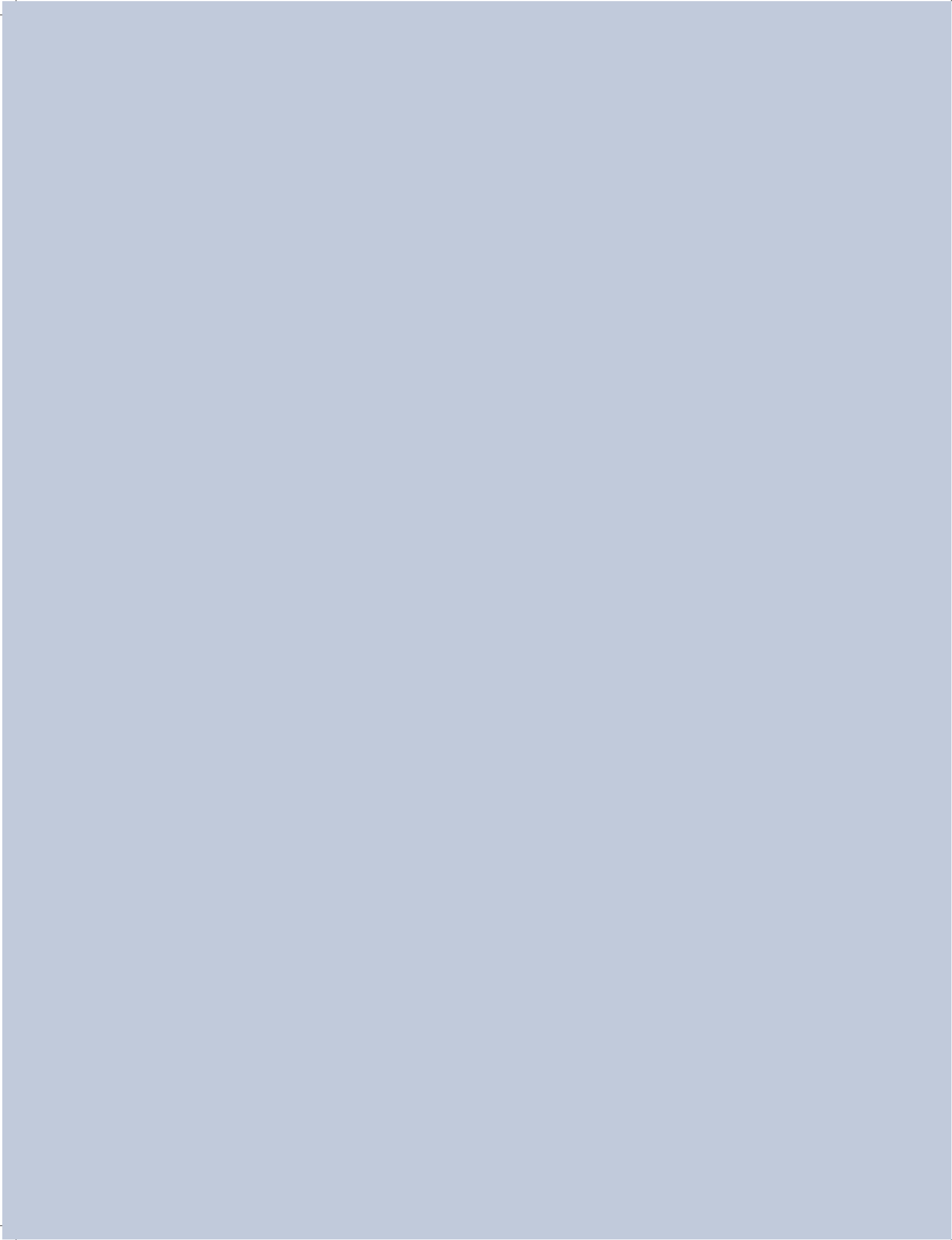
Dependent variable: HP cyclical component of government consumption expenditure.

moved from the pro-cyclical quadrant (positive correlation) to more countercyclical policies (negative correlation) in 2000–14.<sup>c</sup> Only five countries (Guinea, Lesotho, Malawi, Zambia, and Zimbabwe) registered a negative correlation between the cyclical components of government consumption and GDP in both periods. However, 26 countries are still in the pro-cyclical quadrants, with almost half of them classified as having acyclical fiscal policies, since their correlation coefficients are not statistically different from zero. A comparative analysis of the cyclical properties at the regional level before and after 2000 suggests that developing regions have either reduced the degree of pro-cyclicality, like in Sub-Saharan Africa, or shifted to more countercyclical policies, like in Latin America and developing Asia (figure B1.2.2). However, all these changes are still not statically significant, which is consistent with an acyclical stance of fiscal policy during 2000–14. The reduction in the degree of pro-cyclicality in recent years has been the result of better fiscal management, particularly during the expansion phase of the cycle, which better prepared many developing countries (including those in Sub-Saharan Africa) to face the international financial crisis in 2008/09.

**BOX 1.2**  
*Continued*

*Prepared by Rafael Lopez-Monti.*

- a. See Fatás (2005), Blanchard and Giavazzi (2004), and Buitier and Grafe (2004) for a discussion on leaving public investment outside the cyclical stance of fiscal policy.
- b. These are preliminary results that may suffer from the weak instrument problem, since the Kleibergen-Paap F statistic is relatively low in some developing regions for certain periods.
- c. These countries are: Angola, Cabo Verde, Chad, Kenya, Liberia, Mauritius, Nigeria, Rwanda, and South Africa.





## Section 2: Resilient Growth in Some Sub-Saharan African Countries Amid Economic Challenges

- ▶ Post-global financial crisis performance in the region as a whole has not been as stellar as it was in the pre-crisis period. However, there are some diverging growth experiences across countries. We can distinguish four groups of growth performers according to the behavior of real output growth in the pre- and post-crisis periods: established, improved, slipping, and falling behind growth performers.
- ▶ Established and improved performers, with more resilient growth, comprise over a quarter of the region's countries, house 41 percent of its population, and produce 21 percent of its output. Slipping and falling behind countries account for nearly 40 percent of the region's countries, have 36 percent of its population, and produce 62 percent of its output.
- ▶ Established and improved performance have better quality macroeconomic policy frameworks—especially on the monetary front. However, all countries have recently experienced fiscal slippages.
- ▶ On structural reforms, established and improved performers have made more progress in business regulation, rule of law, and government effectiveness. Rwanda is one of the fastest reformers in the region.
- ▶ Finally, established and improved performers have more diversified export structures than the other groups of countries, but they are still below the developing country average. Efforts in Côte d'Ivoire to diversify within the cocoa industry by adding value are a noteworthy example.

### DIVERGING GROWTH EXPERIENCES

The Sub-Saharan Africa region grew at an annual average rate of 3.1 percent during 2014–16 vis-à-vis a rate of about 5 percent in the pre-global financial crisis period (1995–2008). However, the patterns of growth across countries were not homogeneous in 1995–2008 or in the current context (2014–16). For instance, real gross domestic product (GDP) in Angola, Rwanda, and Uganda grew at an annual average rate that exceeded 7 percent in 1995–2008, but it did not surpass 2 percent in the Democratic Republic of Congo, Gabon, and Guinea-Bissau.

The region's economic performance in the post-global financial crisis period has not been as stellar as it was in the pre-crisis period. The region as a whole experienced a marked growth deceleration—GDP grew at an average annual rate of 3.9 percent in 2011–16 compared with 7.3 percent in 2003–08.

In per capita terms, this represents a drop from an annual rate of 4.5 percent in 2003–08 to 0.9 percent in 2011–16. Recent developments suggest that the global environment might be less conducive to growth for developing countries—and, notably, Sub-Saharan Africa—over the next several years than it was in the recent past. Global trade is growing at a much faster pace than global economic activity, whereas global commodity prices—notably, energy and extractives—are predicted to remain at lower levels.

However, some countries in Sub-Saharan Africa showed signs of resilience, growing at faster rates than others in 2014–16. For instance, the average annual growth rate of GDP exceeded 7 percent in this period in Côte d'Ivoire, Ethiopia, and Rwanda, while it failed to surpass 2 percent per annum (ppa) in Botswana, Guinea, Liberia, and South Africa. Is the Sub-Saharan Africa region growing at divergent speeds? If so, which countries are growing faster in the current context (2014–16)? Were these countries also growing at a faster speed during 1995–2008? Or have some countries improved their performance? At the same time, were there good performers in 1995–2008 that slipped in the post-crisis period?

The goal of this section is to implement specific criteria to: (a) identify countries with strong and weak growth in the region during the current juncture (2014–16); (b) identify within each group those that have consistently had strong or weak growth, those that have improved, and those that have slipped during the past two decades; and (c) examine the links between the quality of policies and institutions and better economic performance.

## IMPLEMENTING A TAXONOMY OF GROWTH PERFORMERS IN THE REGION

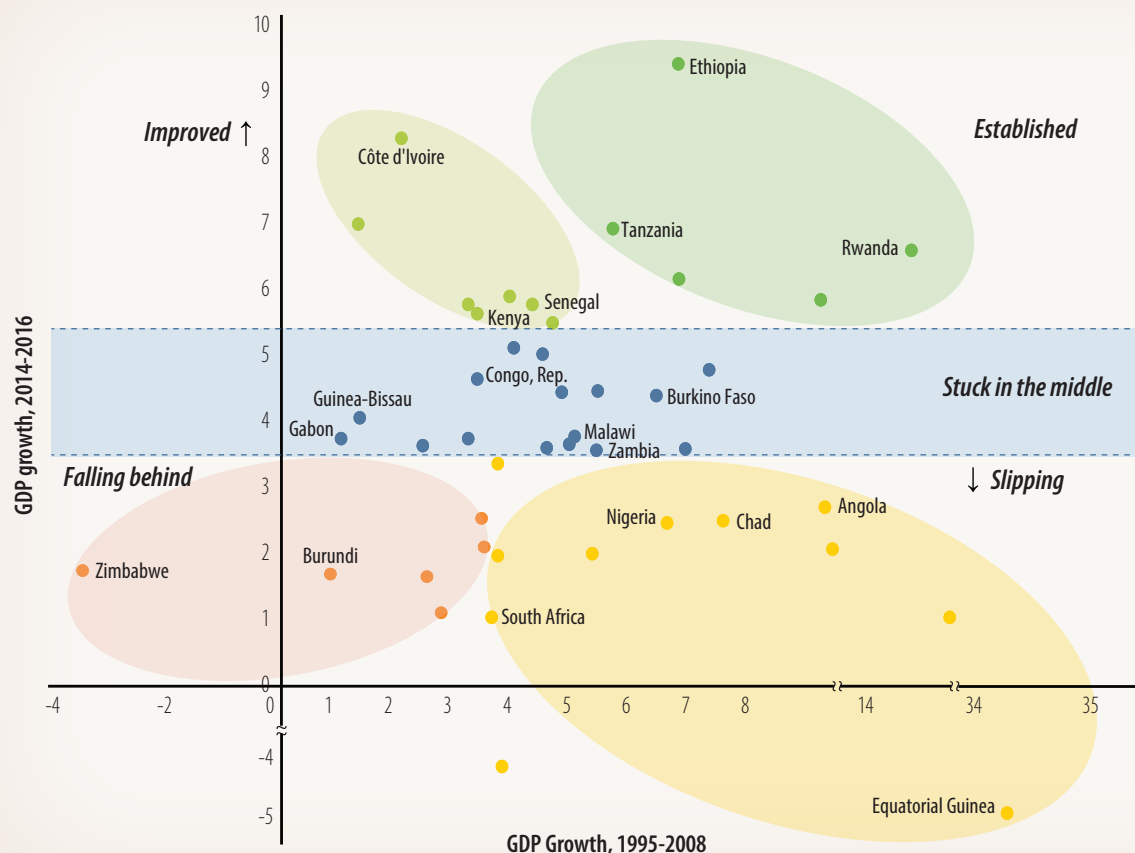
To identify countries in the region with strong or weak growth in the current juncture (2014–16) as well as the persistence/dynamics of that growth rate vis-à-vis the period 1995–2008, we examine the evolution of the rate of GDP growth for a sample of 45 Sub-Saharan African countries.<sup>1</sup> The countries in the region were categorized into four groups based on the comparison of their average annual GDP growth rates during 1995–2008 and 2014–16. The classification into strong or weak growth was based on the computed top and bottom terciles of the average annual growth rate of the 45 countries between 1995 and 2008—that is, 5.4 and 3.5 percent, respectively. Other countries (16) are not in the top or bottom tercile in 2014–16. Growth performance of a country is sensitive to the nature of exogenous shocks that may have occurred in the two periods that are covered in the analysis.

According to their growth performance, the countries can be classified into four groups (figure 2.1):

*Established.* The first group of countries registered an annual average growth rate that exceeds the top tercile in both periods (1995–2008 and 2014–16). The group of established growth performers consists of five countries, Ethiopia, Mali, Mozambique, Rwanda, and Tanzania. This group houses about 21 percent of the population of Sub-Saharan Africa and produces 9 percent of the region's total GDP. The average GDP growth rate of the established growth performers was 6.8 percent in 1995–2008 and 7.8 percent

<sup>1</sup> This sample of countries excludes Eritrea, Somalia, and South Sudan, as these countries do not have full data for the growth rate of GDP throughout the period 1995–2016.

FIGURE 2.1: Growth Performance by Country Groups (Selected Countries)



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

Over a quarter of the region's countries can be categorized as "established" and "improved performers". They house 41% of its population, and produce 21% percent of its output. "slipping" and "falling behind" countries account for nearly 40% of the region's countries, have 36% of its population, and 62% of its output.

in 2014–16. The best performer of the established group in 1995–2008 was Rwanda (10.9 ppa), and in 2014–16, Ethiopia (9.4 ppa). In spite of the fact that GDP growth is declining and expected to be at 3.6 percent in 2016, the average growth for 2014–16 in Mozambique is still above the top tercile (5.9 percent per year in 2014–16).

*Improved.* This group is characterized by those countries with a growth rate below the top tercile of the Sub-Saharan Africa distribution in 1995–2008, but with a rate of GDP growth in 2014–16 greater than the top tercile. It comprises seven countries: Benin, Cameroon, Côte d'Ivoire, the Democratic Republic of Congo, Kenya, Senegal, and Togo. About 20 percent of the population of the region lives in this group of countries, and they produce about 11.8 percent of the region's total GDP. The group of improved performers saw their GDP growth rate increase from 2.9 percent in 1995–2008 to 5.8 percent in 2014–16. The largest growth acceleration among the improved performers was experienced by Côte d'Ivoire and the Democratic Republic of Congo (with an increase in the rate of GDP growth that exceeded 400 basis points between the two periods). Despite the fact that the growth rate is expected to decelerate in the Democratic Republic of Congo to 2.7 percent in 2016, real GDP grew on average 7 percent per year in 2014–16.

*Slipping.* This is a group of economies with a decelerating GDP growth rate; that is, their average annual growth rate in 1995–2008 exceeded the bottom tercile of the Sub-Saharan Africa growth distribution, but the GDP growth rate in 2014–16 fell below the bottom tercile. The slipping group comprises 11 countries: Angola, Botswana, Cabo Verde, Chad, Equatorial Guinea, The Gambia, Liberia, Madagascar, Nigeria, Sierra Leone, and South Africa. The group of slipping performers makes up only 31.7 percent of the region’s population, but produces 60.4 percent of its GDP. The GDP growth rate declined from 5.8 ppa in 1995–2008 to 1.9 ppa in 2014–16. This group of performers includes not only the two largest economies in the continent (Nigeria and South Africa), but also oil rich countries (Angola, Chad, and Equatorial Guinea). Within the group of slipping countries, Equatorial Guinea, Liberia, and Sierra Leone suffered the largest declines in GDP growth. This reversal of fortunes is related to the sharp collapse in oil prices in the case of Equatorial Guinea, whereas the Ebola epidemic and the drop in iron ore prices were the culprits in Liberia and Sierra Leone.

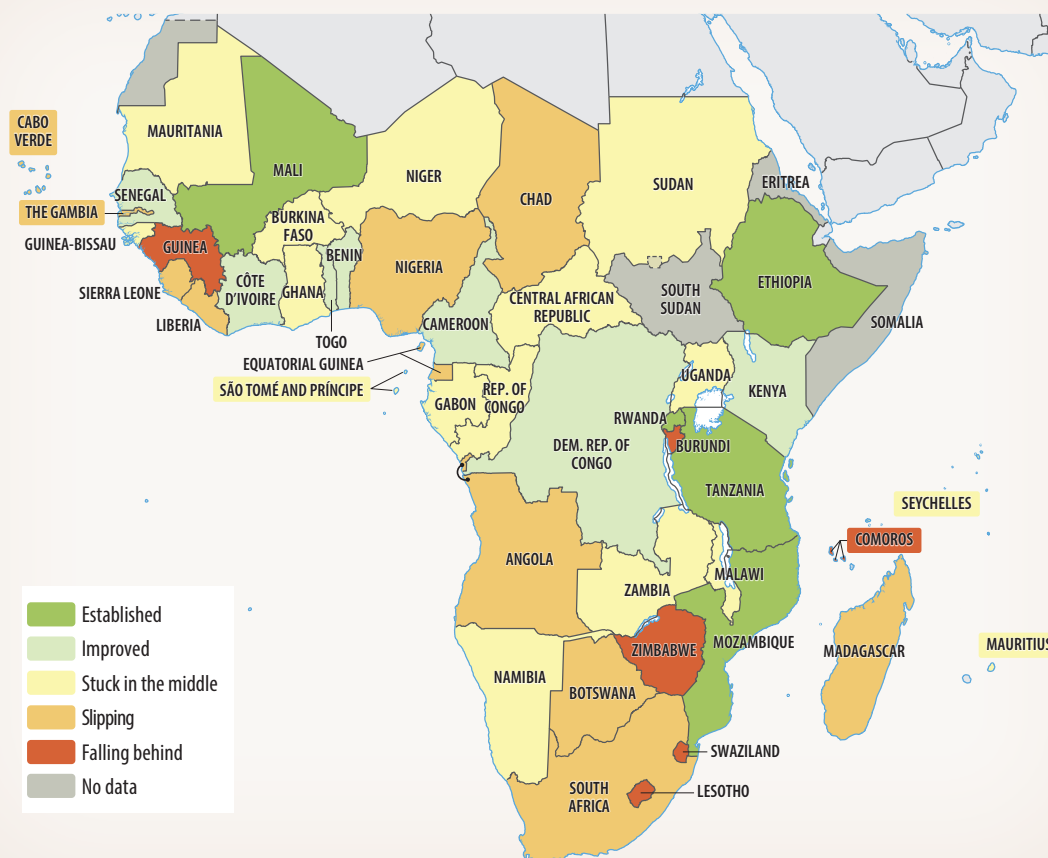
*Falling behind.* This group of economies displayed the weakest growth trajectory throughout 1995–2008 and 2014–16; that is, GDP growth failed to surpass the bottom tercile in both periods. The falling behind group is comprised mostly of fragile states, as well as small (mainland and island) countries, namely, Burundi, the Comoros, Guinea, Lesotho, Swaziland, and Zimbabwe. The six countries in the falling behind group house 4.4 percent of the region’s total population and produce only about 2 percent of its total GDP. The average annual GDP growth rate of the falling behind growth performers was 0.9 percent in 1995–2008 and 1.8 percent in 2014–16. Among the falling behind countries, Swaziland and Guinea are the countries with the largest growth contractions (1.6 and 1.4 percentage points, respectively), and the former displays the lowest growth rate in 2014–16 (about 1.2 percent per year).

Map 2.1 shows that the different groups of established, improved, slipping, and falling behind performers are not necessarily clustered geographically in the region. This may be interpreted as lack of interconnectedness across countries in the region in terms of trade or financial linkages. At the same time, there is a group of performers that is excluded from the subsequent discussion of growth performance. This group of countries, the *stuck in the middle* performers, had a growth rate in 2014–16 that exceeded the bottom tercile but was lower than the top tercile. This group comprises 16 countries, houses 19.9 percent of the total population of the region, and produces 15.5 percent of its output. The full configuration of growth performers in the region—according to the criteria established here—can be seen in annex A.

How does the growth experience of the established, improved, slipping, and falling behind groups translate into the evolution of living standards? Figure 2.2 plots the evolution of (population-weighted) real GDP per capita for these four groups of countries since 1966. It shows that:

- Real income per capita among established performers—the lowest of the four groups throughout the period—is somewhat converging to that of the other three groups. The group’s real income per capita started a steady increase since 1995 and grew at an annual average rate of 4.6 percent per year since 2001.
- Real income per capita among the falling behind countries has experienced a steady decline since 1998 with GDP per capita falling at an annual average rate of 1.6 percent.

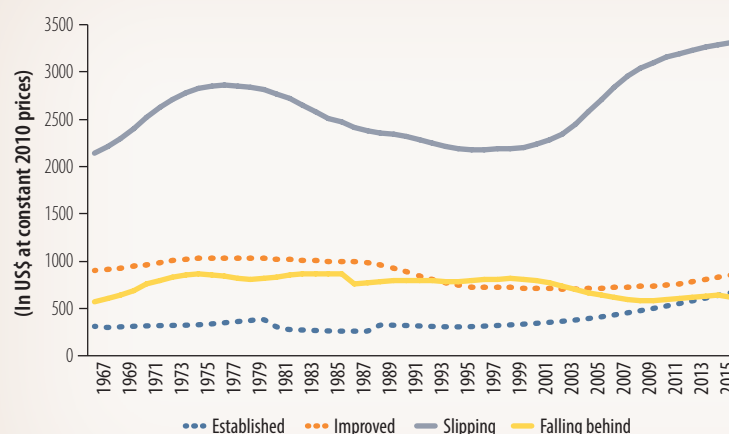
MAP 2.1: Growth Performance by Country



Source: World Bank.

- Real income per capita among slipping countries experienced a turnaround in real GDP per capita since the mid-1990s, and grew at an annual average per capita rate of 2.6 percent per year during 1995–2008. During the post-crisis period, per capita income has grown at a much slower pace —about 0.9 percent per year since 2012.
- After roughly flat-lining for the first two decades and sliding since the mid-1980s, the real income per capita of improved performers started growing in 2003, and at a faster pace since 2012 (about 2.8 percent per year).

FIGURE 2.2: Real GDP per Capita, 1966–2015



Source: World Bank.

Note: The figure presents the Hodrick-Prescott (HP) trend of the median real income per capita of the corresponding group. The value of the smoothing parameter  $\lambda$  in the HP algorithm for annual data is 6.25 (Ravn and Uhlig 2002).

