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June 2016

Robert Gordon on U.S. growth

Nigeria's film industry

Bitcoin technology

AFRICA

Growth's Ups and Downs

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FROM THE **EDITOR**

Africa Pausing

STRONG performance by many African economies over the past two decades led some commentators to coin the term "Africa Rising" to describe the region's surging economic power.

The term graced the cover of *TIME* magazine in December 2012, in an issue that chronicled the region's decades-long journey from economic anemia to impressive vigor. Beginning in the mid-1990s, many—but certainly not all—countries in sub-Saharan Africa energized their economies, achieving in recent years some of the world's highest growth. Living standards improved as a result, as did health care and other key services, inspiring hope for a bright future.

The past year has been harsh, however, as the region suffered a sharp slowdown, owing to slumping commodity prices and softer global economic conditions. Drought has struck in some countries. And China—now a major trade and business partner in a number of African countries—is slowing as it retools its economy, sparking fears of further weakening. A wave of pessimism is taking hold, prompting some to wonder if the Africa Rising story has come to an end.

This issue of *F&D* looks at this critical moment for Africa and brings together articles suggesting that many countries are well positioned to ride out this storm despite the toughest conditions in a decade. Our writers express hope that strong growth will resume, albeit with a pause or two along the way.

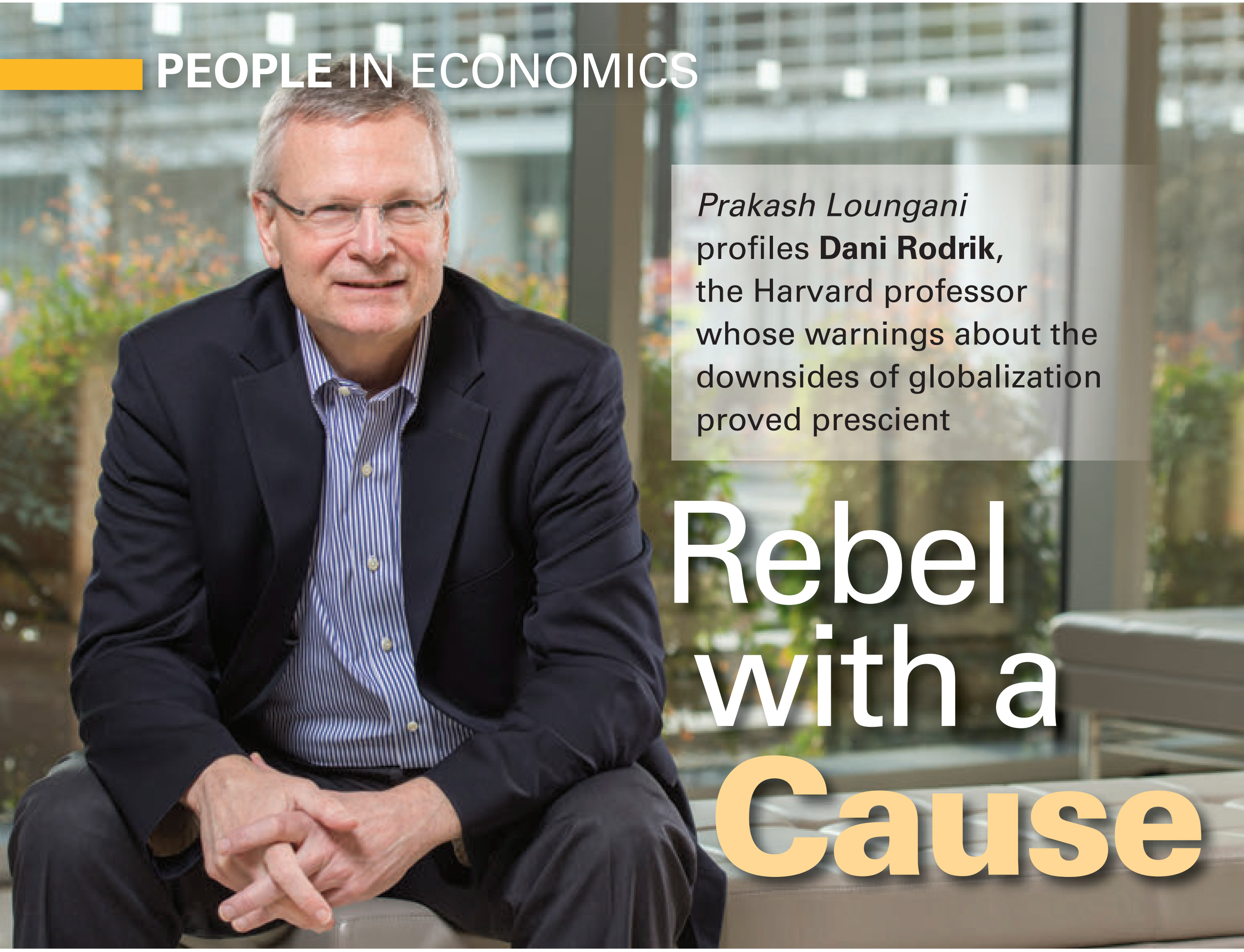
In his overview, Georgetown University's Steven Radelet documents changes that leave Africa better positioned to handle this downturn. Marked improvements in governance, the emergence of more adroit leaders and economic managers, and better economic and social policies are a solid foundation for future growth. Although likely to slow in the next few years, he says, the long-term outlook for growth is solid for countries that diversify their economies, increase competitiveness, and further strengthen their institutions of governance.