There is some evidence of convergence in levels of income per capita among the different groups of countries in Sub-Saharan Africa.

## ANATOMY OF GROWTH ACROSS THE DIFFERENT GROUPS OF PERFORMERS

The patterns of growth of the established, improved, slipping, and falling behind performers in Sub-Saharan Africa can be assessed from two different lenses. One is by examining the evolution of growth and size at the sector level, namely the dynamics of economic activity in agriculture, industry (especially manufacturing), and services. The other is by assessing the sources of growth per worker in the different groups of countries. Specifically, this is done by computing the contribution of factor accumulation (physical and human capital) and total factor productivity (TFP) among the different groups of performers in Sub-Saharan Africa.

### *Sector growth*

Table 2.1 presents the share of the different sectors of economic activity, the growth rate of the value added of each sector, as well as its contribution to GDP for the four groups of countries in 1995–2008 and 2014–15. In the case of the participation of the different sectors of economic activity, the share of agriculture in GDP declines over time, whereas that of industry and services increases among established performers. However, the rising share of industry is attributed to non-manufacturing activities (construction, mining, and quarrying, among others)—as the share of manufacturing declines over time. Among improved countries, the share of agriculture declines while that of services increases—with the share of industry remaining unchanged. Zooming in on the industry sector shows that the relative constancy is the outcome of a lower share in manufacturing that is partly offset by a higher share in non-manufacturing activities. In the case of slipping and falling behind countries, the share of agriculture in GDP declines, although at a faster pace in the case of the latter group. The share of industry (as well as manufacturing) in GDP also declines over time for these groups of countries, although at a faster pace for slipping countries. The services sector rises for both slipping and falling behind countries.

Broadly speaking, the main difference between the fast-growing countries (established and improved) vis-à-vis the slow-growing countries (slipping and falling behind) is that the former might reallocate resources from agriculture to industry and services, while the latter might reassign resources from agriculture and industry to services.

Looking at the average annual growth rates of each sector, industry and services are clearly the more dynamic sectors for the established performers in both periods. Industry growth might be primarily driven by non-manufacturing activities (say, construction and extractives), although the rate of growth of manufacturing exceeds 8 ppa in both periods. For the improved performers, the growth rate of industry and services exceeds 6 ppa in 2014–15, and the latter sector grows at a slightly faster pace than the former (6.79 versus 6.50 percent per year). The growth of agriculture (although lagging compared with the other sectors) is still higher than 6 ppa for the established and improved performers in 2014–15.

Slipping performers, by definition, had a strong showing in 1995–2008, with services and industry (primarily non-manufacturing) being the most dynamic sectors. However, all sectors had a marked slowdown in 2014–15, and the agriculture and industrial sectors contracted. The contraction of the

industrial sector among slipping performers was mainly attributed to non-manufacturing activities. Falling behind countries already had a poor showing in 1995–2008; however, industrial activity contracted in 2014–15, while agriculture and services grew during the same period.

Examining the contribution of sector activity to GDP growth, the fast performers (established and improved) have a greater and more balanced contribution from industry and agriculture than the slow performers (where their slower growth is mainly driven by the services sector). Agriculture and industry jointly explain about 51 and 50 percent of GDP growth among established and improved performers, respectively, in 2014–15.

**TABLE 2.1: Sectoral Growth**

	Sector Share				Growth Rate				Growth Contribution				Overall Growth
	Agriculture	Industry	Services	Manufacturing	Agriculture	Industry	Services	Manufacturing	Agriculture	Industry	Services	Manufacturing	
A. 1995-2008													
Established	37.42	18.04	44.54	9.25	6.48	10.58	7.73	8.77	2.44	1.97	3.42	0.93	7.83
Improved	27.79	24.00	48.22	14.86	2.95	2.69	3.86	2.71	0.87	0.67	1.90	0.41	3.45
Slipping	23.52	30.19	46.29	8.05	3.09	5.34	7.02	4.53	0.87	0.93	3.31	0.33	5.11
Falling behind	25.33	28.84	45.68	15.90	0.81	1.43	2.11	1.08	0.29	0.68	1.05	0.25	2.02
B. 2014-2015													
Established	34.29	19.03	46.10	6.25	5.86	9.53	8.34	8.25	2.10	1.78	3.79	0.46	7.67
Improved	25.63	23.93	50.49	12.82	6.52	6.50	6.79	4.32	1.67	1.59	3.44	0.67	6.70
Slipping	23.53	20.36	55.85	6.55	-0.32	-1.35	1.94	1.80	0.54	-0.06	0.78	0.16	1.26
Falling behind	20.77	28.60	51.96	13.84	4.17	-0.35	2.23	0.49	0.82	-0.02	1.29	0.15	2.10

Source: World Bank staff calculations.

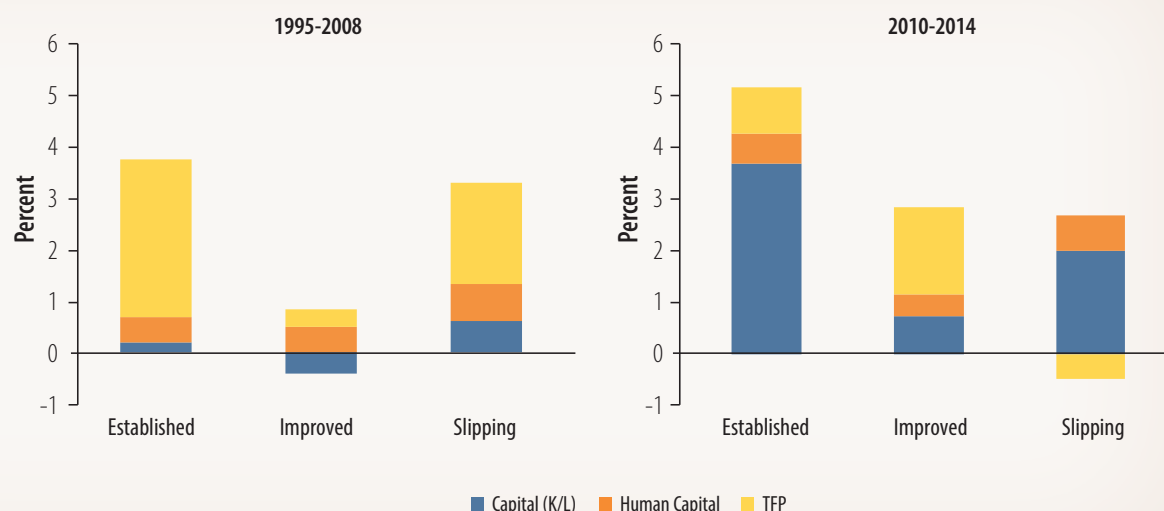
A previous issue of *Africa's Pulse* examined the contribution of capital stock and TFP to (median) growth of real GDP per worker during 1995–2012 for fast- and slow-growing countries in Sub-Saharan Africa (World Bank 2014a). The report showed that: (a) slow-growing countries registered negative TFP growth throughout the period; (b) TFP played a larger role in fast-growing countries; and (c) the contribution of TFP to growth was greater among resource-rich vis-à-vis non-resource-rich countries.

Figure 2.3 depicts the contribution of factor accumulation (physical and human capital) and TFP to real growth per worker among the groups of established, improved, and slipping performers in 1995–2008 and 2010–14. The change in the years for the second period responds to the following motives: (a) lack of data on capital stock and human capital for 2015 among the African nations, and (b) taking a longer second period, in this case 2010–14, would ameliorate problems with cyclical use of factors.

During 1995–2008, growth per worker among the established performers was approximately 3.6 ppa, and mainly driven by increases in TFP. Factor accumulation explains about one-fifth of growth per worker in this group; the rest is attributed to TFP. Slipping countries (which had a good growth record in 1995–2008) grew at an annual rate of 3.1 percent per worker. Factor accumulation in this group explained

The contribution of TFP is greater for the fast-growing countries in Sub-Saharan Africa.

**FIGURE 2.3:** Growth Decomposition across Countries in Sub-Saharan Africa, 1995–2008 versus 2010–14



Source: The data were collected from the Penn World Tables 9.0 (Feenstra, Inklaar, and Timmer 2015).

more than two-fifths of growth per worker. Finally, improved countries (with a rather modest growth record in 1995–2008) grew at an annual rate of only 0.5 percent per worker. In this group, the capital stock per capita declined, while TFP grew and contributed about three-quarters of growth per worker.

During 2010–14, the established performers had a greater average annual growth rate per capita compared with 1995–2008 (that is, 5.2 percent); however, the composition of growth changed. Factor accumulation (physical and human capital) explained more than four-fifths of growth per worker for this group (as opposed to one-fifth in 1995–2008). By contrast, the group of slipping performers saw their growth rate per worker decline from 3.1 percent in 1995–2008 to 2.2 percent in 2010–14, and they registered negative TFP growth during the latter period. Finally, the real GDP growth per worker of improved performers increased from 0.4 ppa in 1995–2008 to about 2.8 ppa in 2010–14. In the latter period, factor accumulation and TFP had a more balanced contribution to growth per worker (thus, explaining 40 and 60 percent, respectively).

Among the fast-growing groups of countries, Ethiopia and Rwanda had the best performance in growth per worker and TFP growth in 1995–2008 and 2010–14 among the established performers. Among the improved performers, Côte d'Ivoire and the Democratic Republic of Congo experienced a significant turnaround in growth per worker and TFP growth.

## ROLE OF MACROECONOMIC POLICIES

A recent edition of *Africa's Pulse* examined whether Sub-Saharan African countries had adequate macroeconomic policy space to withstand adverse shocks that could derail/slow down their growth path (World Bank 2015b). It argued that some countries in the region were able to use their built-in buffers to finance policy responses when the 2008/09 global financial crisis unfolded. In the aftermath



of the crisis, however, macroeconomic policy vulnerabilities have heightened. The region lives in an environment of widened current account deficits, lax fiscal policies, and greater debt vulnerabilities, and with smaller buffers than in the run-up to the global financial crisis.

At the same time, the report validly argued that there is a great deal of heterogeneity not only in economic performance, but also in the quality of macroeconomic policies across countries in Sub-Saharan Africa. This section evaluates the quality of macroeconomic policy among the established, improved, slipping, and falling behind countries in the region.

The evolution of the Country Policy and Institutional Assessment (CPIA) scores on economic management over 2005–15 for fast- and slow-growing countries in the region shows that the quality of economic management (as reflected in their monetary and exchange rate, fiscal, and debt policies) has been greater among established and improved performers compared with slipping and falling behind countries since 2011. Hence, on the one hand, growth among established and improved performers has been supported by greater quality of macroeconomic policies. On the other hand, there has been a gradual decline in the score for economic management among slipping countries since 2008. Looking at the performance of economic management within the established and improved performers, we find that:

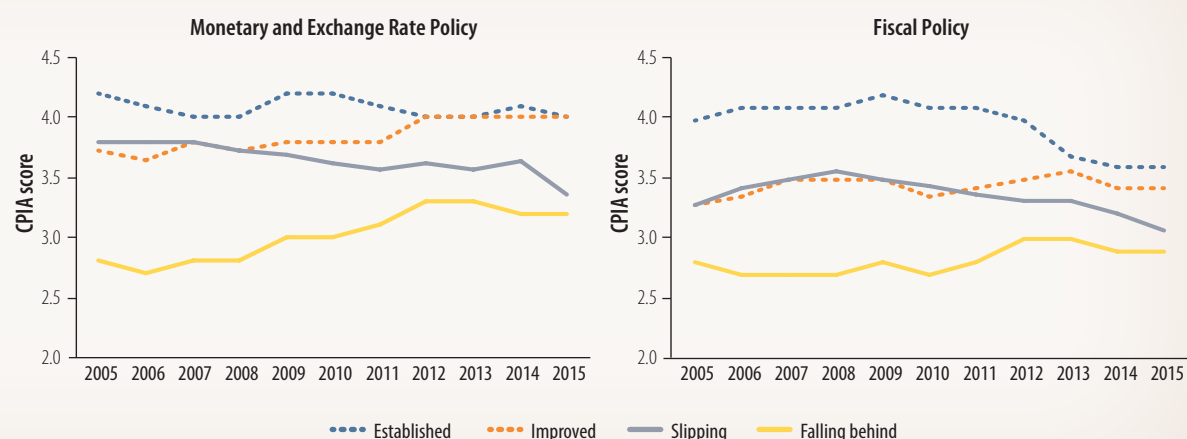
- (a) Rwanda and Tanzania exhibit the highest scores in economic management among the established performers by 2015, whereas Mozambique is the only country within this group with a decrease in its score.
- (b) Kenya and Senegal display the highest scores in economic management among the improved performers by 2015. Côte d'Ivoire shows the greatest improvement in economic management, while the score for Togo has declined slightly since 2011.
- (c) Economic management scores have a wider band of variation across countries in the group of improved performers compared with established ones. For instance, the CPIA scores for economic management typically fluctuate between 3.5 and 4.5 among established performers, and range from 2 to 4.5 among improved performers.

The CPIA scores for the quality of monetary and exchange rate policies and the quality of fiscal policy components of the index of economic management indicate a similar pattern (see figure 2.4). The quality of the monetary framework has been higher among established and improved performers since 2011, and that of slipping countries has been on a gradual but slow decline since 2008 (figure 2.3). Interestingly, the dispersion across countries in the quality of the monetary/exchange rate policy framework is relatively similar.

Likewise, the quality of fiscal policies is superior among established and improved performers (figure 2.4). However, it has been deteriorating among established and slipping countries—although in the latter at a faster pace. In contrast to what occurred with the adequacy of monetary frameworks, the cross-country variability in the quality of fiscal policies is larger among improved performers than among established ones.

Established and improved performers have better quality monetary and fiscal policies.

**FIGURE 2.4: CPIA Scores on Monetary and Fiscal Policy across Countries in Sub-Saharan Africa**



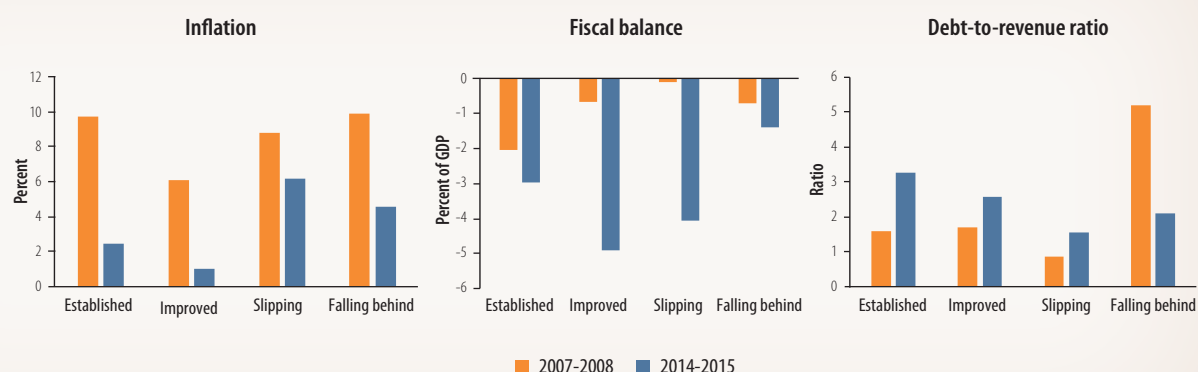
Source: CPIA Africa, World Bank.

Indicators of monetary stability and fiscal balance show mixed results (figure 2.5). First, the median rate of consumer price index inflation for all four groups of performers was lower in 2014–15 relative to 2007–08, and the sharpest decline in the rate of inflation took place among established performers (from 9.7 to 2.4 percent) and improved ones (from 6.0 to 1.0 percent). Although inflation also dropped among slipping performers, it stood at an annual rate of 6.2 percent in 2014–15. Within the group of established and improved performers, the largest drops in inflation were experienced by the Democratic Republic of Congo, Ethiopia, Rwanda, and Senegal.

Second, the overall fiscal balance in 2014–15 deteriorated for all four groups relative to that in 2007–08. The largest deterioration of the fiscal balance is observed among improved performers (where the median deficit increased from 0.7 percent of GDP in 2007–08 to 4.9 percent of GDP in 2014–15), and slipping performers (where the median deficit increased from 0.1 percent of GDP in 2007–08 to 4.1 percent of GDP in 2014–15). Among the established performers, Mozambique experienced the largest

Indicators of monetary stability and fiscal balance show mixed results across country groups.

**FIGURE 2.5: Inflation, Fiscal Balance, and Fiscal Space across Countries in Sub-Saharan Africa**



Source: World Economic Outlook, IMF.

deterioration of fiscal accounts—with a fiscal deficit that widened from 2.3 percent of GDP in 2007–08 to 8.3 percent of GDP in 2014–15. Benin and Cameroon saw their fiscal surpluses in 2007–08 turn into large deficits.

Finally, the ratio of gross public debt to government revenues (excluding grants) is a proxy for “de facto” fiscal space (see Aizenman and Jinjark 2010).<sup>2</sup> It measures the number of government revenue years it takes to repay the public debt.<sup>3</sup> In this context, an increase in the number of years to repay the debt signals the lack of so-called de facto fiscal space. Across the different groups of performers, the number of government years to repay debt has increased among established performers from 1.6 in 2007–08 to 3.2 in 2014–15, and among improved performers from 1.7 in 2007–08 to 2.6 in 2014–15. The number of government years to repay debt declined from 5.2 in 2007–08 to 2.0 in 2014–15 among falling behind countries, although this might be attributed to debt forgiveness in Burundi, Comoros, and Guinea. Within each group of countries, the largest deterioration of fiscal space occurs in: (a) Mali and Mozambique among established countries, and (b) Benin and Cameroon among improved countries.

Looking at the different indicators of monetary and fiscal policy (outcomes and quality indicators), it can be argued that countries in Sub-Saharan Africa—especially the fast-growing established and improved performers—have bigger space to maneuver on the monetary front, whereas their fiscal deficits continue widening and their fiscal space is gradually shrinking.

## DRIVERS OF GROWTH: MOVING BEYOND LUCK TO POLICY

The previous section showed that the higher growth rate of established and improved performers has been supported by better macroeconomic policy frameworks—although these countries appear to have greater space on the monetary rather than the fiscal front. However, it is warranted to ask whether having sound macroeconomic policy frameworks guarantees sustained growth. Do good macroeconomic policies influence the sustainability of growth among countries in Sub-Saharan Africa?

A strand of the literature has questioned the role of macroeconomic policies as a force influencing growth over the long term (see, for instance, Acemoglu et al. 2003, and Easterly 2005). In this context, Fatas and Mihov (2013) summarize the main three pitfalls: (a) macroeconomic policy variables become insignificant when a large number of long-term growth determinants are included in the analysis; (b) the degree of persistence of macroeconomic policies is unambiguously higher than that of growth rates over time; and (c) the positive co-movement between good macroeconomic policies and growth is attributed to the fact that both are the outcome of robust institutions; hence, this relationship dissipates once we control for the quality of institutions.

This section looks beyond (exogenous) external factors affecting growth across countries in Sub-Saharan Africa, to domestic factors—and, notably, domestic policies—that help sustain growth over the long term. The section examines the role of policy-driven, long-term growth fundamentals in the economic

<sup>2</sup> Fiscal space is typically defined “as room in a government’s budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy” (Heller 2005).

<sup>3</sup> More appropriately, Aizenman and Jinjark (2010) use government tax revenues. Sparse data over time and issues of cross-country data availability for countries in Sub-Saharan Africa prevent us from building a time series of “de facto” fiscal space.

performance of established, improved, slipping, and falling behind countries. These policy-driven, long-term growth drivers are classified into four groups:

- (a) *Structural policies*. This focuses on the degree to which the legal, regulatory, and policy environment fosters private sector development by creating jobs, boosting investment, and unleashing productivity. Specifically, it looks at the business regulatory environment, depth of the financial sector, and trade diversification.
- (b) *Governance*. This comprises policies to boost the effectiveness of the legal system and rule-based governance structure to enforce property rights and ensure the quality of the public administration in policy implementation and regulatory management. It also includes the extent to which the executive, legislators, and other high-level officials are held accountable for their use of public resources, administrative decisions, and obtained outcomes.
- (c) *Infrastructure*. This evaluates the quality of and access to the different infrastructure sectors (rail network, air transport, and access to water, among others). In addition to the indicator of overall quality of infrastructure, this group focuses on the quality of the road network, and the quality and reliability of electricity supply.
- (d) *Rural sector*. This focuses on public policies for the development of the agriculture and rural sectors, securing access to land and equitable user-rights over water resources for agriculture among the rural poor, and policies supporting the development of private rural businesses and commercially-based agricultural and rural finance markets.

In sum, this section aims at examining whether government policies provided an enabling environment for the private sector to develop and boost growth. Appendix A provides further details on the definitions and sources of the indicators used in this analysis.

## STRUCTURAL POLICIES

To assess the evolution of structural policies among established, improved, slipping, and falling behind countries, this section focuses on three dimensions: (a) the quality of the regulatory framework, (b) the depth of domestic banks, and (c) the diversification of exports. This categorization may also involve policies that boost human capital accumulation, open trade, and capital accounts, among others. Box 2.1 summarizes the importance of structural policies in driving the growth of one of the best performers among the group of established countries, Rwanda.

### *Quality of the regulatory framework*

Private sector development can influence long-term growth to the extent that governments are capable of implementing policies and regulations that foster the contestability of output and factor markets. The quality of the regulatory framework across countries in Sub-Saharan Africa is proxied by two indicators: (a) the CPIA score on business regulatory environment, and (b) the index of regulatory quality from the World Bank's World Governance Indicators (WGI).

Over the past two decades, Rwanda has experienced fast and sustained growth. Its annual average growth of gross domestic product (GDP) has been about 8 percent since 1996 (4.7 percent per annum in per capita terms). In spite of the adverse external conditions surrounding the region in the past few years, Rwanda's growth forecast in 2016 remains at 6 percent, significantly higher than the regional average of 1.6 percent. Real GDP per capita has more than doubled since 1996; however, it still remains at a low level (US\$690 in 2015).

**BOX 2.1.**  
**RWANDA:**  
Structural  
Reforms and  
Steady Growth

Our analysis shows that Rwanda, one of the established growth performers in the region, has made strides not only in macroeconomic management, but also in structural policies. The main goal of this box is to provide granular information on what contributes to sustain growth in a small, landlocked, resource-poor economy.

### **Macroeconomic Stability**

In the aftermath of the 1994 civil war, the Rwandan government sought to stabilize and revitalize its economy by establishing Vision 2020, a strategic plan created to transform the country into a middle-income country by 2020. Although work is still in progress, the government has made major achievements in some of the objectives highlighted in the plan, including macroeconomic stability. Rwanda managed to implement prudent macroeconomic policies: (a) consumer price index inflation has remained at an average annual rate of 3.8 percent since 2010; and (b) international reserves, in spite of their recent decline, remain at an equivalent of 4.8 months of imports.

On the fiscal front, the government has implemented major tax reforms since 2000, to increase revenues and mobilize domestic resources. Following Vision 2020, most measures have focused on widening tax bases, strengthening tax compliance, and encouraging foreign direct investment. Recently, the government has implemented a major tax reform that includes revision of the investment code, aimed at eliminating loopholes and unnecessary exemptions, broadening the value-added tax (VAT) base, revising the excise tax regime, establishing the infrastructure development levy on imported goods, and increasing the road maintenance levy fund. Tax revenues increased from 11.4 percent of GDP in 2006 to 15.8 percent of GDP in 2015 (World Bank 2016b).

### **Structural Reforms**

Along with sound macroeconomic policies, robust growth in Rwanda has been supported largely by the formulation and implementation of structural policies aimed at improving the institutional environment for private sector development.

*Marked improvements in business environment.* In 2012, the Rwanda Development Board (RDB), a government agency dedicated to enhancing business, investment, and innovation, launched a new online system with which businesses electronically obtain licensing certificates, including Investment Registration and Environment Impact Assessment Certificates. This online one-stop window facilitates easier and more efficient registration processes. Furthermore, in 2016, the government eliminated the requirement to open a bank account to register for VAT.

Strengthening access to credit is another crucial step in starting a business. The Government of Rwanda has implemented various measures to ensure better access to credit. A secured transactions system provides more flexibility on the types of debts and obligations that can be secured through a collateral agreement. Credit information is advanced through collection and dissemination of historical information from utility companies. More recently, the credit bureau started providing credit scores to banks and financial institutions as the credit registry expanded borrower coverage. Such measures have strengthened the credit reporting system.

**BOX 2.1**  
*Continued*

The Doing Business report 2016 shows that Rwanda ranks second in the Sub-Saharan Africa region in the overall doing business scores, and fourth in the indicator for starting a business. The time and cost of starting a business have markedly decreased through various reforms. In addition, the government has undertaken pro-investment policies, which have resulted in increasing foreign direct investment as well as local business formation.

*Property rights.* Clear assignment of rights to property is a precondition for sustainable land management, productivity-enhancing investment, and entrepreneurial activity. Proper land tenure regulation not only supports individuals in receiving property and engaging in economic activities, but also allows businesses to use land as collateral for a bank loan. Although access to land has been a key bottleneck for establishing and running a business in many African countries, Rwanda has become the only African country that has completed nationwide land regulation. In 2015, all 10.67 million land parcels were entered through the land tenure regularization into the land administration system (Hilhorst and Meunier 2015). With formal land titling and an electronic administration system, it has become significantly easier to transfer and register property. Regulatory bodies such as the RDB register intellectual property rights and provide a certificate and ownership title. The government has been highlighting robust anti-corruption efforts as a key national goal. Corruption allegations are thoroughly investigated and prosecuted.

**Private-Sector-Led Growth**

Private sector development has played a catalytic role in Rwanda's economic growth. The government has undertaken measures to foster private sector participation in the country's key industries, such as tourism. The government has launched measures to promote private sector investment in tourism, and formed a tourism group (through public-private dialogue) where the private sector is consulted on national policies and strategies. The government has also enabled a business-friendly environment by implementing market-based reforms: investment codes, company laws, labor regulations, and the insolvency law have been reformed to attract private sector participation. A one-stop window at one border crossing was launched as such custom procedures were simplified. After a myriad of government and private sector efforts, tourism currently accounts for 25 percent of total exports, an increase from 13 percent in 1997.

Coffee cultivation is another important industry in Rwanda. Historically, coffee was a low-quality, low-price commodity in Rwanda, as the country lacked infrastructure. Moreover, the industry was prone to volatile international market and commodity price fluctuations. To strengthen the industry, the government liberalized the coffee sector in the late 1990s by lowering various trade barriers, creating new incentives to invest in coffee production, and fostering entrepreneurship within the industry. The government began opening the market for coffee exports to increase competition, and strengthening the value chain. The government also initiated discussions about nurturing a high-quality coffee industry, which is less prone to price volatility. The liberalization of the industry allowed smallholder farmers to benefit from higher coffee prices, as the smallholders were incentivized to invest in infrastructure such as coffee-washing facilities. Furthermore, a new value chain and networks among farmers mitigated social distrust and allowed the country to regain social benefits.

On the quality of the business regulatory environment of the four groups of performers, the evolution of the CPIA scores over 2005–15 shows that (figure 2.6): (a) the established and improved performers have the highest level of business regulatory environment, and (b) the gap between established and slipping performers has increased since 2009, given that the quality of regulation has declined in the latter group.

Among the established performers, Rwanda is the only country in the group with notable improvement in this area. For improved performers, this is the case of the Democratic Republic of Congo—although coming from low levels.

The WGI index of regulatory quality shows two opposite trends since 2007: (a) an increase in the quality of regulations among established and improved performers, although the former group at a faster pace, and (b) a decline in regulatory quality among slipping countries. By the end of the period, established and improved performers exhibited the highest quality of regulations (namely, those governing market contestability). The average of established and improved groups of economies in Sub-Saharan Africa is still below the average of developing countries (excluding Sub-Saharan Africa).

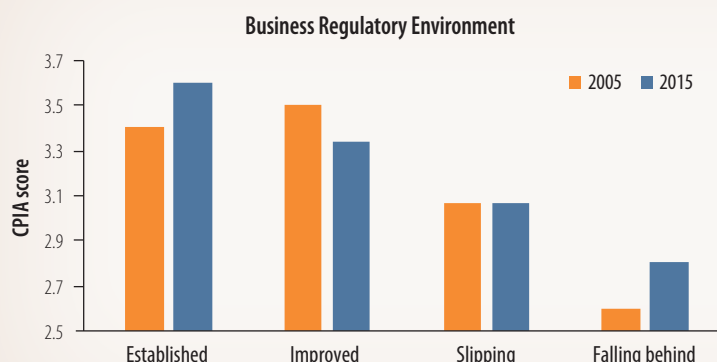
The biggest reformer, among established performers, is Rwanda, whose WGI index of regulatory quality is higher than that of other developing countries. Côte d'Ivoire and Senegal experienced some increase in regulatory quality among improved countries. However, the group of improved performers shows greater cross-country variability in regulatory quality than the established performers.

### *Depth of the domestic banking sector*

Financial development will foster long-term growth to the extent that domestic financial institutions improve in the following areas (Levine 2005): (a) producing ex ante information about potential investments; (b) monitoring investments and implementing corporate governance; (c) trading, diversifying, and managing risk; and (d) mobilizing and pooling savings, among others.

Figure 2.7 shows a steady increase in credit to the private sector among improved countries (from 15.5 percent of GDP in 2006 to 23.8 percent of GDP in 2015), as well as among established countries (from 11.4 percent of GDP in 2007 to 22.6 percent of GDP in 2015), although the level of financial depth of the former is larger than that of the latter. In the case of slipping countries, the credit-to-GDP ratio not only has increased at a slower pace, but also their domestic banks are not as deep as those of the established and improved country groups. Mozambique and Rwanda display the greatest increase in

**FIGURE 2.6: Quality of the Regulatory Framework in Sub-Saharan Africa**



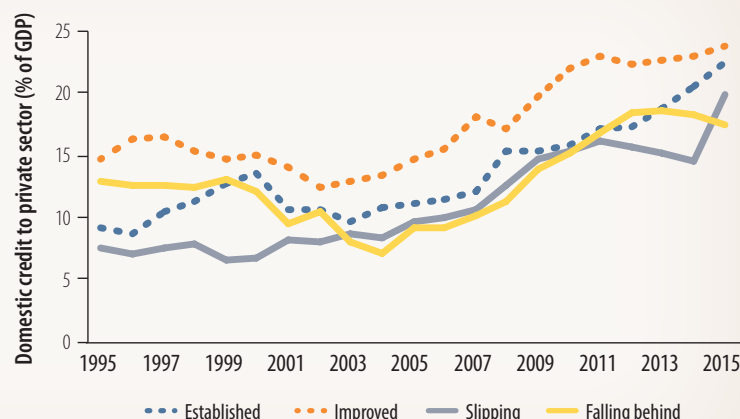
Source: CPIA Africa, World Bank.

Better regulatory quality supports the growth of established and improved performers.



Banking sector activity deepened among improved performers and, to a lesser extent, among established ones.

**FIGURE 2.7:** Domestic Credit to the Private Sector across Groups in Sub-Saharan Africa



Source: World Development Indicators, World Bank.  
Note: Zimbabwe is excluded due to insufficient data.

the credit-to-GDP ratio among established performers, whereas financial depth increased sharply in Senegal among improved performers.

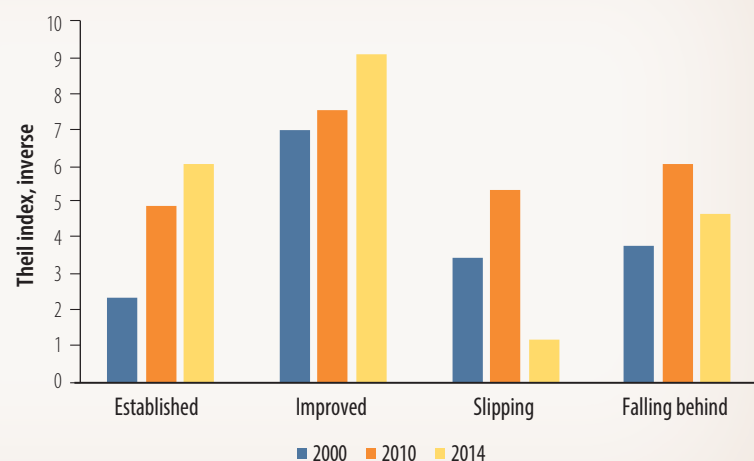
### Export diversification

A strand of the literature shows that trade openness is conducive to long-term growth under certain circumstances (Frankel and Romer 1999; Chang, Kaltani, and Loayza 2009). However, greater trade integration can lead to greater volatility, as

countries become more exposed to external shocks—and this is the case of commodity-exporting nations or countries with concentrated structures of production. Haddad et al. (2013) find that product diversification—rather than market diversification—protects an economy against the deleterious impact of idiosyncratic global shocks on volatility.

Improved performers have the most diverse structure of exports.

**FIGURE 2.8:** Export Diversification across Countries in Sub-Saharan Africa, 2000–14



Source: Ibrahim Index of African Governance.

Figure 2.8 depicts the inverse of the Theil index using disaggregated exports at the four-digit level following the Harmonized System, rev. 2. These scores were standardized into a 0–100 scale, with greater scores implying more diversified export structures. The first feature that emerges from the figure is the low degree of diversification among groups in Sub-Saharan Africa—notably, slipping and falling behind performers. Second, improved performers have the most diverse export structure

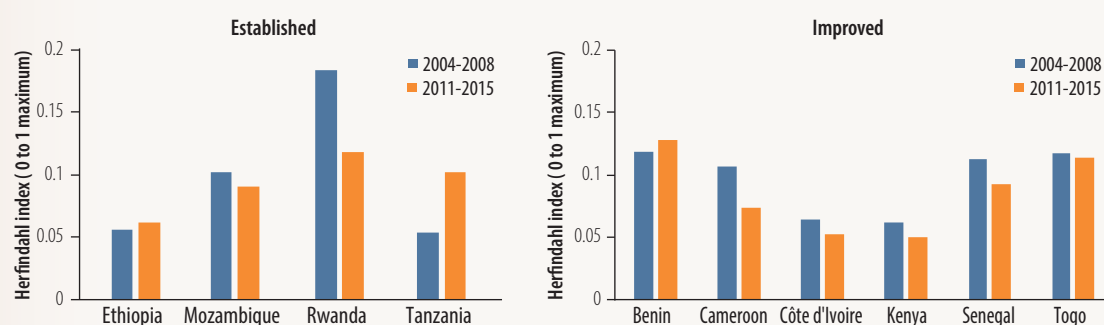
among the four country groups, with an index that is about 50 percent greater than that of established countries. Third, Tanzania and Senegal are the best performers in export diversification among established and improved countries, respectively (box 2.2).

One of the salient features of Sub-Saharan African countries is the limited diversification of their export structures. In general, countries in the region have low levels of export diversification in terms of markets and products. Having a reduced number of trading partners or relying on an export basket with a limited number of goods prevents countries from diversifying away idiosyncratic shocks. This box examines whether the growth of established and improved performers in the Africa region was supported by trade diversification across markets or products.

**BOX 2.2: Trade Diversification among Established and Improved Performers**

Figure B2.2.1 depicts the extent of market diversification as measured by the Herfindahl index of trading partners. It generally shows that improved performers tend to be more diversified across markets than established ones. Among the improved performers, Cameroon, Côte d'Ivoire, Kenya, and Senegal have increased the number of destinations for their exports over the past 10 years, while Rwanda is the only country among the established ones with significant progress in market diversification.

**FIGURE B2.2.1: Herfindahl Index of Market Concentration**



Source: World Integrated Trade Solution database.

In terms of product diversification, the Herfindahl index of export goods for the four groups of performers across Sub-Saharan Africa is depicted in figure B2.2.2. The improved performers not only have a more diversified export basket over the past two decades, but also the number of products exported has increased. For the established performers, product diversification has gradually increased since 2004, while the export basket has become more concentrated for the slipping countries in the post-crisis period.

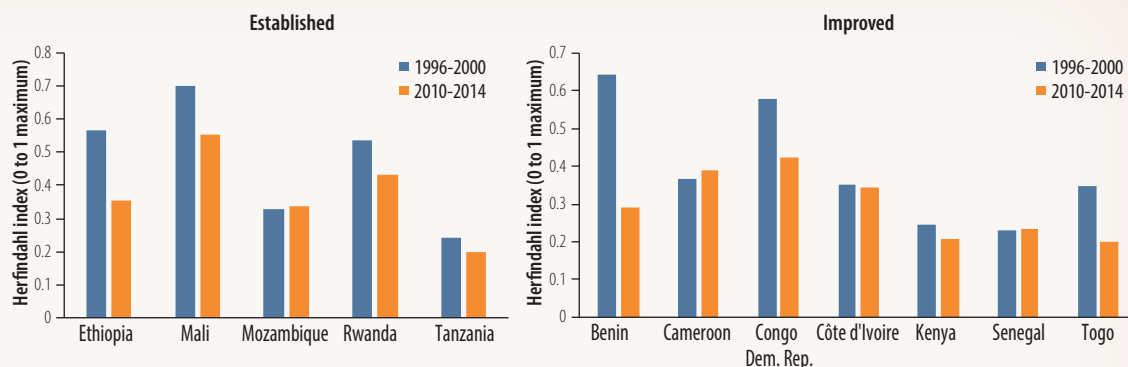
Zooming in on the established countries, Tanzania displays the greatest extent of product diversification over the past two decades. The main export products of Tanzania are gold and precious metal ores, tobacco, sesame seeds, copper ores, cashew nuts, palm oil, and coffee, among others. In addition, diversification of the export basket has steadily increased across all countries in this group—although this has taken place at different speeds. For the improved countries, Kenya and Senegal have the greatest degree of product diversification. In addition, Benin has the largest drop in the Herfindahl index of product concentration (figure B2.2.2).

**Country experience: Côte d'Ivoire**

Product diversification in Africa can also be achieved by moving up the value chain and processing existing products. This is the case of the cocoa sector in Côte d'Ivoire. The West African nation is the largest cocoa producer in the world, accounting for 40 percent of the world's total production in 2015.<sup>a</sup> Cocoa makes up 23 percent of the country's total exports. Although the majority of the country's cocoa exports are in

**BOX 2.2**  
Continued

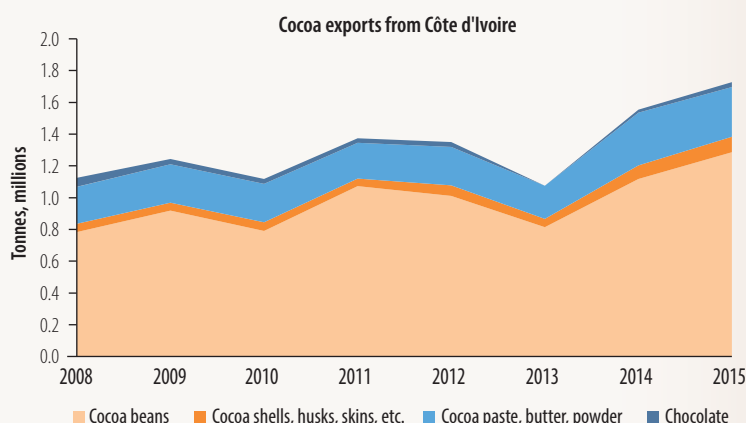
**FIGURE B2.2.2: Herfindahl Index of Product Concentration**



Source: United Nations Conference on Trade and Development (UNCTAD).

the form of beans, the expansion of domestic processing and grinding facilities has lifted exports of processed cocoa products. With rapidly increasing investment in grinding facilities, Côte d'Ivoire is now the largest cocoa processing country in the world, overtaking the Netherlands. Furthermore, the new facilities produce additional value-added products, such as whole bean and nib roasted liquor, cocoa butter, and cocoa cake, which drives their industry into further diversification (figure B2.2.3).

**FIGURE B2.2.3: Cocoa Exports from Côte d'Ivoire**



Source: COMTRADE, United Nations.

a. Cocoa Barometer 2015.

## PUBLIC SECTOR MANAGEMENT AND INSTITUTIONS

There is ample evidence that a country's institutions may create incentives for investment and technology adoption, and the opportunity for workers to accumulate human capital—thus, leading to higher growth over the long term. Weak institutions may encourage rent-seeking activities and corruption, discourage firm investment and human capital accumulation, and lead to stagnation (Acemoglu, Johnson, and Robinson 2005).

In this context, we examine the following features of institutional quality across the established, improved, slipping, and falling behind countries:

- (a) Institutions that provide a legal framework to secure and enforce property and contract rights, and foster the quality of the legal and judicial system. Proxies for this dimension of institutional

quality are the CPIA score on property rights and rules-based governance, and the WGI index of the rule of law.

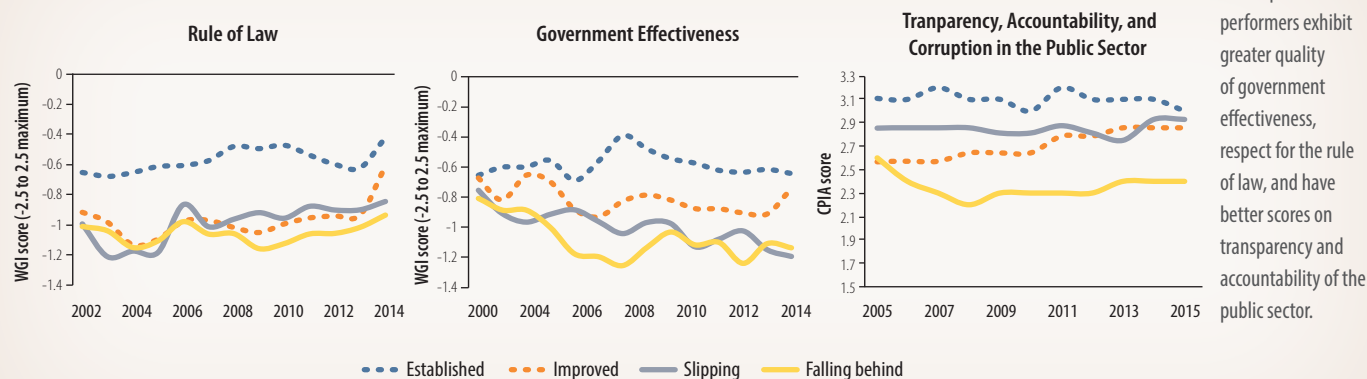
- (b) Institutions that improve the quality of public service and ensure the quality of policy formulation and implementation. Proxies for these institutions are the CPIA score on the quality of public administration, and the WGI index of government effectiveness.
- (c) Institutions that foster the transparency and accountability of government officials, foster integrity in the management of public resources, and discourage state capture by interest groups. This dimension is captured by the CPIA score on transparency, accountability, and corruption in the public sector.

### *Property rights and the rule of law*

The evolution over the past decade of the CPIA scores on property rights and rule-based governance finds that established performers display the highest scores, but they have dropped from their highs in 2010. Improved performers have seen an increase in their scores, and have gradually converged to the levels exhibited by slipping countries. Among established performers, Rwanda has the sharpest increase in protection of property rights; Mali and Mozambique have experienced a decline in their scores. For the group of improved performers, Senegal has the highest score; Côte d'Ivoire recorded the largest increase.

The evolution of the WGI rule of law index since 2000 for the four groups of countries is depicted in figure 2.9. Most of the groups of countries experienced an incipient turning point in 2013: (a) established performers have converged to other developing countries; (b) improved performers have surpassed the slipping ones since 2013; and (c) falling behind countries have seen some progress in the rule of law, although they still trail the other three groups. The degree of variability across countries in the rule of law is greater among improved performers than among established ones. Rwanda experienced the steepest increase in rule of law over the past 15 years among established performers (and registered the highest score), whereas Mali shows a declining trend over the past decade. Within the group of improved performers, Côte d'Ivoire records the largest increase, and the highest value of the rule of law index is displayed by Senegal.

**FIGURE 2.9: Quality of Public Sector Management and Institutions in Sub-Saharan Africa**



Sources: World Governance Indicators; CPIA Africa, World Bank.

## *Government effectiveness*

Established and improved performers exhibit the highest quality of public administration among the groups—although their trajectory has changed since 2010. While the quality of public administration appears to be increasing among improved countries, it has deteriorated slightly among established performers. Improved performers have surpassed slipping ones since 2012. Among the established performers, Ethiopia and Rwanda have the highest levels of quality of public administration, and that of Mali is the lowest. Among improved performers, Côte d'Ivoire exhibits the largest quality increase, and Senegal has the highest level.

The WGI index of government effectiveness for the four groups of countries in Sub-Saharan Africa displays a level lower than that of other developing countries (figure 2.9). Government effectiveness among established performers in Sub-Saharan Africa has declined steadily since 2006, and that of improved performers appears to be catching up by the end of the period. Government effectiveness has also declined among slipping countries, but at a faster pace than that of established countries. Among established performers, Rwanda is the only country with a sharp improvement and greater government effectiveness relative to that of other developing countries; Mali and Mozambique exhibit a steady deterioration in this indicator. Cross-country variability in government effectiveness is greater among improved performers (compared with established ones), with values ranging from about -2 (the Democratic Republic of Congo) to 0.2 (Senegal).