Antoinette Sayeh, head of the IMF's African Department, sounds a similar note in her Straight Talk column, arguing that the underlying drivers of growth over the past decade still persist and that a reset of monetary and fiscal policies can help reignite sustainable growth in the region.

Other articles in our Africa feature look at sources of future growth: digital technologies that increase access to financing, regional economic agreements that foster closer business ties, increased women's participation in the workforce, and a focus on improving infrastructure and health care. We also take a look at a sector that exemplifies Africa's growing influence and economic energy: Nigeria's film industry, or "Nollywood," one of the world's largest film industries in terms of number of films produced.

Elsewhere in this issue, we are pleased to offer an article on U.S. growth by Robert J. Gordon, whose recent book, *The Rise and Fall of American Growth*, has stirred much thought about the prospects for a long period of muted growth in the United States. Finally, Prakash Loungani profiles iconoclastic economist Dani Rodrik.

Jeffrey Hayden
Editor-in-Chief



Prakash Loungani profiles **Dani Rodrik**, the Harvard professor whose warnings about the downsides of globalization proved prescient

Rebel with a Cause

THE triumph of markets over the state appeared almost complete in the early 1990s. The collapse of the Soviet Union and the fall of the Berlin Wall had discredited the role of the state in commanding the economic and political life of citizens. The political scientist Frank Fukuyama proclaimed in 1992 that the spread of democracy and capitalism around the globe would henceforth make history somewhat "boring." Among economists, markets—already held in fairly high regard—gained further esteem. Prominent left-leaning economists like Larry Summers admitted to a "grudging admiration" for such champions of the global spread of free markets as Milton Friedman.

But Harvard economist Dani Rodrik refused to join the party. Instead, he warned that globalization—the process of economic integration of nations through trade and finance—may have gone too far. In a 1997 monograph, he said there was a "yawning gap" between the rosy view of globalization held by economists and "the gut instincts of many laypeople" to resist it. In the United States, he noted, "a prominent Republican," Pat Buchanan, had just run "a vigorous campaign for the presidency on a plank of economic nationalism, promising to erect trade barriers and tougher restrictions on immigration" (themes pushed two decades later by Republican Donald Trump in his campaign for the 2016 presidential nomination).

Rodrik's warnings that the benefits of free trade were more apparent to economists than to others were prescient. His skepticism about the benefits of unfettered flows of capital across national boundaries is now conventional wisdom. His successful attack on the so-called Washington Consensus of policies to generate economic growth has made governments and international organizations like the IMF and the World Bank admit that there are many policy recipes that can generate growth. That the phrase

“one size does not fit all” has become a cliché is due in no small part to the influence of Rodrik’s work. “We didn’t understand how right he was,” says David Wessel, a former *Wall Street Journal* economics writer now at the Brookings Institution’s Hutchins Center.

Inside the ivy tower

Rodrik has spent most of his professional life at Ivy League institutions. He has a bachelor’s degree from Harvard and master’s and PhD degrees from Princeton, followed by a teaching career at Harvard and Columbia.

He was able to go from his native Turkey to Harvard because of his father’s success as a businessman. Like many countries in the 1970s, Turkey followed a policy of import substitution—imposing tariffs to keep out imports and substitute domestic products. Protected by these tariffs, his father’s ballpoint pen company was successful enough that Rodrik could contemplate studying in the United States. “I am the product of import substitution,” Rodrik has said.