## *Government accountability*

The evolution over time of the CPIA scores on transparency, accountability, and corruption in the public sector for the four groups of countries is plotted in figure 2.9. Established performers have the highest scores in government accountability—although they still have lower levels than those of other developing countries. Progress in transparency and accountability is observed since 2012 among improved performers. Again, there is greater variability across countries in accountability among the improved than the established performers.

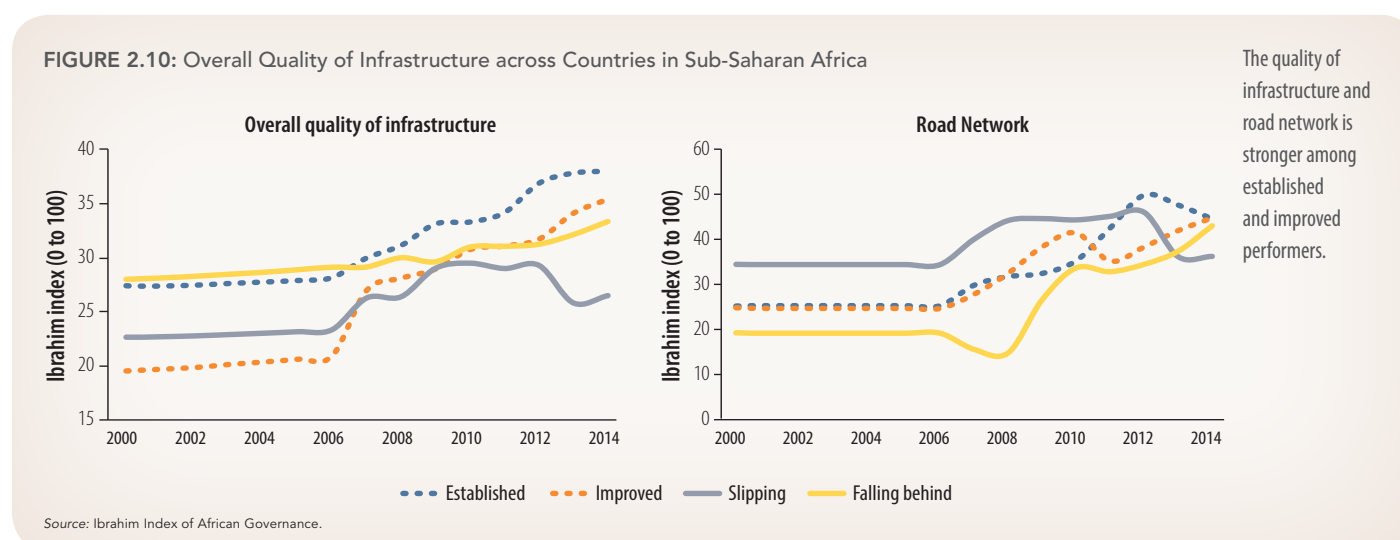
## **INFRASTRUCTURE**

There is ample research on the contribution of infrastructure development to the growth of productivity and aggregate income. Theoretical models have explored different characterizations of the economic role of productive public services and their financing, while the empirical literature has examined the growth impact of infrastructure development in a variety of cross-section, time-series, and panel data settings (Calderón and Servén 2014). Empirical evidence for the region shows that the increased volume of infrastructure stocks and improved quality of infrastructure services have a positive impact on long-run growth (Calderón and Servén 2010).

In most dimensions of infrastructure performance, Sub-Saharan Africa ranks at the bottom of all developing regions, so the strategic push on infrastructure is not surprising. This section looks at three indicators: (a) an overall index of the quality of and access to infrastructure, which involves seven sectors,

namely, roads, railways, air transportation, access to water, electricity supply, telecommunications, and digital connectivity; (b) an indicator that assesses the quality of the road network; and (c) an indicator for the perception of the quality and reliability of the electricity supply, which accounts for interruptions and voltage fluctuations.

Figure 2.10 presents the evolution of the (perceived) overall quality of (and access to) infrastructure across the four country groups. A more positive perception of the overall quality of infrastructure has been building up since 2006, notably among established and improved countries; the same cannot be said about slipping performers in the aftermath of the global financial crisis. Again, the cross-country variability in the perception of overall quality of infrastructure is greater among improved performers relative to established ones.



Of the established performers, Mali is the country with the greatest increase in the overall quality of infrastructure—especially since 2006. This might be attributed to the big push on infrastructure spending in Mali of about US\$555 million per year (10 percent of GDP) during the late 2000s, with nearly 85 percent of total public spending devoted to transport, power, and information and communications technology (ICT) (Briceño-Garmendia and Shkaratan 2011). Of improved performers, Kenya shows the largest improvement in the overall quality of infrastructure. Briceño-Garmendia and Shkaratan (2011) report the significant progress in infrastructure made in Kenya through the mid-2000s. For instance, institutional reforms in the power sector have reduced the amount of subsidies by 1 percent of GDP; a modern ICT sector provides 90 percent of the population with access to a GSM cell phone signal; and the establishment of a sound system for funding road maintenance should reduce the cost of road travel to the economy.

The quality of the road network over time for the different groups of performers in Sub-Saharan Africa is depicted in figure 2.10. The largest increase in the perceived quality of the road network is experienced by improved and established performers—and this is attributed to greater perception of quality in Ethiopia, Mali, and Rwanda among established performers, and in Cameroon, Kenya, and Senegal among improved performers. There is also a better perception of the quality and reliability of the electricity supply in improved and established performers. Over time, that perception has remained almost

invariant (with a slight decline in the latter years) among established performers, while that of improved ones has increased. The rising perception of quality among improved performers might be attributed to greater quality in Kenya and Senegal.

## RURAL SECTOR

Previous issues of Africa's Pulse have argued that in spite of the high growth achieved over the past two decades, the poverty rate fell at a slow pace.<sup>4</sup> Achieving faster poverty reduction requires strategies that foster inclusive growth—that is, growth that comes along with falling inequality, in outcomes and opportunities. A key ingredient is the design of policies to boost productivity in sectors where the poor will benefit directly, and key areas are agriculture and the rural sector.

It is imperative that governments in Sub-Saharan Africa continue boosting agricultural productivity and fostering productive nonagricultural jobs in rural areas, among other actions. This section looks at three components of rural sector development: (a) public resources for rural development, (b) land and water for low-income populations, and (c) rural business environment.

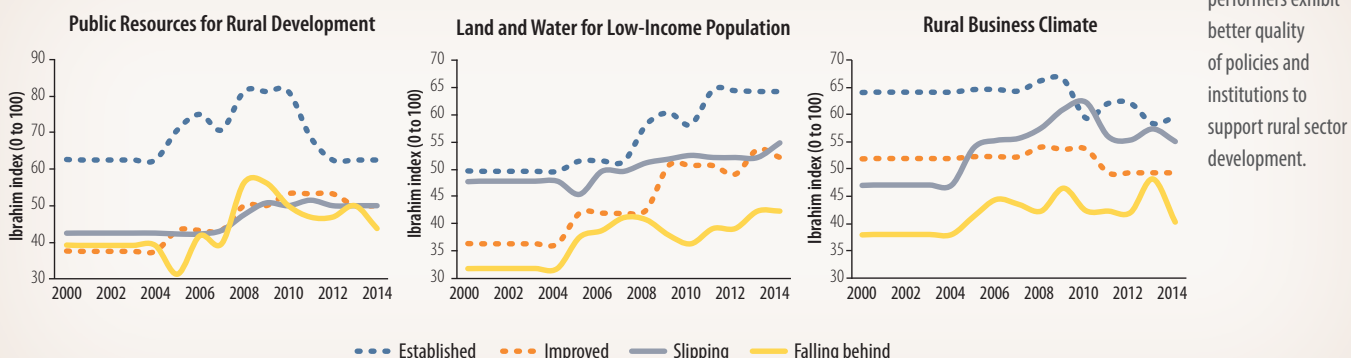
The indicator on public resources for rural development captures government policies and programs for rural sector development as well as the efficiency and transparency of the resources allocated in the sector. In spite of having the largest scores on public resources for rural development, this indicator has experienced a significant decline since 2010 among established countries (figure 2.11). The performances of improved and slipping countries are characterized by a slight increase over time and a much more volatile rise, respectively. Ethiopia and Rwanda are the countries with the largest amount of public resources devoted to rural development among established performers, and Cameroon and Senegal are those among improved performers.

The extent to which the rural poor have secure access to land and water resources for agriculture is presented in figure 2.11. The figure shows an upward trend in all groups of countries over the past decade—although there is heterogeneity on the pace of growth across groups. Established performers have the highest scores, whereas improved performers show the largest increase in the index.

Ethiopia and Rwanda are the best performers in the established group, and Cameroon and Kenya are salient nations among the improved performers. The indicator of the extent to which policy and the institutional framework support private rural businesses shows that there has been no significant increase over time in the rural business climate across the established, improved, slipping, and falling behind countries (figure 2.11). The dynamic within the groups of established and improved performers shows great volatility.

<sup>4</sup> Christiaensen, Chuhan-Pole, and Sanoh (2013) estimate that one percentage point of growth reduces poverty only by 0.7 percent in Africa, while the decline for other developing regions is 2 percent.

FIGURE 2.11: Policies and Institutions to Boost Agricultural and Rural Development



Source: Ibrahim Index of African Governance.

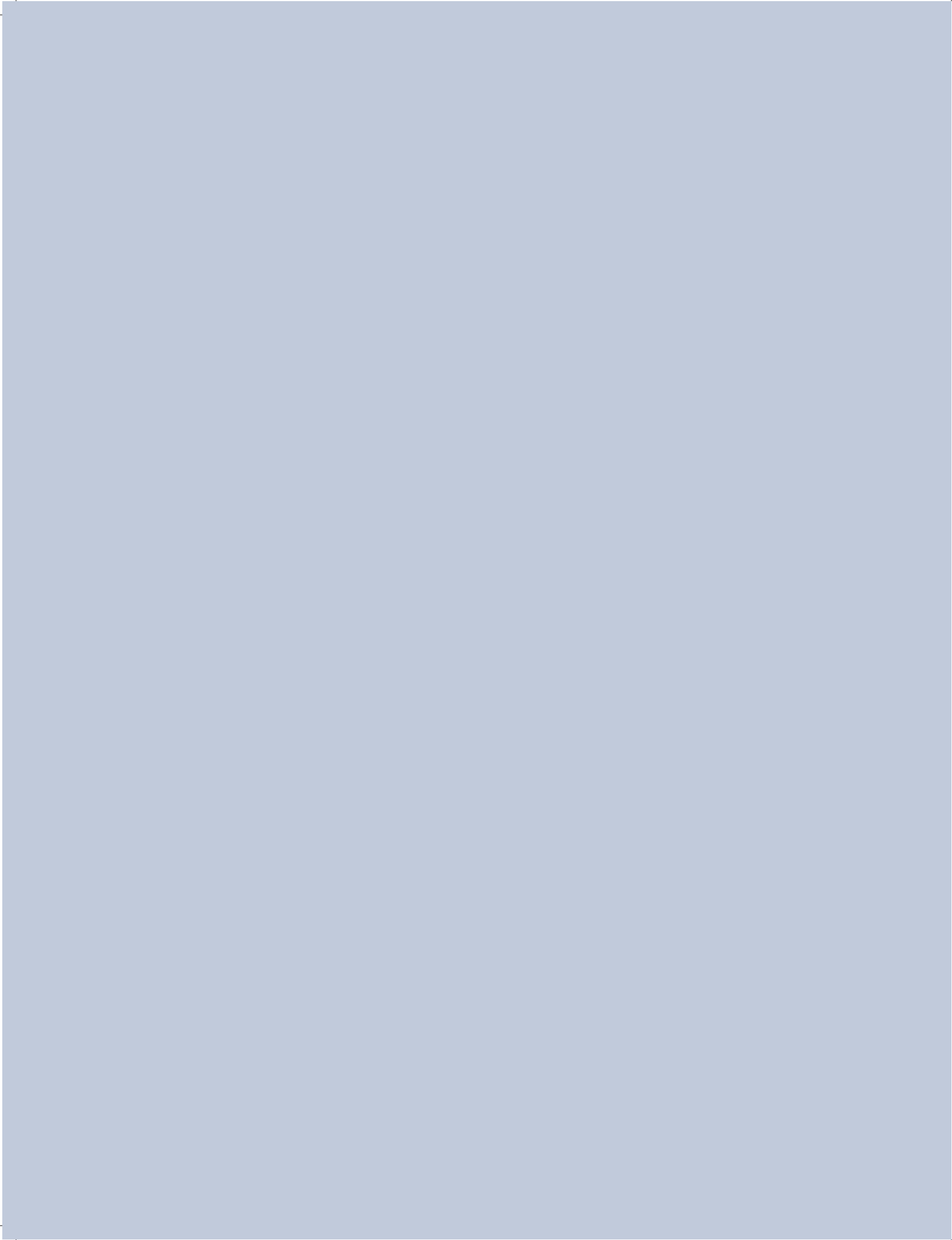
ANNEX A: Taxonomy of Countries in Sub-Saharan Africa, 2014–16 versus 1995–2008

		2014-2016		
		LOW	MEDIUM	HIGH
1995-2008	LOW	<b><i>Falling Behind</i></b> Burundi Comoros Guinea Lesotho Swaziland Zimbabwe	<b><i>Stuck in the Middle</i></b> Central African Rep. Congo, Rep. Gabon Guinea-Bissau Seychelles	<b><i>Improved</i></b> Côte d'Ivoire Democratic Republic of Congo Kenya Togo
	MEDIUM	<b><i>Slipping</i></b> Botswana Gambia, The Madagascar Sierra Leone South Africa Angola Cabo Verde Chad Equatorial Guinea Liberia Nigeria	Ghana Malawi Mauritania Mauritius Namibia Niger Zambia Burkina Faso São Tomé and Príncipe Sudan Uganda	Benin Cameroon Senegal
	HIGH			<b><i>Established</i></b> Ethiopia Mali Mozambique Rwanda Tanzania

Source: World Bank staff calculations.

Note: The classification of low, medium, and high growth is determined by the bottom and top tertiles of the distribution of 45 countries in Sub-Saharan Africa in 1995–2008. The calculated tertiles are 3.5 and 5.4 percent, respectively.





## Section 3: Enhancing Agricultural Productivity for Poverty Reduction<sup>1</sup>

- ▶ The lack of robust agricultural productivity growth underlies pervasive rural poverty in Sub-Saharan Africa. Although many developing countries in other regions have successfully raised their agricultural productivity, Sub-Saharan Africa continues to lag behind. Production increases in the region have come largely from expanding the area under cultivation rather than input intensification or total factor productivity growth.
- ▶ Yet boosting agricultural productivity in Sub-Saharan Africa would not only raise the incomes of farm households, which make up over half the region's population, it would also lower food costs for the nonfarm population and promote the development of agro-industry. These outcomes, in turn, would promote broader economic growth by stimulating demand for nonfarm goods and services. Higher productivity would also free up resources, such as labor, for the growth of other economic sectors. Improving agricultural productivity in Sub-Saharan Africa through these mechanisms remains an important strategy for reducing poverty and enhancing inclusive growth and structural transformation in the region.
- ▶ Conditions are in place for boosting the productivity of African agriculture. African regional markets are growing rapidly—driven by population, urbanization, and income growth—and are forecast to reach a trillion dollars by 2030. On the supply side, the prospects are promising as well, since Africa's potential for agricultural prosperity is enhanced by an abundance of vital inputs.
- ▶ The successes of countries around the world as well as within the region can provide lessons for African agriculture. Evidence shows that investments in rural public goods, combined with better policies and institutions, have driven agricultural productivity growth globally. The dividends from investments to strengthen markets, expand irrigation, and develop and disseminate improved technologies can be enormous. In addition, improvement of the policy environment through trade and regulatory policy reforms complements spending, by enhancing the incentives for producers and innovators to take advantage of public goods that crowd in private investment.
- ▶ Overall, Sub-Saharan African countries tend to underfund high-return investments. Agricultural spending in Sub-Saharan Africa not only lags behind other developing regions by several metrics of volume, it is also vitiated by subsidy programs and transfers that tend to benefit the better off with insignificant gains for the sector and the poor. Shortcomings of the budgeting process itself also reduce spending effectiveness.
- ▶ Addressing the quality of public spending and the efficiency of resource use is even more important than addressing the level of spending. Rebalancing the composition of public agricultural spending could reap massive payoffs.

<sup>1</sup> This section draws from the Regional Flagship Study on *Public Spending Priorities for African Agriculture Productivity Growth* by Aparajita Goyal and John Nash, 2016, World Bank, forthcoming.

- ▶ Input promotion during high agricultural productivity growth periods in Asia and South America addressed systemic constraints to productivity through integrated investments in improved technologies, extension services, water management, and market linkages. Countries in Sub-Saharan Africa could achieve greater impact with the existing expenditure envelope by moving away from a heavy focus on fertilizer subsidies, toward a package of complementary investments. Reforming the design and implementation of these subsidy programs while rebalancing government spending in favor of high-return core public goods and policies could produce significant gains.
- ▶ Enhanced public spending is only one ingredient of a strategy for agricultural transformation, and must be complemented by a host of additional policies. In a poor policy environment, even spending in areas that otherwise have high returns will be unproductive or counterproductive. The efficient use of public funds has laid the foundation for transformation in other parts of the world, and can play that role in Sub-Saharan Africa as well.

## WHY AGRICULTURAL PRODUCTIVITY GROWTH MATTERS FOR SUB-SAHARAN AFRICA

Extreme poverty is becoming concentrated in Sub-Saharan Africa, and its breadth and depth remain a dominant challenge.<sup>2</sup> The region accounted for 43 percent of global poverty in 2012. Although the region's growth in gross domestic product (GDP) has picked up in recent years, it has been driven mostly by higher production of mineral and hydrocarbon resources. This growth model has not turned out to be an effective engine to drive the twin goals of rapid poverty reduction and shared prosperity.<sup>3</sup> Even after nearly two decades of economic growth, most Africans continue to earn their livelihoods in the traditional economy. Much more than in any other region, agriculture dominates African economies,<sup>4</sup> accounting for a third of the regionwide GDP and employing two-thirds of the labor force, with the poorest countries most heavily reliant on it.

Clearly, one element of progress toward the twin goals is to revitalize growth where a large majority of the continent's poor live and work. Evidence indicates that agricultural growth reduces poverty in developing countries by around three times more than growth in other sectors.<sup>5</sup> Improving agricultural productivity is also critical for fostering structural transformation and managing the urban transition, by increasing incomes and enabling people to move out of agriculture.<sup>6</sup> Investments and policies to foster growth in the rural economy thus emerge as critical for accelerating poverty reduction and fostering inclusive growth in the region.

The Green Revolution, which boosted yields in other countries, largely bypassed Africa. Figure 3.1 compares Africa's performance in total factor productivity growth (box 3.1) with that in other developing regions over two decades: Sub-Saharan Africa was lagging in the 1990s and fell even farther behind in the 2000s.<sup>7</sup> In other regions, production increases were mainly associated with yield growth because of better use of inputs and adoption of improved production technologies. But in Sub-Saharan Africa, increases in production largely resulted from expanding the area under cultivation. Sub-Saharan Africa is the only developing region in the

<sup>2</sup> World Bank (2015a).

<sup>3</sup> Ferreira, Leite, and Ravallion (2010); Ivanic and Martin (2014).

<sup>4</sup> Sub-Saharan Africa and Africa are used interchangeably.

<sup>5</sup> Christiaensen and Kaminski (2015).

<sup>6</sup> Gollin, Lagakos, and Waugh (2013).

<sup>7</sup> Fuglie (2015).

world where the contribution of area expansion exceeded the contribution of growth in yields (figure 3.2).<sup>8</sup> And growth in cereal yields in Sub-Saharan Africa has consistently lagged that in all other regions (figure 3.3). Over four decades, yields in Sub-Saharan Africa have barely doubled, while they tripled in South Asia and increased around sixfold in East Asia and the Pacific.

### *The time is right for boosting the productivity of African agriculture*

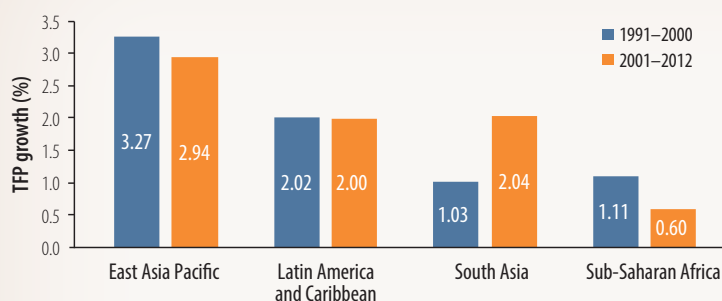
The potential for increasing the production and productivity of African agriculture is enormous. Although total factor productivity needs to be the primary driver of sustainable agricultural growth, Africa's potential for agricultural prosperity is enhanced by an abundance of vital inputs. Of the world's surface area suitable for the sustainable expansion of production—that is, unprotected, unforested land with low population density—Africa has the largest share by far, accounting for almost 45 percent of the global total. Although some large areas of the continent are arid or semi-arid, the water resources in Africa are also, on average, substantially underused. Only 2.5 percent of the renewable water resources in Africa are being used, half the 5 percent rate worldwide.

8 Deininger and Byerlee (2011).

Total factor productivity (TFP) measures the total conventional resource cost of producing economic outputs. Unlike partial productivity measures (such as labor productivity, as output per worker, and land productivity, as crop yield per hectare), TFP takes into account the contributions of all conventional inputs to production—land, labor, capital, and materials. While growth in labor or land productivity may be attributed to increasing the use of other inputs, growth in TFP reflects improvements in the efficiency of this aggregate bundle of inputs. It is a more complete measure of productivity and more closely associated with technological change. Measuring TFP trends requires detailed information on all the output and input quantities involved in agricultural production, plus information on prices and unit costs. This measurement is an onerous task even for countries with detailed agricultural data, like the United States; for countries in Sub-Saharan Africa, data are incomplete and often of poor quality, and indirect methods are required to derive approximate measures of TFP.

#### **BOX 3.1:** Measuring Agriculture's Productivity Performance

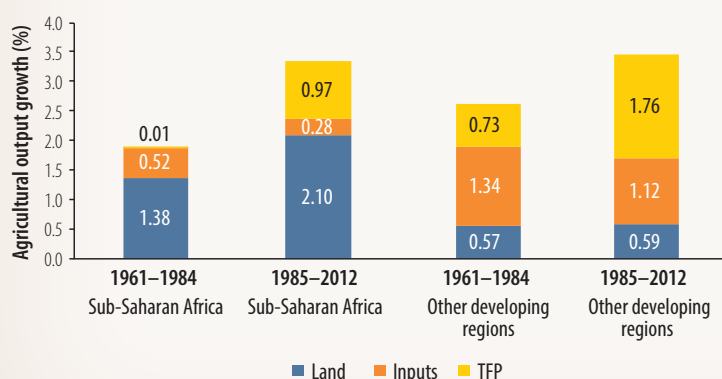
**FIGURE 3.1:** Comparison of Total Factor Productivity Growth in 1991–2000 versus 2001–2012



Source: USDA Economic Research Service data in Goyal and Nash 2016.  
Note: TFP = total factor productivity.

Total factor productivity growth in Africa lags behind other regions—and the gap is widening.

**FIGURE 3.2:** Agricultural Output Growth in Sub-Saharan Africa and Other Developing Regions

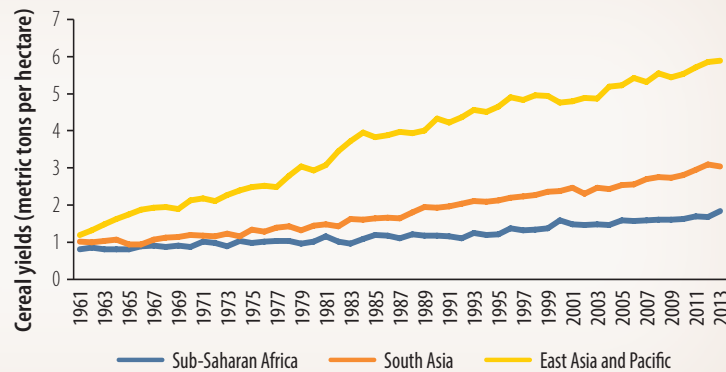


Source: USDA Economic Research Service data in Goyal and Nash 2016.  
Note: TFP = total factor productivity.

Production increases in Africa came largely from expanding the area under cultivation rather than input intensification or total factor productivity growth.

Growth in cereal yields in Sub-Saharan Africa has consistently been lower than in other regions.

FIGURE 3.3: Cereal Yields in Africa and Other Regions

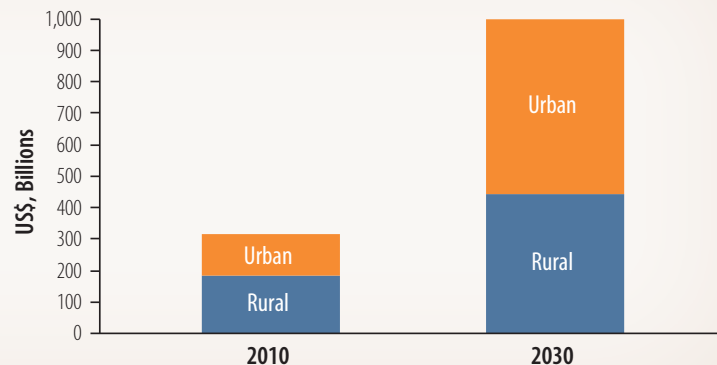


Source: World Development Indicators database.

On the supply side, the prospects are promising for increasing capital and labor devoted to agricultural production. If the investment climate can be improved, the potential is good for attracting a higher share of global resources. Africa's inward foreign direct investment stock in agriculture accounts for a mere 7 percent of the total stock in developing countries, compared with 78 percent for Asia and 15 percent for Latin America and the Caribbean. There is also the prospect of a growing labor force for agriculture. With the creation of jobs in upstream or downstream agribusinesses, this "youth dividend" could drive growth in the sector. But failing to create these jobs would mean rising unemployment or accelerated migration to already-crowded cities.

African regional markets account for only 5-10 % of food trade in Africa but it is set to increase rapidly and hit \$1 trillion by 2030.

FIGURE 3.4: Retail Value of Food and Beverages in Sub-Saharan Africa in 2010 and 2030



Source: World Bank 2013a.

### African markets are growing rapidly

On the demand side, African regional markets are growing rapidly—driven by population, urban, and income growth—and are forecast to reach a trillion dollars by 2030 (figure 3.4).<sup>9</sup> The rising demand for food to nourish rapidly growing urban populations has so far been filled mostly with imports.

From the 1990s to the 2000s,

the balance of trade in food staples was moving from deficit to surplus in Europe and Central Asia, South Asia, and East Asia and the Pacific. But in Sub-Saharan Africa, the deficits widened.<sup>10</sup> Food trade deficits are understandable in a region such as the Middle East and North Africa, which has limited advantage in food production. But in Sub-Saharan Africa, where all the natural ingredients for efficient production are in place, food trade deficits signal that something fundamental is amiss. If not reversed, the consequences of missed opportunities to capture regional markets will only increase over time. But if African agriculture becomes more competitive and regional producers capture these markets, the benefits could be enormous. Taking full advantage of these opportunities will require smart policy

<sup>9</sup> World Bank (2013a).

<sup>10</sup> World Bank (2012).

choices to reduce trade barriers, which currently greatly impede regional trade, as well as efficient spending in the public and private sectors to make Africa's production more competitive with imports.

### *Improving the effectiveness of public investments can boost productivity*

A crucial element in enhancing agricultural productivity growth is improving the provision of productive investments through more and better public spending in agriculture. This opportunity has been recognized by African policy makers; over the past few years, ministries of agriculture and finance have intensified efforts to improve the quantity (volume) and quality (effectiveness) of public spending. In 2003, African nations launched the Comprehensive Africa Agriculture Development Programme (CAADP), which includes the commitment popularly known as the Maputo Declaration to invest 10 percent of national public spending in agriculture. This target was reiterated in the 2014 Malabo Declaration, and CAADP has led the charge to support national teams to conduct basic agriculture public expenditure reviews and related specialized analyses. A cornerstone of CAADP's work and that of its development partners, including the World Bank, has been to assist countries in developing National Agricultural Investment Plans, make progress toward the quantitative goal, and improve the quality of spending.

Increasing the volume of public spending in agriculture will be important but not sufficient to kindle agriculture growth and poverty reduction. Actions will also be needed to improve the efficiency and effectiveness of public spending. The expectation that high-quality public spending should bolster growth has strong empirical validation. There are significant differences in the rates of return to different categories of agricultural spending.<sup>11</sup> Indeed, many studies find quite low returns to aggregate spending on agriculture. But almost all find high returns to specific types of spending, such as investments in core public goods related to technology generation and diffusion, market linkages, and irrigation infrastructure. The implication is that a large part of the spending in some countries goes to low-return activities, dragging down the overall returns relative to what they could have been if more spending had been allocated to higher-return activities. The inevitable conclusion is that choices about how to allocate public agricultural spending matter a lot.

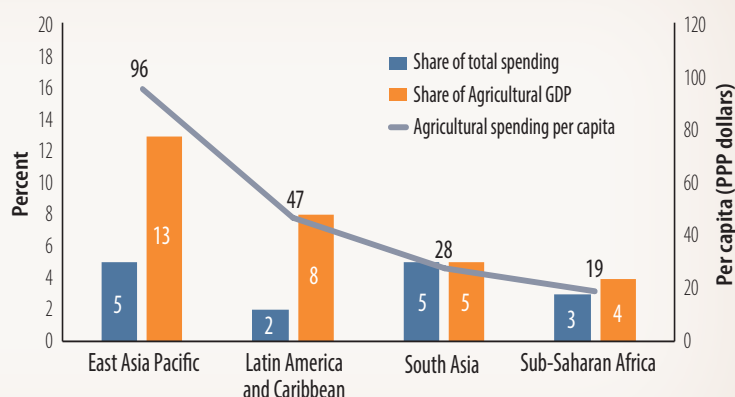
Enhanced public spending in agriculture is only one ingredient of a strategy for agricultural transformation. Investments in rural infrastructure, health, and education matter too, and wise investments must be complemented by a host of other policies. Indeed, in a poor policy environment, even spending in areas generally considered high return will be unproductive or counterproductive. But smart use of public funds—not only by agriculture ministries, but also by other ministries dealing with hard and soft infrastructure in rural areas—has laid the foundation for transformation in other parts of the world.<sup>12</sup> In this sense, enhancing the quality of spending is the first order of business. Nonetheless, the quantity of spending is a meaningful indicator of government commitment to agriculture, so it is worth considering how Africa compares with other regions and the Maputo and Malabo targets.

<sup>11</sup> Devarajan, Swaroop, and Zou (1996).

<sup>12</sup> Goyal and Nash (2016).

Sub-Saharan Africa's agricultural spending, as a share of overall public spending, lags behind other regions.

**FIGURE 3.5: Public Agricultural Spending Across Regions, 2000–12**



Source: Data from IFPRI 2015c in Goyal and Nash 2016.

## Africa is lagging behind other regions

Public agricultural spending in Africa has lagged behind that in other developing regions on several metrics. Agricultural spending as a share of overall public spending—the metric used in the Maputo Declaration—is substantially lower than that in other regions, particularly East Asia and South Asia (figure 3.5). In 2014, Burkina Faso, Malawi, Mozambique, and Zimbabwe had barely met or surpassed the 10

percent target (Malawi and Mozambique consistently surpassed it). Three countries—Niger, Rwanda, and Zambia—were close behind at 9 percent. On another metric—public spending on agriculture as a share of agricultural GDP—spending is also substantially lower in Africa than in other regions. This is also the case on the metric of spending per capita; in Africa, spending per capita was on average \$19, almost a third lower than the next lowest region, South Asia.

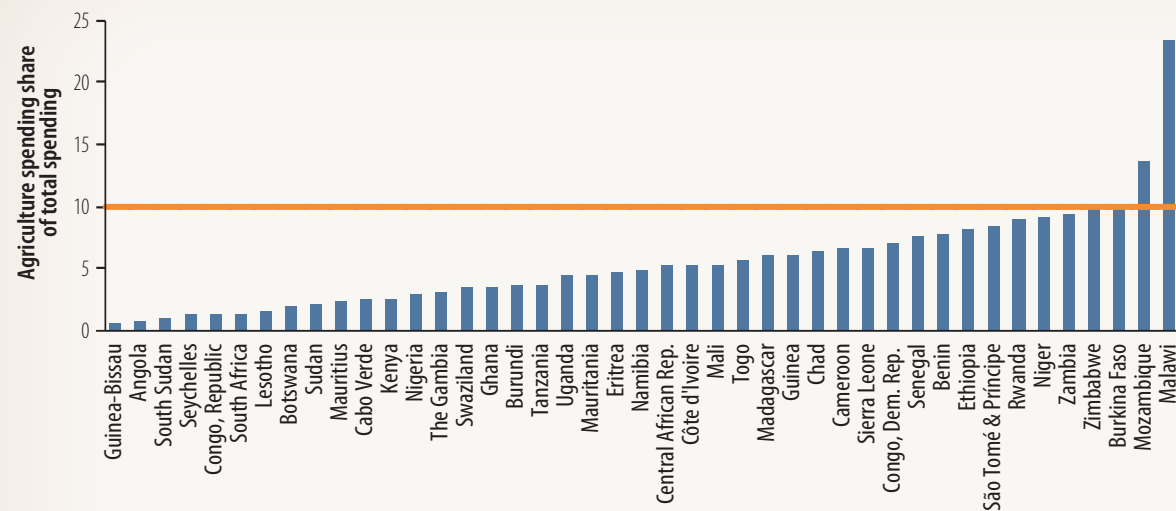
## Conditions and contexts differ widely—but trends indicate a widespread problem

Almost all countries in Sub-Saharan Africa are spending below the 10 percent target, but country conditions and thus spending contexts differ widely across the region (figure 3.6). For instance, the spending target is arguably less meaningful for such countries as Botswana and South Africa, which have relatively small agricultural GDP shares in the overall economy. An alternative indicator of the public budgetary commitment to agriculture accounts for sector size—the Agriculture Orientation Index (AOI) is agriculture's share of public spending relative to its share in the economy.<sup>13</sup> An AOI value of 1 would indicate that the share of its budget that the government spends on agriculture is exactly proportional to agriculture's contribution to GDP. As with other indicators, this is a blunt tool for measuring policy, and only under special assumptions would government spending be allocated exactly in proportion to each sector's contribution to the economy. Still, intuitively, large deviations would suggest the need for a deeper enquiry by policy makers.

As it turns out, no country in Africa has an AOI of 1, although some come close (figure 3.7). There is a strong tendency for the countries with a small agriculture sector to devote proportionately more of the budget to supporting it (higher AOIs). Overall, however, most African countries spend much smaller proportions of the public budget on agriculture than the sector's share in the economy. Of the 47 countries for which the AOI can be computed, it is less than 0.3 in 31 countries. But perhaps

<sup>13</sup> AOI = [(Ag PE/Total PE)] / (Ag GDP/ GDP)].

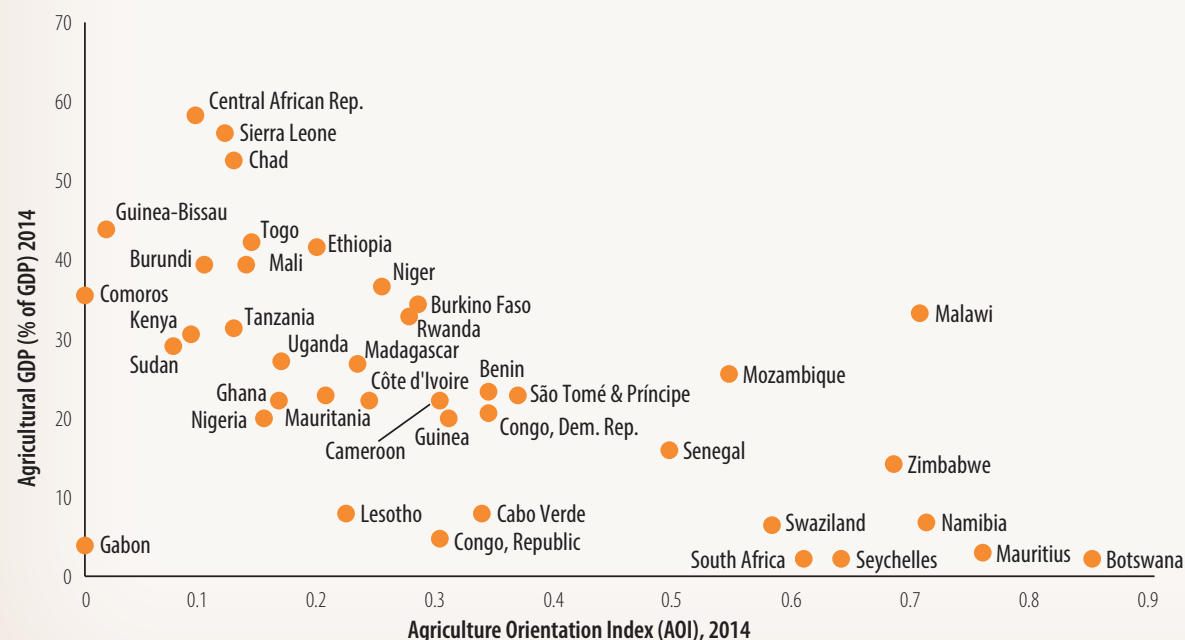
**FIGURE 3.6: Public Agricultural Spending in Sub-Saharan Countries, 2014**



Almost all African countries fall short of the 10 percent target of government spending.

Source: Data from IFPRI 2015b.

**FIGURE 3.7: Agriculture Orientation Index for Selected African Countries, 2014**



No country in Africa spends as much on agriculture as agriculture contributes to the economy.

Source: Goyal and Nash 2016.

Note: GDP = gross domestic product.

even more important than the level of spending is the inefficiency of resource use within the existing budget envelope.

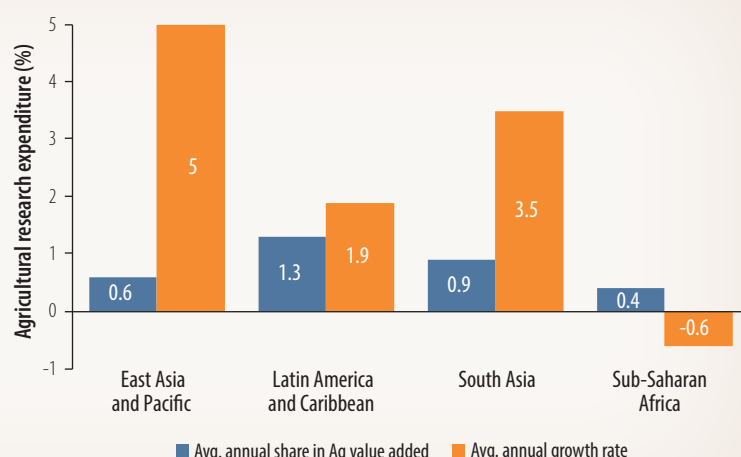
Within any given overall budget envelope for agricultural public spending, the allocation across different activities needs to be balanced for the highest returns. There is no one-size-fits-all formula for deciding what that optimal allocation should be, and it will differ greatly across countries, depending on country



circumstances and political preferences.<sup>14</sup> Even so, it is useful to consider what kinds of expenditures have generally been most productive, and to examine how the current composition of spending appears to reflect these lessons—or not.

Spending on agriculture R&D was about 0.4% of agricultural GDP in Sub-Saharan Africa, compared with 1.3% in Latin America and the Caribbean, 0.6% in East Asia and the Pacific, and 0.9% in South Asia.

**FIGURE 3.8: Public Agricultural Research Spending across Regions, 2000–11**



Source: Data from IFPRI 2015a in Goyal and Nash 2016.

### *Research has high returns but is severely underfunded*

Spending on agricultural research and development (R&D) is worth an especially close look, given the strong evidence that returns to investments in this area are consistently high around the world. A large sample of studies have estimated rates of return averaging 43 percent in developing countries and 34 percent in Sub-Saharan Africa. Yet agricultural R&D capacity in Sub-

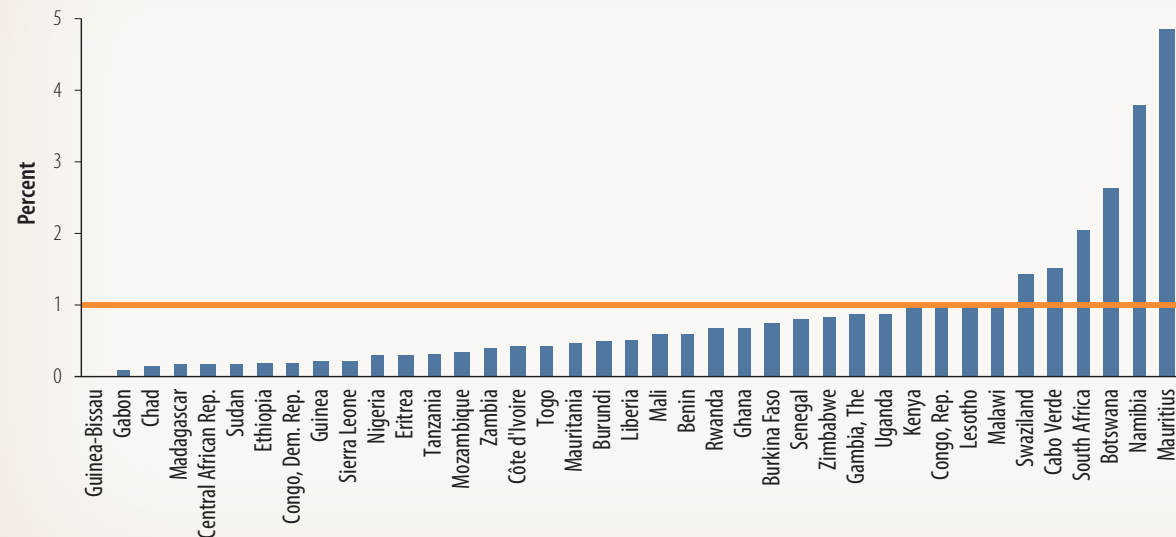
Saharan Africa has remained low by international norms. Over the past decade, spending on agricultural research constituted about 0.4 percent of agricultural GDP in Sub-Saharan Africa, compared with 1.3 percent in Latin America and the Caribbean, 0.6 percent in East Asia and the Pacific, and 0.9 percent in South Asia (figure 3.8). In addition, Africa was the only region where agricultural research spending fell on average over this period. These are troubling signs that agricultural research is severely underfunded in Africa.

### **Most countries fall short of NEPAD's 1 percent spending target**

In 2006, in its commitment to implementing an agriculture-led development agenda, the African Union's New Partnership for Africa's Development (NEPAD) set an additional target to increase public spending on agricultural R&D to at least 1 percent of agricultural GDP, a target that few countries have met (figure 3.9). Most high-income countries spend around 1 percent of their agricultural GDP on research, as does Brazil, a country widely regarded to have an effective research agency, Embrapa. A closer look at the relative shift in the patterns of spending in agricultural R&D in countries in Sub-Saharan Africa over time reveals important cross-country differences and challenges. Over 2000–11, half the Sub-Saharan African countries experienced near-zero or negative growth in agricultural R&D spending (figure 3.10). Despite the well-documented considerable payoffs to agricultural research and the demonstrated political commitment to agricultural R&D in Africa, many Sub-Saharan African countries have continued to underinvest in this activity.

<sup>14</sup> FAO (2015).

**FIGURE 3.9: Agricultural Research Spending in Sub-Saharan African Countries as a Share of Agricultural GDP, 2011**



Source: Data from IFPRI 2015a.

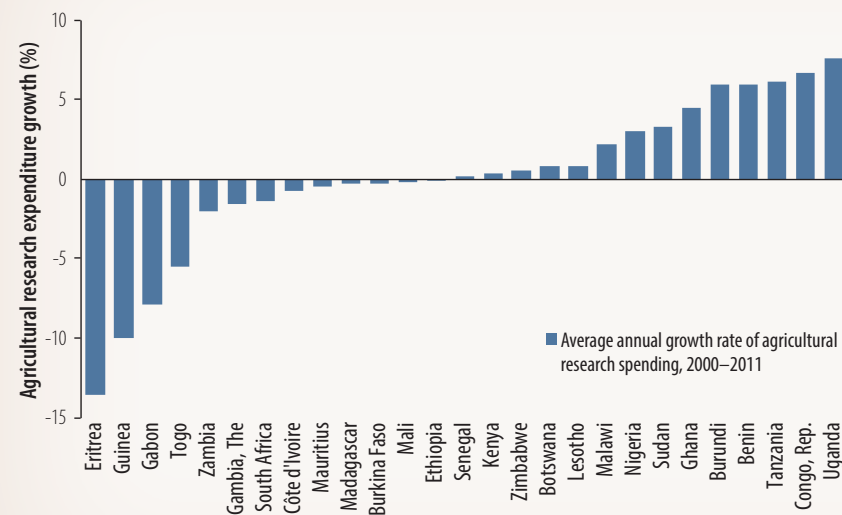
Despite the well-documented considerable payoffs for agriculture R&D, spending in this area is above 1% only in six countries.