On his application to Harvard, he wrote that he wished to major in electrical engineering, unaware that the school then did not offer it as a major. Nevertheless, he has since written, he was admitted because one member of the admissions committee “somehow saw a flicker of hope” in his application and pushed his case “over the strenuous objections of others on the committee.”

Shortly after arriving at Harvard in 1975, he decided to major in political science—and take a minor in economics due to his “father’s prodding.” His father, he says, “still had hopes that I would go to business school and do something useful in life.” In his senior year at Harvard, still “confused about his career goals,” he applied to six different graduate programs—some in economics and business, others in political science and international relations. He chose a master’s in public policy at the Woodrow Wilson School at Princeton and “had a great time,” but realized that he had “simply put off the decision” of whether to pursue a career in economics or political science.

He remembers “well what settled it.” One day in the library he picked up copies of the flagship publications of the two disciplines, the *American Political Science Review* and the *American Economic Review*. The former was “written in English, the other in Greek”—that is, liberally sprinkled with the mathematical equations favored by economists. He says he realized that “if I did a PhD in economics, I would be able to read both journals, but that if I did a PhD in political science, it would be goodbye economics. That was my epiphany.”

He was admitted to the economics department at Princeton in 1982, a year after his initial application, “more out of compassion than conviction,” he has written. A member of Princeton’s faculty, Peter Kenen, “was single-handedly responsible for my admission.” Some members on the admissions committee had concerns about Rodrik’s math skills but Kenen, with whom Rodrik had taken a course as a master’s student, prevailed on them to give him a chance.

At Princeton, he wrote his dissertation under the noted economist Avinash Dixit (see “Fun and Games,” in the December 2010 *F&D*). “I’ve never seen anybody who’s a clearer thinker than him,” Rodrik has said. “There’s never been a paper that I’ve written that I haven’t thought, ‘What will Dixit think about this?’”

Rodrik’s first job was at Harvard’s Kennedy School of Government in 1985. Except for stints at Columbia from 1992 to 1996 and, more recently, at the Institute for Advanced Study in Princeton, New Jersey, he has been at Harvard for the past three decades. It is from within the confines of this ivy tower that Rodrik has launched the attacks that have changed the profession’s views and made his name.

Taking on trade

That there are gains from free trade is a core belief of economists. Trade theory shows that if countries specialize in making some products, and then exchange some of those products through imports and exports, they end up richer than if each country were to go it alone. But there is a catch. When the United States decides to specialize in producing Hollywood movies rather than textiles, its textile workers stand to lose. Not to worry, trade theorists respond, our analysis shows that the gains to the Hollywood producers will be sufficient to make up for the losses of the textile workers.

Rodrik also emphasized that trade “fundamentally transforms the employment relationship.”

In practice, though, losers seldom share in the winners’ gains (redistribution in economic parlance). Rodrik says that “to this day, there is a tendency in the profession to overstate” the gains from trade while paying lip service to the need for redistribution. But trade theory shows that “the larger the net gains, the larger the redistribution [that is needed]. It is nonsensical to argue that the gains are large while the amount of redistribution is small.”

In his 1997 monograph, “Has Globalization Gone Too Far?” Rodrik pointed to the failure to push redistribution seriously as one reason for the gap between economists and laypeople in their attitude toward trade.

And he outlined several other tensions created by trade. Rodrik wrote that trade “is exposing a deep fault line between groups who have the skills and ability to flourish in global markets” and those who lack them. Without retraining or education, the latter would understandably be opposed to free trade. Rodrik also emphasized that trade “fundamentally transforms the employment relationship.” If workers can be more easily substituted for each other across national boundaries, “they have to incur greater instability in their earnings [and] their bargaining power erodes.” Trade could also “undermine the norms implicit” in domestic production, for instance, if child labor in a foreign producer displaced U.S. workers.

Rodrik concluded that the cumulative consequences of these tensions could end up “solidifying a new set of class divisions" between those who stood to gain from trade and those who lost out.

The monograph was published by the Institute for International Economics—now the Peterson Institute—and has become one of the think tank's bestsellers. The institute's founding director, C. Fred Bergsten (see "An American Globalist," in the March 2012 *F&D*), says that he suggested the title "instead of the long and technical one that Dani had." But Bergsten did more than suggest the title. He also persuaded his advisory board that the monograph was worth publishing; several members of the board were opposed to associating the Institute's name with an attack on free trade.