### However, R&D brings enormous rewards

Spending on R&D has driven the transformation of agriculture around the world. During periods of rapid growth, Brazil, China, and India invested heavily in agricultural research; their collective share in developing country public spending on agricultural R&D increased from a third in 1981 to almost half in 2000.<sup>15</sup> Investments in national and international agricultural research have been demonstrated to

be among the most important determinants of long-term productivity growth in Sub-Saharan Africa as well. For example, the Consultative Group for International Agricultural Research (CGIAR) consortium has played an important role in raising agricultural productivity growth in Sub-Saharan Africa. CGIAR's

**FIGURE 3.10: Annual Growth in Agricultural R&D Spending in Sub-Saharan African Countries, 2000–11**



Source: Data from IFPRI 2015a in Goyal and Nash 2016.

Note: The figure excludes Cabo Verde, Central African Republic, Chad, Democratic Republic of Congo, Guinea-Bissau, Liberia, Mauritania, Mozambique, Namibia, Rwanda, and Swaziland because time-series data did not date back to 2000.

Half the countries in the continent have zero or negative spending growth in R&D.

<sup>15</sup> Alston et al. (2000); Pardey et al. (2007).

spending in the region has generated \$6 in benefits for every dollar spent on research. Returns to national agricultural R&D spending have been lower, but still significant, averaging about \$3 in benefits for every \$1 spent on R&D.

Given the economies of scale in research, it would be expected that resources devoted to research would bear more fruit in larger countries. And indeed, this seems to be the case. Large countries such as Kenya and Nigeria have earned higher returns to R&D than small countries, but even in small countries returns have been high enough to justify the investment, particularly for adaptive research (table 3.1). Moreover, national and international agricultural research efforts in Sub-Saharan Africa are complementary: countries that have made a greater national investment in agricultural research are better able to adapt and deliver to farmers new technologies emanating from international centers. Stronger national research systems have helped to achieve greater impact from CGIAR research by enabling more rapid diffusion of international technologies.<sup>16</sup>

African research institutions can learn from Brazil's Embrapa, whose success is attributable to institutional characteristics and policy choices in addition to adequate funding, such as high investment in human capital, effective collaboration with private sector and international research centers, as well as an open innovation system and intellectual property rights to facilitate technology development and diffusion. Other lessons emerging from Africa's own experience in investing in technology generation and dissemination will be useful in shaping future spending decisions in this area (box 3.2).

**TABLE 3.1: Returns to Agricultural Research in Sub-Saharan Africa**

Countries	Returns to agricultural research		
	Benefit-cost ratio	IRR (%)	IRR without CGIAR (%)
<b>Large countries</b> Côte d'Ivoire, Ethiopia, Ghana, Kenya, Nigeria, Sudan	4.4	43	36
<b>Mid-size countries</b> Madagascar, Mali, Mozambique, Senegal, Uganda	2.6	29	23
<b>Small countries</b> Botswana, Burundi, Gabon, Gambia, Swaziland	1.6	17	13

Source: Fuglie and Rada 2013.

Note: The benefit-cost ratio discounts future benefits at a yearly rate of 10 percent. CGIAR = Consultative Group for International Agricultural Research; IRR = internal rate of return.

**BOX 3.2:**  
Lessons from  
Experience  
for Advancing  
Agricultural  
Research in  
Sub-Saharan  
Africa

Improving productivity growth in Sub-Saharan Africa will require revitalizing science and technology systems for agriculture. Even within the spending category of research, it is important to put each dollar to its most productive use. Doing this requires understanding the current status of research systems on the continent and identifying useful lessons to move the science and technology agenda forward regionwide.

For now, most investments in agricultural science and technology in Sub-Saharan Africa come from the public sector—well over 90 percent, as contrasted with a figure that has fallen below 50 percent in Europe and North America. In Sub-Saharan Africa, most public support for agricultural science and technology is through programs and institutions that belong to ministries of agriculture. Such public agricultural research

<sup>16</sup> Fuglie and Rada (2013).

**BOX 3.2**  
*Continued*

systems in Sub-Saharan Africa have often stagnated. Since 2000, while investment in public R&D has grown by 20 percent across the region as a whole, the increases have been concentrated in just a few countries (mainly Ethiopia, Kenya, Nigeria, and South Africa). Most national public agricultural research institutions and programs across the rest of the continent have declined, and they lack the resources to maintain a broad research portfolio.

The main lessons that are emerging from recent experience include the following:

- Small national research programs should focus on areas of comparative advantage. To remain relevant and viable, country-based research programs are most effective when they focus on and build unique expertise in a selective set of thematic topics that are particularly well-suited and of highest priority in their locations (bananas and cassava in Uganda, rice in Mali, cocoa in Ghana, and maize in Malawi). Such systems may also focus on adaptation and adoption for a wide variety of crops and livestock.
- Regional approaches and planning improve efficiency and relevance. Successful examples are the West Africa Agricultural Productivity Program and the East Africa Agricultural Productivity Program, with coordination from corresponding subregional organizations (CORAF in West and Central Africa and ASARECA in East and Central Africa).
- African programs should expand coordination with CGIAR programs. Greater participation of African programs in CGIAR planning and priority setting, and greater participation by CGIAR centers in agricultural planning in Sub-Saharan Africa will produce more relevant plans and more synergies in execution under the CAADP-led Dublin process.
- Agricultural universities and public agricultural research programs need to be closely linked. Creating critical mass in staff and equipment enhances the quality of training for graduate students, and reduces the fragmentation of effort. South Africa and Uganda each feature shared research programs, shared laboratories and equipment, and joint appointments—and graduate students do some of their research under the guidance of staff at research organizations.
- Coordinating public, private, donor-led, and nongovernmental organization initiatives can enhance coherence and effectiveness. The Alliance for a Green Revolution in Africa and its support for cocoa and rice research in West Africa show how partnerships can improve strategic planning and the implementation of common research and capacity building. Pooled donor funding for core budget support to subregional organizations can also help. Documenting the outcomes and impacts of agricultural research is critical to maintain funding.
- Close links with agricultural extension systems and farmers are essential to facilitate the adoption of research findings and enhance the relevance of research. In Ethiopia and Nigeria (and many other places on a small scale), researchers regularly develop and implement applied research programs with farmers in the field. They also work together to evaluate results over time and plan follow-on research.

Source: Goyal and Nash 2016.

## HOW TO REAP RICHER RETURNS THROUGH REBALANCED SPENDING

### *Reduce the barriers to disseminating foreign technology and developing domestic technology*

An important principle for expenditure policy is that governments cannot be the only, or even the main, developers of new technology. In Africa, governments currently fund more than 90 percent of the ongoing R&D. But with scarce budget resources, countries need to adopt policies to reduce barriers to spill-ins of technology from abroad and encourage private investment in technology generation. The current requirements for lengthy and expensive tests to register new seed varieties (imported or domestic) in many African countries practically guarantee that African farmers will not benefit from advances in other parts of the world or from private domestic R&D (box 3.3).

**BOX 3.3:**  
Quality of  
regulations  
for seed and  
fertilizer in  
Sub-Saharan  
Africa

The Enabling the Business of Agriculture report (EBA 16 report) measures agribusiness regulations, with a view to promoting smart regulations that foster efficiency while ensuring safety and quality. The report recognizes the need for well-functioning seed and fertilizer systems for promoting agribusiness. Seed and fertilizer are among the six topics covered in the 2016 issue (other topics are machinery, finance, markets, and transport). The section on seed focuses on assessing the quality of the laws and regulations that support the development, evaluation, and release of new varieties, as well as seed quality mechanisms. The fertilizer indicators measure the requisites for registering a new fertilizer product, permit requirements for importing fertilizer, and laws in place to ensure quality control of fertilizer. Forty countries, including 14 in Sub-Saharan Africa, are surveyed.

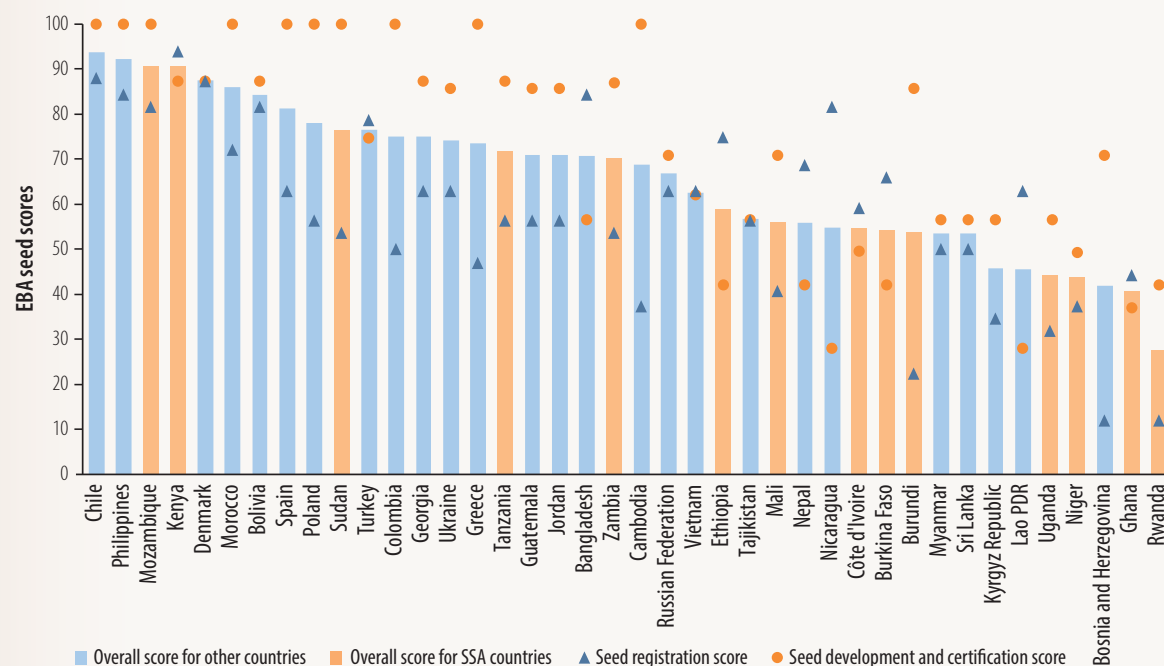
Scores of seed indicators show that a few countries in Sub-Saharan Africa, such as Kenya and Mozambique, perform well, but half of the countries that were assessed place among the bottom tercile of performers (figure B3.3.1). But even in the higher-scoring countries, there is scope for improvement. Overall, most countries in Sub-Saharan Africa have higher scores in the seed development and certification indicator than in the seed registration indicator. In some cases, low scores reflect lack of implementation of regulations. For example, seed variety release authorities have been established by law in Burkina Faso, Burundi, Ghana, Mali, Niger, and Rwanda, but do not meet in practice. Lack of transparency in procedures can pull scores down. For example, lack of an official fee schedule for the mandatory certification of cereal crops underpins the low scores in Ethiopia, Ghana, Kenya, Niger, Rwanda, and Uganda. In several countries, accredited private companies are allowed to carry out some or all seed certification activities, which can reduce potential delays in the certification process.

There is a wide range of fertilizer scores among the 14 countries in Sub-Saharan Africa that were included in the EBA 16 report (figure B3.3.2), but room for improvement in all of them. One-third of the countries do not register fertilizer products, and in three others (Burundi, Côte d'Ivoire, and Mozambique) no private sector company has gone through the registration process. Thus, half of the 14 countries in Sub-Saharan Africa that were surveyed have no registration practices. A higher-scoring country, such as Tanzania, can improve in this area, as the registration process has an average cost of 1,000 percent of gross national income (GNI) per capita and takes up to 600 days to complete. In comparison, it takes 242 percent of GNI per capita and 210 calendar days to register a fertilizer product in Zambia. For importing fertilizer, only three countries in Sub-Saharan Africa do not require that importers obtain an import permit, which, when added to importer registration, can be burdensome for business and obstruct efficient trade. Ethiopia's

low score is primarily because it is the only country that does not allow private companies to import fertilizer products. Countries in Sub-Saharan Africa score below average in quality control, mainly driven by the lack of penalties for mislabeled and open fertilizer bags in several of the studied countries.

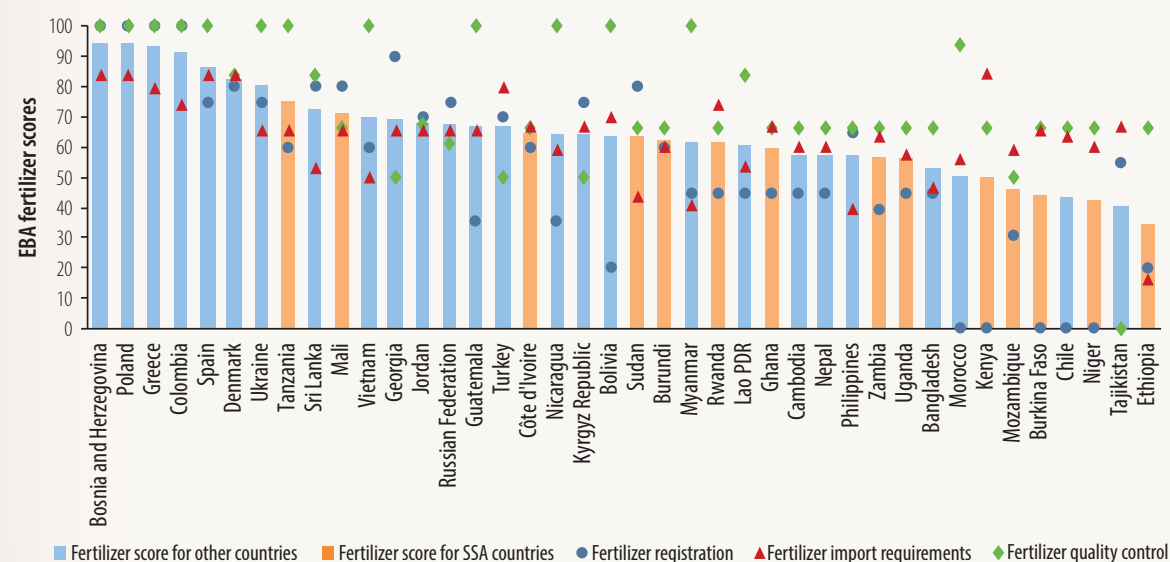
**BOX 3.3**  
Continued

**FIGURE B3.3.1: Seed Scores**



Source: EBA database.

**FIGURE B3.3.2: Fertilizer Scores**



Source: EBA database.

Prepared by the Enabling the Business of Agriculture (EBA) team.

These barriers could be reduced by following the practices in such countries as India and South Africa, which allow the introduction of new varieties with no performance testing but require truth in labeling to protect farmers from false claims.<sup>17</sup> This has been particularly effective in South Africa, where farmers benefit from a much higher rate of introduction of new varieties than other African countries, even accounting for the size of the market.<sup>18</sup> Barriers can at least be lowered by mutual recognition of new varieties already registered in neighboring countries, which is the approach of the European Union and is being pursued in several regional regulatory frameworks in Africa, but progress has been slow. The two approaches are not mutually exclusive, and countries could potentially consider unilateral action to reduce barriers while waiting for regional agreements to take shape.<sup>19</sup>

### ***Invest in land governance***

An important public good that is greatly undersupplied across Africa is the legal and institutional framework for land governance. Only about 10 percent of rural land in Africa is registered. The rest is undocumented or under informal arrangements that make it vulnerable to “land grabbing” or expropriation, a particular problem for women. It takes twice as long (65 days) and costs twice as much (9.4 percent of the property value) to transfer land in Sub-Saharan Africa than in Organisation for Economic Co-operation and Development countries (31 days; 4.4 percent). The poor institutional framework is reflected in the low demand for land administration professionals: Ghana, Kenya, and Uganda, for example, all have fewer than 10 land surveyors per million population, compared with 197 in Malaysia and 150 in Sri Lanka.<sup>20</sup> These conditions undermine land market development and secure tenure, weakening incentives to make on-farm investments and impeding rural credit market development.

Significant investments will be needed to reverse soil degradation and depletion, so improving land security will be hugely important for creating the conditions for sustainably boosting productivity (box 3.4). Many countries in Sub-Saharan Africa have legislation in place or initiatives underway to address communal land rights and gender equality, the basis for sound land administration. In addition, countries have made a commitment to implement comprehensive land policy reforms, primarily second-generation reforms, guided by the African Union’s *Framework and Guidelines on Land Policy in Africa*.

**BOX 3.4:**  
**Land and**  
**Agricultural**  
**Productivity in**  
**Sub-Saharan**  
**Africa**

Land is the central productive asset held by rural households in Sub-Saharan Africa. Yet land policies and institutions may be constraining investment and productivity growth across the region. Insecure property rights over land and other assets can constrain agricultural productivity, and economic activity more broadly, through four key theoretical mechanisms (Besley and Ghatak 2010): expropriation risk, which could dampen incentives to invest; reliance on inefficient guard labor, which could drag down farm yields; limited land market activity, which prevents the factor from being transferred (for example, through sales or rentals) to the most productive users; and restricted use of collateral for access to credit (including credit for productive investments).

<sup>17</sup> Gisselquist, Nash, and Pray (2002).

<sup>18</sup> Pray, Gisselquist, and Nagarajan (2011).

<sup>19</sup> Keyser (2013).

<sup>20</sup> Byamugisha (2013).



Impact evaluations of land administration programs in Sub-Saharan Africa provide mounting empirical evidence in support of the first theoretical mechanism. These programs—which include land demarcation, registration, and titling interventions—aim to improve tenure security and strengthen use and transfer rights over land through registration and written documentation. In Rwanda, Ali, Deininger, and Goldstein (2014) find that a pilot land titling program increased soil conservation investments, particularly among female-headed households. Evidence from a randomized controlled trial in Benin points to increased investment in perennials following systematic land demarcation activities. The program also erased the gender gap in land fallowing, a key soil fertility investment. However, earlier efforts to examine the investment and productivity effects of these types of projects yielded mixed results (Place 2009), as many of the studies relied on statistical correlations rather than causal estimates of impact.

Nevertheless, given the variation in land tenure systems and customary and formal legal institutions across the continent and within each country, policy has shifted from the costly and complex “one-size-fits-all” approach of individual freehold land titling, toward context-specific solutions and a more flexible policy framework (Udry 2012). Results from Ethiopia, for example, suggest that low-cost land use certification could lead to higher agricultural yields (Holden, Deininger, and Ghebru 2009). Yet there is a need for more rigorous evidence to assess whether interventions such as customary land certification and communal land registration can boost agricultural yields across a range of contexts in Sub-Saharan Africa.

*Prepared by Michael O'Sullivan.*

**BOX 3.4**  
*Continued*

### *Bolster extension*

Another crucial element in crafting spending decisions to encourage greater adoption of modern technologies is to improve the effectiveness of extension services. Particularly where information constraints are a major bottleneck in the uptake of modern inputs and production techniques, public funding (although not necessarily provision) of extension can be a cost-effective use of public funds. Moreover, higher returns to investments in agricultural extension are expected if the rate of developing new technologies for Sub-Saharan Africa is increasing, enabling farmers to adjust more quickly to changing circumstances.<sup>21</sup>

Extension services are coming back on the agenda, and in a few countries these services now make up a substantial share of the budget. But there is the risk that extension will once again be viewed as ineffective. Attention to extension services peaked in the 1980s and early 1990s, when money was poured into systems that mainly promoted the adoption of agricultural technology in a centralized, linear, one-size-fits-all method.<sup>22</sup> In the late 1990s, when many of these traditional systems were shown to be deficient in quality and relevance, public spending on extension declined. However, the rapid adoption of digital technologies in rural areas shows promise in reviving some aspects of extension services and consequently improving productivity. Innovative models are being implemented in Kenya and Nigeria. New digital tools and approaches have helped to overcome information problems that hinder market access for many small-scale farmers, promote knowledge and skill development, and stimulate opportunities for agricultural supply chain management.<sup>23</sup>

<sup>21</sup> Fuglie and Rada (2013).

<sup>22</sup> Davis (2008).

<sup>23</sup> Deichmann, Goyal, and Mishra (2016).



The balance between R&D and extension has long been an issue, with critics suggesting that many extension agents had nothing to extend, owing to weak R&D—and that extension systems tended to be the poor relation at the bottom of the funding chain. As a result, entire budgets were spent on recurrent items such as salaries, while there was no fuel for vehicles, and thus no farm visits.<sup>24</sup> In funding the new generation of extension programs, the lessons from the past need to be taken into account for better balance of spending across subcategories, and to make extension more effective, particularly in reaping the benefits from irrigation (box 3.5).

**BOX 3.5:**  
Sub-Saharan  
Africa's  
Potential for  
Increasing  
Irrigation

The irrigated area as a share of total cultivated area is estimated at 6 percent for Africa, compared with 37 percent for Asia and 14 percent for Latin America. Food production in Africa remains almost entirely rainfed, despite highly variable and in many cases insufficient rainfall together with a high incidence of droughts. The potential for profitable irrigation development in Sub-Saharan Africa remains large, given the existing water resources, high value of irrigated agriculture, and large number of rural poor who could benefit from productivity improvements as a result of irrigation.

The returns to many irrigation projects in the past were relatively low in Africa, and the negative externalities were high. But recent advances in planning and design techniques have provided the ability to minimize the adverse environmental and social consequences of large irrigation infrastructure. Recent studies show that irrigated land can be expanded from 13 million to 24 million hectares in economically viable ways, with returns ranging from 17 percent for large-scale irrigation to 43 percent for small-scale irrigation.<sup>a</sup> Sub-Saharan Africa has significant unexploited potential to develop both large- and small-scale irrigation, but economic viability depends on keeping costs down (i.e. switching to higher value crops is sometimes necessary so farmers can afford irrigation). Although there is significant potential for rehabilitating existing irrigated areas in the region, the expertise, knowledge, and capacity to manage irrigation investments are critical.<sup>b</sup>

a. You et al. (2011).

b. Rosegrant, Ringler, and Zhu (2009).

### *Improve post-harvest practices and market access*

Investments in post-harvest processing facilities, access to markets, and accompanying infrastructure and policy reforms that foster commercial agriculture are critical for transforming African agriculture. A large literature on the impacts of investments to improve market access for farmers has found that the benefits are significant, come in different forms, and can be realized through several channels. Reduction in transport costs reduces trade costs and interregional price gaps.<sup>25</sup> The spillover effects are that farmers pay less for their inputs and get more for their outputs, increasing incomes.<sup>26</sup>

Various digital tools and approaches have helped to overcome information problems that hinder market access for many small-scale farmers. Proximity to rural roads has significant effects on poverty and agricultural productivity overall.<sup>27</sup> This is particularly critical in Africa, where less than half of the rural population lives close to an all-season road. Trader surveys in Benin, Madagascar, and Malawi find that transport costs account for 50–60 percent of total marketing costs.<sup>28</sup> In Tanzania, the price pass-through

<sup>24</sup> Thirtle and van Zyl (1994).

<sup>25</sup> Casaburi, Glennerster, and Suri (2013).

<sup>26</sup> Khandker, Bakht, and Koolwal (2006); Minten and Kyle (1999); Chamberlin et al. (2007); Stifel and Minten (2008).

<sup>27</sup> Dercon et al. (2008); Bosker and Garretsen (2012).

<sup>28</sup> World Bank (2008).

of maize from broader markets to farmers was significantly lower even 25 miles away from a paved road.<sup>29</sup> Higher profitability from road access also increases the value of farmers' land.<sup>30</sup> Not surprisingly, access to markets facilitates economic diversification in rural areas and creates incentives for farmers to adopt modern production technologies.<sup>31</sup>

### *Shift government spending from private to public goods*

Research from Latin America and the Caribbean finds that it is crucial to shift public spending from providing goods and services to specific groups of producers, toward the increased provision of public goods. On average, 51 percent of total government spending in rural areas was on subsidies to private goods during 1985–2001. A reallocation of 10 percentage points of public expenditures from subsidies to public goods would increase per capita agricultural income by about 2.3 percent without increasing total spending.<sup>32</sup> These findings from cross-country analysis for Latin America are consistent with the analysis for Asia, where spending on rural infrastructure, agricultural research, and dissemination had large poverty alleviation effects. Governments in Sub-Saharan Africa and other developing regions have invested heavily in state-owned enterprises (parastatals) to perform commercial functions that generally are carried out more efficiently by the private sector; the public investment crowded out private investment and dragged down the overall performance of the sector. Although the situation has improved over time, state-owned enterprises are still more involved than they should be in the agriculture sector, particularly in marketing inputs and outputs.

Many parts of Asia have achieved impressive gains in agricultural productivity and poverty reduction over the past half-century. By contrast, sustained productivity growth remains elusive in most of Africa. What can African policy makers learn from Asia's experience? Conditions naturally differ in many respects between Africa and Asia, but it is instructive to understand the mix of public investments and policies in many Asian countries, and their relative importance in driving growth and reducing poverty. Spending on productive investments related to the development and diffusion of technological improvements, greater connectivity in rural areas, and irrigation development did the most to reduce poverty. In India, the relative performance of subsidies evolved over time, with somewhat higher returns in the early years of the Green Revolution but rapidly declining returns thereafter. Fertilizer, power, and irrigation subsidies were among the least significant contributors over the four decades. The findings of studies from other regions provide potentially important implications for enhancing agricultural growth and poverty reduction in Sub-Saharan Africa.

### *Target spending to reduce poverty*

The scope is considerable for crafting investments to magnify their pro-poor impacts. Rural roads and irrigation infrastructure can be geographically targeted in areas where there are concentrations of the poor. Research can be aimed at the crops, livestock, and technologies that are likely to be most useful to the poor rather than, for example, plantation export crops. Efforts to connect farmers to markets can be focused on smallholders. Analysis indicates that such investments can have large payoffs in economic growth and poverty reduction (box 3.6).

<sup>29</sup> Delgado, Minot, and Tiongco (2005).

<sup>30</sup> Jacoby (2000).

<sup>31</sup> Gachassin, Najman and Raballand (2010); Mu and van de Walle (2007).

<sup>32</sup> Lopez and Galinato (2007); Valdes (2008).

**BOX 3.6:**  
Impacts of  
Policy Options  
to Raise  
Agricultural  
Productivity in  
Sub-Saharan  
Africa

Recent research has quantified the improvement in productivity from policy reforms and several kinds of agriculture investments. Although comprehensive development of the agriculture sector in Africa requires investments across multiple areas, the decomposition of total factor productivity (TFP) shows that productivity improvements in Sub-Saharan Africa have been led by investments in the development of new technologies, wider adoption of new technologies, and policy reforms to strengthen economic incentives for farmers (table B3.6.1).

**TABLE B3.6.1: Drivers of Agriculture Productivity in Sub-Saharan Africa**

Driver	Contribution to cumulative TFP growth (%)
Agricultural research and development	51
Improvement in agriculture's terms of trade with market and trade policy reform	20
Reduction in conflict	18
Increase in farmer education	8
HIV/AIDS therapy to infected adult population	2

Sources: Fuglie and Rada 2013; Fan, Gulati, and Thorat 2008.

The investments must be conscious decisions in the design and targeting of spending programs, and there are likely to be trade-offs between distributional objectives and the goal of boosting the growth of agricultural GDP. Of course, this kind of pro-poor targeting has limits, since the investments will benefit the landless poor only indirectly. As far as we know, there are no comprehensive cross-country studies on the extent to which current spending policies are taking advantage of opportunities for pro-poor targeting. Anecdotal evidence suggests that such conscious decisions are being made (for example, almost all World Bank projects to improve market linkages are aimed at smallholders), but there undoubtedly is room for improvement.

In Sub-Saharan Africa, women make up a large proportion of the agricultural labor force, yet they are consistently found to be less productive than male farmers. The gender gap in agricultural productivity—measured by the value of agricultural produce per unit of cultivated land—ranges from 4 to 25 percent, depending on the country and crop. This gender gap exists because women frequently have unequal access to key agricultural inputs such as land, labor, knowledge, fertilizer, and improved seeds. However, the gender gap is caused by more than just unequal access to inputs; women also face unequal returns to the inputs they do have.

The fact that the gender gap persists suggests that current agricultural policies and programs are inadequate for tackling the underlying constraints. It is crucial to recognize that men and women may face different constraints that impede them from improving their agricultural practices, and that it may be necessary to rethink, innovate, and test new programs to address women-specific constraints (see box 3.7).

A new report from the Africa Gender Innovation Lab quantifies the cost of the gender gap in agriculture and the potential gross gains economies and communities could realize from closing the gap in Malawi, Tanzania, and Uganda. The study shows that closing the gap could result in gross gains in gross domestic product of \$100 million in Malawi, \$105 million in Tanzania, and \$67 million in Uganda—along with other positive development outcomes, such as reduced poverty and greater food security. In addition, higher agricultural output could lead to lower food prices, which could in turn help improve nutrition by enabling poor people to buy more and better food. As a result, the report suggests that 238,000 people in Malawi, 80,000 people in Tanzania, and 119,000 people in Uganda could be lifted out of poverty. Estimating the monetary value of the gender gap demonstrates the scale of the gross gains that could be made from designing better policies to improve women's ability to use agriculture to lift themselves and their families out of poverty and contribute to economic growth.

The study also finds that the gender gap can be attributed to three main determinants in these countries. The first and main cause of the gap is differential access to male family labor. One key reason why women farm managers have less access to male family labor is that the majority of women farm managers are widowed, separated, or divorced. Second, women farmers are less likely to grow export crops than men who grow and sell these crops in the market for higher profits. Finally, women's access to agricultural implements and machinery is significantly lower than that of men in all three countries. Addressing the determinants of the gender gap in future policy making will lead to more effective programming to increase agricultural productivity.

The task is to design innovative and effective approaches to close the gender gap. Research to date has provided a menu of promising solutions and ideas to test, such as providing women farmers with small nudges in the form of well-timed discounts to encourage the purchase of fertilizer, or bringing agricultural training to women's doorsteps through farmer field schools and mobile phone applications. Further research should look at the relative impacts of specific policies and programs, as well as their cost efficiency to quantify their net benefits.

*Prepared by Niklas Buehren and Rachel Coleman.*

Source: World Bank and United Nations 2016.

**BOX 3.7:**  
Improving  
Opportunities  
for Women  
Farmers in  
Africa

## *Address emerging priorities arising from climate change*

Public spending policy will need to remain flexible to cope with future challenges, and, for agriculture, probably no challenge is more urgent than climate change. It is a threat for agriculture across the world, but the lack of resilience of poor farmers makes it particularly serious in Sub-Saharan Africa. Projections show yield decreases in the near term of 5 percent, potentially growing to 15–20 percent across all crops and regions in Sub-Saharan Africa by the end of the century. Agriculture is also an important contributor to greenhouse emissions, particularly from deforestation, and Africa is the only region where the majority of production increases have come from expanding cultivated area, generally at the expense of forests. In Africa, as around the world, a more climate-resilient agriculture sector is needed to achieve the triple win of enhancing agricultural productivity, mitigating emissions of greenhouse gases, and helping farmers adapt to climate change.

Most investments to mitigate climate change (low-carbon growth) and adapt to it (resilience building) will need to be made by farmers and other private agents. But proactive government policies, planning, and investments will be required to provide information, incentives, and an enabling environment to encourage communities, households, and the private sector to change their behaviors and investment choices. Many climate-resilient investments will not be very different from productive investment choices, even not taking climate change into account. Building resilience has overall benefits in any case, but the value of climate-resilient investments is amplified by the changes that will occur with global warming.

## MAXIMIZE THE BENEFITS OF FERTILIZER SUBSIDIES

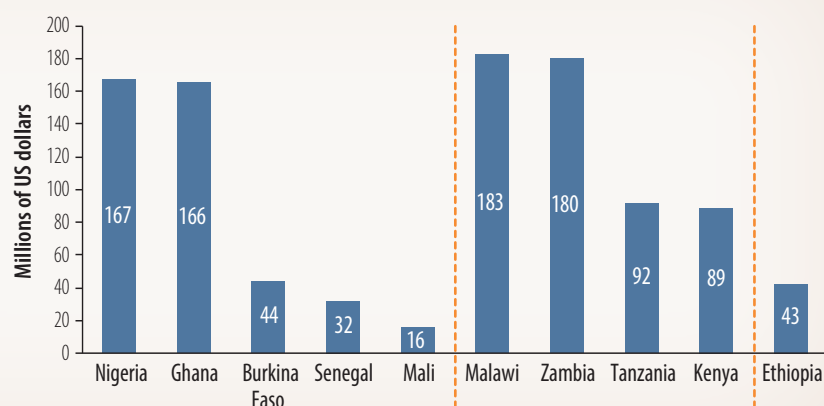
### *Subsidies are resurging*

The resurgence of input subsidy programs in Africa has arguably been the region's most important policy development for public agricultural spending in recent years. Ten African governments together spend more than one billion dollars annually on input subsidies alone (figure 3.11), primarily on fertilizers. These programs were almost phased out in the 1990s, during a period of structural adjustment in Africa, but they have made a strong comeback due partly to residual support for subsidies among African leaders,

even while pressured to phase them out, and partly to the uncertainties about food supply during the 2007–08 period of global food and fertilizer price instability. Input subsidies continue to be vastly popular among African politicians as a highly demonstrable way to support their constituents.

The 10 largest African governments spend \$1.2 billion a year on input subsidies alone.

**FIGURE 3.11: Input Subsidy Spending in Selected Countries, 2014**



Source: Goyal and Nash 2016.

### *The level of fertilizer use is supposedly suboptimal*

The economic rationale for fertilizer subsidies comes mainly from the motivation that, because of credit and information constraints, the level of fertilizer use is suboptimal in most of Africa. Some argue that subsidies could overcome these problems by reducing the costs that farmers incur and the barriers of affordability, access, and learning. This justification is often based on the facts that fertilizer is used much less intensively in Africa than in other regions, particularly Asia, and fertilizer use on demonstration plots provides high returns.

Even so, there are reasons to question the assumption of suboptimal use. Experimental evidence from farmer-managed fields indicates response rates that are considerably lower than on researcher-managed fields. On demonstration plots, crops are grown under conditions that are much closer to optimal than those of most farmers' fields, with better soil and more plentiful water. But, in much of Africa, water management is scarce and soil has been degraded, greatly reducing the responsiveness of crops to higher chemical fertilizer use.<sup>33</sup> Facile comparisons of average fertilizer application rates between Africa and Asia, which suggest that higher application rates in Africa would produce results comparable to those in Asia, can be highly misleading. Indeed, policy discussions of low productivity in Africa tend to overemphasize fertilizer use and underemphasize the poor farming practices and rainfed conditions that limit African farmers' ability to use fertilizer as profitably as it can be used in other regions.<sup>34</sup>

The evidence from the high agricultural growth periods in South Asia shows that fertilizer subsidies played little or no role in substantially boosting productivity.<sup>35</sup> Studies in four Asian countries—Bangladesh, India, Indonesia, and Pakistan—conclude that fertilizer subsidies were not significant in farmers' adoption of technology. The studies instead identify technology research, irrigation expansion, and other investments, such as roads, as the main drivers.<sup>36</sup> At the height of the Green Revolution, farmers in three of the four countries (except Bangladesh) were net taxed for fertilizer (that is, domestic prices of fertilizers were higher than the world market prices), indicating that it was profitability and not subsidies that drove technology adoption during the Green Revolution.<sup>37</sup>

### *Returns to subsidies are low and variable*

Evidence has been accumulating on some of the largest input subsidy programs in Sub-Saharan Africa—in Ethiopia, Ghana, Kenya, Malawi, Nigeria, Tanzania, and Zambia—based on farm-level surveys.<sup>38</sup> The analysis points to several conclusions with important policy implications:

- The crop response rates of smallholder farmers are highly variable and usually low because of the inability to use fertilizer efficiently and profitably. Low water availability and poor soil, chronically late deliveries of fertilizer, poor management practices, and insufficient complementary inputs prevent farmers from obtaining higher rates of fertilizer efficiency.
- The increment in total fertilizer use is smaller than is distributed through the program. Even with “smart” subsidies, crowding out of commercial fertilizer sales and outright diversion and theft remain major problems.
- Subsidies are unlikely to address their multiple objectives effectively. It is often argued that subsidizing fertilizer is desirable to boost agricultural production and help poor farmers. Yet there is strong evidence that most of the benefits do not go to poor farmers (targeting is regressive with respect to asset wealth and landholding size), and the gains in overall food production have been transitory and much smaller than the costs (table 3.2).

<sup>33</sup> Christaenson and Kaminski (2015).

<sup>34</sup> Jayne et al. (2013).

<sup>35</sup> Gautam (2015); Fan, Gulati, and Thorat (2008).

<sup>36</sup> Smith and Urey (2002); Rashid et al. (2013).

<sup>37</sup> Rashid et al. (2013).

<sup>38</sup> Most empirical work refers to the fertilizer components of these programs. Although many programs distributed packets of fertilizer and seeds together, the cost of fertilizer was 10–14 times the cost of seeds.

**TABLE 3.2: Summary Evidence of the Impacts from Farm and Household Studies**

Country	Characteristics of recipient households acquiring subsidized fertilizer	Financial benefit-cost ratio	Economic benefit-cost ratio
Malawi	Households with larger landholdings and asset wealth get more	0.62	0.80
Zambia	Households with more land get slightly more	0.56	0.92
Kenya	Households with higher landholdings receive more subsidized fertilizer	0.79	1.09

Note: Ratios are estimated based on five-year estimated response rates. The ratios reported here use baseline calculations, making adjustments to the average partial effect of 1 kilogram of subsidized fertilizer on total smallholder fertilizer use, as suggested by Chirwa and Dorward (2013) and Jayne et al. (2013). Costs are those of the fertilizer only, while reported yields are those observed using both fertilizer and seeds. For this reason, the benefits overestimate the benefits of fertilizer use alone, and the benefit-cost ratios could be considered upper bounds of the ratio for subsidized fertilizer.

Subsidies are often administered in such a way that they are only or mainly available to growers of a narrow set of staple crops, reinforcing the policy bias against diversified cropping. This encouragement of mono-cropping makes production less nutritious, exacerbates soil depletion, and makes smallholders more vulnerable to adverse climatic events.

### *Add alternative and complementary investments to the policy mix*

In areas where fertilizer or other modern production technologies are actually underused, many policy levers are available to encourage greater uptake. The optimal choice of instruments depends to a large extent on the constraint. If the main bottleneck is that farmers have few choices of appropriate input technologies for the main agro-ecological systems in a country, the best solution may be to focus on regulatory reform to encourage spillovers from abroad, or to invest in domestic research. If the problem is lack of information on the part of farmers, extension may be the best policy lever. If one of the underlying causes for low fertilizer use is insufficient cash flow for farmers to buy inputs, efficiently promoting the emergence and growth of rural credit markets (including support for land market development) would address this. Much can be done using innovative ways of doing banking and taking advantage of new applications of information technologies.

Several countries have recently implemented changes to improve the efficiency and effectiveness of their input subsidy programs. Countries have replaced public with private procurement and delivery mechanisms, and even put in place electronic delivery systems for subsidies (as in Nigeria). These changes appear to be steps in the right direction. But there is not yet rigorous empirical evidence to assess whether these changes have significantly improved the performance of the programs, much less whether they have changed the benefit-cost calculus from negative to positive. And some claims echo those for the earlier generation of smart subsidies, which proved to be exaggerated. The new reforms are worth monitoring, but until they are proven effective, they cannot be assumed to be good models for spending decisions.

Notwithstanding the large body of evidence that even “smart” input subsidies have seldom produced benefits commensurate with their fiscal costs, they remain politically attractive. Where subsidies continue to be used, they should at least be reduced to a modest amount in national agriculture budgets, with



a clear exit strategy and combined with complementary expenditures. In the longer term, no program will sustainably raise fertilizer use until it becomes profitable for farmers to buy fertilizer on commercial markets after they graduate from the subsidy program. This brings back the issue of complementary investments. Creating demand will require lowering the farmgate prices of fertilizers in Africa, where they are high relative to other regions. There are clear implications for government spending priorities: spending needs to be aimed at streamlining logistics and reducing costs and risks in fertilizer supply chains.<sup>39</sup> Much of this investment is most appropriate for the private sector, but governments can support the effort by improving the infrastructure for fertilizer distribution, reducing regulatory barriers, and improving profitability by reducing transport costs (see box 3.3 above).

It will be necessary to enhance research and extension, and invest in soil analysis and mapping, to improve soil fertility management to raise fertilizer response rates.<sup>40</sup> Input promotion during the high agricultural productivity periods in Asia and South America, for example, addressed systemic constraints to productivity through integrated investments in new technologies, extension support, irrigation, and market linkages. Countries in Sub-Saharan Africa could get a bigger impact within the existing expenditure envelope by moving away from a heavy focus on fertilizer subsidies, toward a package of complementary investments. Reforming the design and implementation of these subsidy programs while rebalancing government spending in favor of high-return core public goods and policies could produce massive dividends. The Alliance for a Green Revolution in Africa has a program on soil health, and some countries (including Kenya and Nigeria) are testing program designs to get these services on the ground and integrated with fertilizer subsidy programs (box 3.8).

Most rural development strategies in Sub-Saharan Africa focus on improving the productivity of smallholder farms. The approach has clear advantages, since it leverages resources already in place in rural communities—primarily land, family labor, farming knowledge, and social capital—while the slow-paced dynamics of economic transformation and farm restructuring play out. Importantly, improving smallholder productivity speeds up economic growth and complements programs that prepare rural workers for jobs in other sectors.

With the possible exception of mechanization, technologies that improve overall small-farm productivity usually help farmers achieve higher yields. In general, yield gaps are high in Sub-Saharan Africa, and even a partial narrowing could have a significant impact on local and global food supplies. A careful and transparent approach to promoting new commercial farms, carved from underutilized land resources, can help improve food supplies over time, but with fewer benefits for economic growth or poverty reduction, and with greater stress on Africa's natural resources and ecologies.

A key instrument in the pursuit of improving smallholder productivity is the development and dissemination of new technologies. In the case of Asia's Green Revolution, a small set of technologies had a transformational impact on rural communities and food systems that were land-constrained and structured largely around wheat and rice. In Sub-Saharan Africa, agroclimatic and market conditions are more diverse, as are food systems. Consequently, a larger set of place-specific technologies is needed to prompt an African Green Revolution. This raises the cost of developing and testing new technologies and the cost of disseminating technologies that meet farmers' needs.

**BOX 3.8:**  
Central Role of  
Small Farms in  
African Rural  
Development  
Strategies

<sup>39</sup> Jayne et al. (2013).

<sup>40</sup> Drechsel et al. (2001); Tittonell and Giller (2013).



**BOX 3.8**  
*Continued*

Lessons from the fields of maize and rice farmers in Sub-Saharan Africa illustrate these points. In the case of lowland rice, the seed-fertilizer technologies that transformed many Asian food systems work well in well-managed irrigation systems. But those technologies are not enough to create material change in the lives of most rice producers in Sub-Saharan Africa, since most of the rice produced in the region is rainfed. Nevertheless, research suggests that, in many communities, rainfed rice yields can be improved by focusing not only on seeds and fertilizer, but on improved agronomic practices.

In the case of maize, differences in risk, markets, and growing conditions help explain dramatic differences among farmers in the use of fertilizer and high-yielding seeds. Heterogeneity also helps explain why technology promotion programs based on a single technology packet, which proved transformational in Asia, have seen limited success in Africa. However, as the example of highland maize farmers in Kenya illustrates, indigenous hybrid systems based on improved genetic material and improved resource management can supplement traditional seed-fertilizer technologies.

Taken together, the evidence suggests that a strategy of boosting smallholder productivity is a sound one, especially when combined with policies that help families prepare for jobs outside agriculture. However, the task of building out, cataloging, and disseminating the full set of technologies needed for transformational change represents a challenge for African governments and the development community. Still, there is evidence of local successes and some indication that yield gaps have closed in recent years. Pursuing additional paths, built on resource management technologies and indigenous innovations, can speed Africa's Green Evolution.

Source: Larson, Muraoka, and Otsuka 2016.

### *Tackle the data and evidence challenge*

Policies and investments are only as good and effective as the data and evidence informing them. But obtaining good quality data is often a challenge. The topic of data has recently received a lot of attention<sup>41</sup> for tracking poverty,<sup>42</sup> but the challenge applies in equal measure to agriculture. In part this is because the world in which African agriculture operates has been changing (income growth, urbanization, and climate change), and previously held perceptions have quickly become out of date. But it is also because the information base on African agriculture has been limited for a long time.<sup>43</sup>

Several initiatives are underway to remedy this situation, such as the Global Strategy to Improve Agricultural and Rural Statistics, and the ensuing regional Action Plans. Another initiative, at a smaller scale and more focused on innovation in agricultural household data collection, is the Living Standards Measurement Study–Integrated Surveys on Agriculture (LSMS-ISA). The LSMS-ISA supports national statistical offices in the collection of at least four rounds of nationally representative household panel survey data in six to eight African countries during 2008–20. It provides a unique opportunity to ground-truth our understanding of Africa's farming reality today, which is what an international consortium of researchers led by the World Bank under the Agriculture in Africa Telling Facts from Myths project set out to do.<sup>44</sup> The findings underscore how important it is to invest in regular data collection and the continuous examination of conventional views, to confirm, fine-tune, and at times also revise direction or raise new issues. By way of illustration, three of the areas of policy concern that were covered in this research are featured in box 3.9.

41 For example, for macroeconomic statistics, see Jerven (2013); Devarajan (2013).

42 Beegle et al. (2016).

43 Carletto, Jolliffe, and Banerjee (2015).

44 The six countries examined are Ethiopia, Malawi, Niger, Nigeria, Tanzania, and Uganda. For details, see <http://www.worldbank.org/en/programs/africa-myths-and-facts#1>.

*Technology.* Population pressure and the growth of urban markets are expected to have led to marked intensification in African agricultural production. The evidence suggests that this has not been fully realized in Africa compared with other developing regions. The practice of fallow has disappeared, but the use of modern inputs (fertilizers, improved seed varieties, and other agro-chemicals) and modern technology (irrigation and mechanization) have lagged somewhat. However, the orthodox view that African farmers use few modern inputs is overstated. Although many smallholders still use rudimentary technologies on the farm, inorganic fertilizer use has picked up to significant levels in some countries, with more than 40 percent of farmers using inorganic fertilizer in Ethiopia, Malawi, and Nigeria. In all countries in the region, irrigation and tractor use are negligible (Sheahan and Barrett 2014). Two important insights come from these data. First, although farmers are using modern inputs, they are not combined correctly to reap the gains from joint use. Households are spreading inputs across the farm rather than concentrating them on a single plot, thereby foregoing important synergies. Second, increasing fertilizer use may well not be a profitable option for many farmers. A study of fertilizer use among Nigerian maize farmers found, for example, that in addition to low physical returns to fertilizer at the margin (7.5 kg maize per kg of nitrogen fertilizer compared with estimates of around 17 in Eastern and Southern Africa, and up to 50 if researcher management protocols are followed), the costs of acquiring fertilizers (mostly transportation costs) further reduced fertilizer profitability, rendering additional fertilizer use in effect unprofitable for a number of farmers in Nigeria (Liverpool-Tasie et al. 2015). Such insights from the micro data are vital for understanding farmers' behavior and designing effective policies. The insights question the notion that fertilizer use is low (as derived from facile comparisons with fertilizer use in other continents). They also underscore the importance of integrated interventions (access to input use, extension, and markets).

*Labor productivity.* As highlighted at the outset of this section on agriculture, the policy priority in Africa has to be to raise agricultural productivity—of land and labor. At the same time, the conventional view is that labor is intrinsically far less productive in agriculture than elsewhere in the economy, and that the most is to be gained from transferring labor out of agriculture (without much investment in raising productivity within agriculture). The data examined in the Myth and Facts project, however, show that this is a myth. While the national accounts report that labor in nonagriculture is six times more productive than in agriculture, the farm-level data tell us it is only three times more productive. But even this is misleading. When output is measured *per hour worked*, the gap almost disappears. This is because workers in agriculture work fewer hours (700 hours per worker per year) than those in nonagriculture (1,850 hours). Per worker productivity gaps reflect differences in employment rather than in output per hour worked (McCullough 2015). The incentive to shift out of agriculture therefore lies in the opportunity to spend more time at work. In agriculture, work hours are constrained or rationed, possibly because of the seasonal nature of production.

*Seasonality.* Although it is commonly accepted that seasonality permeates African livelihoods, surprisingly little attention is paid to it. Because of the seasonal nature of agricultural production, one area where seasonality manifests itself is in prices. Better integration of domestic food markets today may explain part of the limited attention to seasonality. But there is also very little systematic available evidence on the extent of food price seasonality, and what is available is largely dated. The consequence is that “while we all know about seasonality,” it is very unclear “precisely what it is we know.” Using trigonometric and sawtooth models to overcome some of the systematic upward bias in seasonal gap estimates from the common monthly dummy variable approach, researchers in the Myths and Facts project showed that seasonality in staple crop prices can be substantial, with maize prices in the 193 markets from the seven African countries studied on average 33 percent higher

**BOX 3.9:**  
Sorting out  
facts from  
myths

**BOX 3.9**  
*Continued*

during the peak months than during the troughs, and rice prices 16.5 percent higher. This is two and a half times larger than in the international reference markets. Seasonality varies substantially across markets, but in virtually none of them is the variation lower than in the international reference markets. This finding confirms the existence of substantial excess seasonality, for which there may be a host of reasons, including poor post-harvest handling and storage facilities, and lack of market integration. Follow-up analysis in Tanzania shows that the estimated food price seasonality also translates into seasonal variation in caloric intake of about 10 percent among poor urban households and rural net food sellers. Together the findings suggest that the current neglect of seasonality in the policy debate is premature.

*Prepared by Luc Christiaensen*

## MANAGE THE POLITICAL ECONOMY

### *Identify underfunded high-return categories of spending*

Some categories of spending that have been shown to have significant positive effects on productivity and welfare are often underfunded, and others that generally show unfavorable results often capture large shares of the budget. Explaining such discrepancies between impact and prominence in the public budget requires understanding how the public resource allocation process is shaped by agents' incentive structures, the characteristics of the investments, and the broader governance environment in which agents operate. Budget decisions will always be politically influenced, but understanding the sources of bias that are likely to drive inefficient or ineffective policies can help avoid those outcomes.

### *Move beyond the status quo*

Many African countries have long pursued policies of implicit or explicit agricultural taxation, creating a pro-urban, anti-agriculture bias.<sup>45</sup> One explanation is that rural populations exhibit greater difficulty in organizing collective action among dispersed populations that lack easy means of communication.<sup>46</sup> But if the difficulty of organizing collective action can be overcome, there is also strength in numbers.<sup>47</sup> One way to offset at least partially this natural disadvantage of rural populations is to improve the information base of key actors, so that they better understand the effects of alternative policy choices. Policy processes exhibit a status quo bias, such that policies that have outlived their usefulness often are not discontinued. Governments favor the status quo because those who benefit from the current state are usually the ones with the power to have ensured enactment of those policies in the first place.<sup>48</sup> And their political support for the current policies is increased by those who have altered their behavior to become beneficiaries after the policies were put in place.<sup>49</sup>

### *Use visibility to guide spending*

Types of spending with highly visible results that are easily attributable are more attractive. Visible infrastructure investments and direct cash or in-kind transfers are more easily connected to the efforts and spending decisions of public officials. These can even be conveniently advertised—for

<sup>45</sup> Krueger, Schiff, and Valdes (1988); Anderson (2009).

<sup>46</sup> Olson (1985).

<sup>47</sup> Acemoglu and Robinson (2001).

<sup>48</sup> Fernandez and Rodrik (1991).

<sup>49</sup> Coate and Morris (1999).

example, through labels on the fertilizer voucher ticket indicating who is responsible for subsidizing the fertilizer—thus serving as an effective tool for patronage.<sup>50</sup> In contrast, if a farmer observes that the quality of information provided by a new agricultural extension officer has improved, it may be difficult for the farmer to ascertain whether that is because the new extension officer is more motivated, or the agriculture ministry has done a better job in selecting, training, and incentivizing extension officers. For example, the greater visibility (and therefore attributability) of large-scale irrigation schemes in Mozambique has made them more attractive than small schemes, despite the weaker agricultural performance of the large ones.<sup>51</sup>

### *Reduce time lags in investment*

Goods and services with a long lag between the time when resources are allocated and the time when the benefits become available are less politically attractive for several reasons. A longer lag tends to break the perceptible link between politicians' decisions and public officials' resource allocations, and politicians may have a short time horizon for their tenure in office. Given the substantial time lag between investing in research and reaping its rewards—usually decades, not years—agricultural research requires a long-term commitment for sufficient, sustained funding. Long research cycles rarely coincide with short election cycles, shifting political agendas, and changes in government budget allocations. The inability to extract short-term political credit acts as a disincentive for policy makers to commit to long-term agricultural R&D investments, thus jeopardizing future research planning and outputs.

Given low investments by governments, agricultural research in many countries in Sub-Saharan Africa is highly dependent on donor funding, which by nature is mostly short term and ad hoc, often causing major fluctuations in a country's yearly agricultural investments. In contrast to the long gestation to realize the benefits of investing in research, public spending to subsidize agricultural inputs usually requires a span of only a few months from the time of the investment until the subsidized fertilizer reaches farmers. In Malawi, the time span from the spending being incurred to the fertilizers being received by farmers ranged from one to six months,<sup>52</sup> and in Ghana, the equivalent time span was about four months.<sup>53</sup> This is clearly one factor behind the bias toward subsidies in the current policy mix.

### *Monitor corruption*

The prevalence of corruption tends to increase the share of large capital investment spending in overall spending. Areas of public spending involving large infrastructure or other capital investment (such as irrigation) create opportunities for public officials to improve the chances of a private agent winning contracts, or to loosen regulatory burdens on the agent, in return for private payments to the official. Underperformance of irrigation infrastructure in countries beset with corruption is notorious for another reason as well. Incentives for technical staff to maintain structures properly are severely weakened without side payments, given the rents that can be extracted in a context of insecurity about access to functioning irrigation systems.<sup>54</sup>

<sup>50</sup> Keefer and Khemani (2005); Chinsinga (2011).

<sup>51</sup> Mogues and do Rosario (2015).

<sup>52</sup> Chirwa and Dorward (2013).

<sup>53</sup> Banful (2011).

<sup>54</sup> Wade (1982); Walter and Wolff (2002).

### *Move from top-down to more participatory budgeting institutions*

Institutional mechanisms to make spending more pro-poor have a mixed record and vary in their strengths and vulnerabilities. In some African countries, the potential benefits of participatory budgeting have been vitiated by a top-down process closely managed by the party in power, as in Mozambique.<sup>55</sup> Benefits have also been constrained by earmarking transfers from the federal government, as in Kenya and Uganda,<sup>56</sup> or by high administrative and maintenance costs, as in Uganda.<sup>57</sup> Where spending decisions are decentralized, concrete mechanisms to strengthen electoral accountability need to be put in place to ensure local administrators are responsive to the needs of individuals and not only to local elite groups. This must be matched by building local officials' public management capacity, and improving citizens' information base on the actions as well as the performance of local governments. Inefficiencies and poor targeting of subsidies can be reduced through operational features that improve the clarity and reduce the ambiguity of eligibility criteria, paired with an increase in the transparency and information about which localities, and within localities which households, are eligible to receive the transfers.

### *Overcome inertia in policy making*

Too often, countries fail to adopt and implement policies that are known to be necessary for sustained economic development. In addition, for the reasons described, there is significant inertia in policy making. How, then, can change occur?

### ***Be ready to take advantage of opportunities for reform***

Major past reform programs have been necessitated by the realization that more of the same is not fiscally sustainable. External (oil and other commodity) price shocks and debt crises have exposed inefficient and unsustainable policies.<sup>58</sup> Much of the restructuring and privatizing of marketing boards in Africa came about when they became fiscally unsustainable, partially because of movements in the international prices of commodities.<sup>59</sup> Severe budgetary constraints have disturbed the political equilibria that supported those policies and opened space for reforms, often with the strategic and financial support of external actors such as international financial institutions. These reforms have involved profound changes in agricultural policies, including major shifts in public spending programs. Among them was a reduction in input subsidies, which were common in the 1980s and 1990s. But after the crises subsided and economic recovery progressed, some of the same programs and policies (including input subsidies) reemerged, albeit in improved versions, because they remained politically attractive.<sup>60</sup> The lesson here is not that reforms must always await the advent of shocks, but that reformers should be ready with plans and evidence to influence reforms, and alert to opportunities that may arise. Countries could also benefit from anticipating economic shocks and investing now in the necessary adaptations.

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<sup>55</sup> Nylen (2014).

<sup>56</sup> Ranis (2012).

<sup>57</sup> Francis and James (2003).

<sup>58</sup> World Bank (2008).

<sup>59</sup> Akiyama et al. (2001).

<sup>60</sup> Jayne et al. (2013).

### ***Consider compensating losers***

Improvements in the quality of spending have sometimes been greatly facilitated by partially compensating losers. In Mexico, Romania, and Turkey, comprehensive reforms that reduced agriculture subsidies and privatized state-owned enterprises ushered in rapid agriculture sector growth. The reforms were accompanied by area-based cash payments (much more efficient and less costly to the government than the policies they replaced), without which these reforms likely would not have been politically feasible to enact or sustain.

### ***Find ways to commit to long-gestation policies with high returns***

Other forces can be harnessed to facilitate policy reform. Two major barriers to reform are the lack of understanding by the citizenry of the distributional effects of policies (which also reduces the attributability of positive impacts) and the difficulty that politicians have in making a credible commitment to policies with long gestations. Farmer cooperatives and other producer organizations can help identify beneficial policies, disseminate this information to their members, and then lobby for their enactment. Democratization increases the opportunity for the formation of member-driven groups that can be effective in promoting policy change as opposed to top-down organizations. Other agents of civil society in a country (the press, local nongovernmental organizations, and even competing parties) can also increase the transparency of policy and the availability of information. Rigorous impact evaluations of projects and programs hold promise for revealing the distributional and welfare effects of spending policies; their wide dissemination would go a long way toward increasing public understanding.

### ***Enhance credibility by committing to an external agent***

Enhanced credibility is an important principle underlying international trade treaties. The sweeping agricultural reform program in Mexico, for example, was motivated by the determination to join the North American Free Trade Agreement, and the consequent need to firmly lock-in the policies that would make this possible. In a similar vein, regional agreements and institutions in Africa, such as the CAADP, can play this role if commitments are taken seriously. CAADP's peer reviews of National Agricultural Investment Plans and the Joint Sector Review process with an emphasis on "mutual accountability" mechanisms could potentially enhance credibility. The fungibility of resources makes it difficult for donors and development partners to have a significant influence over the size and composition of agriculture budgets through the mechanism of funding individual projects. But with agricultural public expenditure reviews becoming more common, they provide a tool to get a comprehensive view of the entire budget, identify shifts in overall spending patterns, increase transparency, and facilitate more effective input into budget planning and implementation.

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## Appendix A. Definitions of Variables

### *Economic Activity*

*GDP Growth.* We use the growth rate of GDP (in %) from the World Bank's World Development Indicators.

*Sectoral growth.* We use the annual percentage growth rate of the value added in agriculture, industry, services, and manufacturing. The data are collected from the World Bank's World Development Indicators.

*Sources of growth.* The variables used to calculate the sources of growth were collected from Feenstra, Inklaar, and Timmer (2015). The data are available for download at [www.ggdc.net/pwt](http://www.ggdc.net/pwt).

The variables used were:

- Real GDP at constant 2011 national prices (in millions 2011 US\$)
- Capital stock at constant 2011 national prices (in millions 2011 US\$)
- Share of labor compensation in GDP in current national prices
- Human capital index based on years of schooling and returns to education
- Number of persons engaged in employment (in millions).

### *Macroeconomic policies*

To measure the quality of macroeconomic policies, we will examine the evolution of the CPIA score on *economic management*, which measures the quality of monetary and exchange rate policies as well as fiscal and debt management policies.

In addition to the overall score of economic management, we will look into the score of two of its three components; namely,

- (a) *Monetary and exchange rate policy.* This indicator evaluates the quality of monetary and exchange rate policies in a coherent macroeconomic policy framework. The goal is to examine whether the monetary and/or exchange rate policy framework is consistent with economic stability and sustained medium-term growth. It covers the extent to which the monetary and/or exchange rate policy framework: (i) maintains short- and medium-term internal and external balance, (ii) is consistent with price stability goals, and (iii) offers flexibility to deal with internal and external shocks.
- (b) *Fiscal policy.* This indicator examines the quality of the fiscal policy in its stabilization and allocation functions. The stabilization function deals with achieving macroeconomic policy objectives in conjunction with coherent monetary and exchange rate policies; that is, smoothing business cycle fluctuations. The allocation function refers to the appropriate provision of public goods; that is, it focuses on the composition of public expenditure—including, for instance, the provision of infrastructure and agriculture-related public goods and services that support medium-term growth.

### *Structural policies*

To assess the quality of structural policies, we depict the evolution of the CPI score on *structural policies*, which covers policies affecting trade, the financial sector, and the business environment. In this category, we will only zoom into one of its subcomponents:

- (a) *Business regulatory environment.* This component examines the extent to which the legal, regulatory, and policy environment helps or hinders private business in investing, creating jobs, and becoming more productive. It focuses on direct regulations of business activity and regulation of goods and factor markets, thus covering: (i) regulations affecting entry, exit, and competition; (ii) regulations of ongoing business operations; and (iii) regulations of factor markets (labor and land).

*WGI Regulatory Quality.* This captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. It takes values from -2.5 to 2.5, and higher values imply greater levels of government effectiveness. Source: World Bank's World Governance Indicators (WGI). The data can be downloaded from [www.govindicators.org/](http://www.govindicators.org/).

*Depth of financial systems.* We use the domestic credit to the private sector as percentage of GDP. The data are available from the World Bank's World Development Indicators.

*Diversification of exports.* The diversification index measures the extent to which exports are diversified. It is constructed as the inverse of a Herfindahl index, using disaggregated exports at four digits (following the Harmonized System, rev. 2). The score is then standardized into a scale of 0 to 100, with 100 as the best score. The data are from Mo Ibrahim Index at <http://mo.ibrahim.foundation/>.

### *Public sector management and institutions*

To assess the quality of the public sector, we examine the evolution of the CPIA score on public sector management and institutions. This score covers multiple dimensions of governance and public sector capacity issues —namely, property rights and rule-based governance; quality of budgetary and financial management; efficiency of revenue mobilization; quality of public administration; and transparency, accountability, and corruption in the public sector. In this category, we will focus our attention on the following categories.

- (a) *Property rights and rule-based governance.* This score evaluates the extent to which economic activity is facilitated by an effective legal system and rule-based governance structure in which property and contract rights are reliably enforced. It covers: (i) legal framework for secure property and contract rights, including predictability and impartiality of laws and regulations; (ii) quality of the legal and judicial system, as measured by independence, accessibility, legitimacy, efficiency, transparency, and integrity of the courts and other relevant dispute resolution mechanisms; and (iii) crime and violence as an impediment to economic activity and citizen security.
- (b) *Quality of public administration.* This indicator evaluates the core administration —as defined by civilian central government (and subnational governments to the extent that their size and policy responsibilities are significant) excluding health and education personnel, and police. Specifically, it examines the functioning of the core administration in three areas: (i) managing its own operations; (ii) ensuring quality in policy implementation and regulatory management; and (iii) coordinating the larger public sector human resources management regime outside the core administration (de-concentrated and arms-length bodies and subsidiary governments).
- (c) *Transparency, accountability, and corruption in the public sector.* This indicator examines the extent to which the executive, legislators, and other high-level officials can be held accountable for their use of funds, administrative decisions, and results obtained. Accountability is generally enhanced by transparency in decision-making, access to relevant and timely information, public and media scrutiny, and by institutional checks (inspector general, ombudsman, or independent audit) on the authority of the chief executive. This score quantifies four dimensions: (i) the accountability of the executive and other top officials to effective oversight institutions; (ii) access of civil society to timely and reliable information on public affairs and public policies, including fiscal information (on public expenditures, revenues, and large contract awards); (iii) state capture by narrow vested interests; and (iv) integrity in the management of public resources, including aid and natural resource revenues.



*WGI Government Effectiveness.* This indicator captures the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. It takes values from -2.5 to 2.5, and higher values imply greater levels of government effectiveness. Source: World Bank's World Governance Indicators (WGI). The data can be downloaded from [www.govindicators.org/](http://www.govindicators.org/).

*WGI Rule of Law.* This measures the perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. It takes values from -2.5 to 2.5, and higher values imply greater levels of government effectiveness. Source: World Bank's World Governance Indicators (WGI). The data can be downloaded from [www.govindicators.org/](http://www.govindicators.org/).

### Infrastructure

Infrastructure measures the quality of and access to infrastructure by using seven indicators, including (i) road network; (ii) rail network; (iii) air transport; (iv) access to water; (v) electricity supply; (vi) telephone and IT infrastructure; and (vii) digital connectivity. The overall score of the category is an average of each indicator, which is converted into a standardized scale of 0 to 100, where 100 is the best score. Source: Ibrahim Index downloaded from <http://mo.ibrahim.foundation/>.

Of the four indicators, we further look at two components.

- (a) *Road Network.* This indicator evaluates the quality of roads, ranging from extremely underdeveloped to extensive and efficient. The scores are based on the World Economic Forum.
- (b) *Electricity Supply.* This indicator from the World Economic Forum scores the perception of the quality and reliability of the electricity supply, taking into account interruptions and voltage fluctuations.

### Rural sector

Rural sector is a category comprised of eight indicators: public resources for rural development; accountability, transparency & corruption in rural areas; land and water for low-income rural populations; rural business climate; agricultural research and extension services; agricultural policy costs; engagement with low-income rural populations; and equal representation in rural areas. Source: Ibrahim Index downloaded from <http://mo.ibrahim.foundation/>.

- (a) *Public Resources for Rural Development.* This indicator scores government policies, strategies, and investment programs for the agricultural and rural development sector, and the efficiency, consistency, and transparency with which resources are allocated, managed, and accounted for. This is scored by the International Fund for Agricultural Development (IFAD).
- (b) *Land & Water for Low-income Rural Populations.* This component evaluates the extent to which the rural poor have secure access to land and equitable user-rights over water resources for agriculture. It consists of two sub-indicators from IFAD.
- (c) *Rural Business Climate.* This indicator measures the extent to which the policy and institutional framework supports the development of private rural businesses and commercially-based agricultural and rural finance markets. It consists of three sub-indicators from IFAD.