Rodrik says that Bergsten deserves credit for backing his cause when many others were reluctant. But he also credits a seemingly unlikely institution, the IMF. "Over the years I have been quite surprised by the assistance I have received from the IMF," where he wrote part of the monograph while a visiting scholar in 1995–96. The Fund is "not exactly the place you would think the ideas in that book would have necessarily originated."

Controls on capital

In October 1997, at its annual meetings in Hong Kong SAR, the IMF put forward its arguments why countries should not only *lower restrictions on trade* but should also move to *relax restrictions on the movement of capital across national boundaries*. Economists refer to the former as current account liberalization (or convertibility) and the latter as capital account liberalization or financial globalization. The IMF asked its member countries to amend the institution's charter to give it authority to monitor progress toward capital account convertibility.

At this time, several Asian economies were engulfed in a financial crisis that many attributed to the decision to open up to foreign capital flows. Though this made the timing of the IMF request awkward, then–First Deputy Managing Director Stanley Fischer gamely went ahead. He called capital account liberalization "an inevitable step on the path of development, which cannot be avoided and should be embraced." Fischer noted that this liberalization ensures that "residents and governments are able to borrow and lend on favorable terms, and domestic financial markets become more efficient as a result of the introduction of advanced financial technologies, leading to better allocation of both saving and investment."

Along with Jagdish Bhagwati, a champion of free trade, and Nobel Prize–winner Joseph Stiglitz, Rodrik spoke up against this financial globalization. Rodrik argued that the benefits that Fischer mentioned paled in comparison to the risks of increased volatility from the entry and exit of foreign capital. "Boom-and-bust cycles are hardly a sideshow or a minor blemish in international capital flows; they are the main story," he said.

Rodrik also was skeptical of any benefits of long-term capital moving to the countries where it was most needed. He argued against IMF insistence that capital accounts could be liberalized in "an orderly fashion and buttressed by enhanced prudential regulation of financial practices," which he said happened more in textbooks than in the real world. "Enshrining capital account convertibility in the IMF's articles of agreement is an idea whose time has not yet come," he concluded. "We have no evidence that it will solve any of our problems, and some reason to think that it may make them worse."

Two decades later, the time for capital account liberalization has still not come.

Indeed, two decades later, the time for capital account liberalization has still not come. Evidence has accumulated that its benefits are difficult to establish, while the costs have been undeniable. In 2006, a major study coauthored by the IMF's then–chief economist Kenneth Rogoff found little evidence of improved economic performance after a country opens up to capital flows. Another study found that foreign capital increases volatility in developing economies. The chief economist who followed Rogoff, Raghuram Rajan, showed that countries that grew rapidly relied less, not more, on foreign capital. In 2009, Rodrik himself wrote in *IMF Staff Papers*, an academic journal published by the institution, that "more is not necessarily better" when it comes to foreign capital flows; "depending on context and country, the appropriate role of policy will be as often to stem the tide of capital inflows as to encourage them" (see Box 1).

Killing the Consensus

In 1989, John Williamson of the Institute for International Economics put together a list of 10 policy actions he felt summarized the consensus among major international organizations on what countries had to do to trigger growth. The

Box 1

Global financial regulation: less is more

The recent global financial crisis turned a harsh spotlight on the effects of international flows of capital and triggered calls for a better system of global financial regulation. Predictably, Dani Rodrik is a lone voice in opposition, writing that "global financial regulation is neither feasible, nor prudent, nor desirable" (*The Economist*, March 12, 2009). He argues that desirable forms of financial regulation differ across countries and depend in part on how countries value financial stability versus financial innovation. The responsibility for regulating leverage, setting capital standards, and supervising financial markets should "rest squarely at the national level." Global financial firms should have to comply with these national requirements, just as global manufacturers comply with product-safety rules that differ across countries. "The world economy will be far more stable and prosperous with a thin veneer of international cooperation superimposed on strong national regulations than with attempts to construct a bold global regulatory and supervisory framework."

term “Washington Consensus”—sometimes also “neoliberal agenda”—has come to represent a general orientation toward market-based solutions for growth.

Rodrik has said that “when I first began to criticize the Washington Consensus, I thought I was doing the obvious.” In a series of papers and books written during the 1990s and 2000s, he made three points against the Consensus. First, growth often happened as a result of “eclectic solutions” that combined the roles of the market and government. Second, growth was often triggered by one or a few changes and did not require a “long checklist” of reforms. Third, there were many pathways to growth, not a unique set of institutions and reforms.

Rodrik provided many examples of successful industries in many countries that relied on a combination of market and state support. “Costa Rica is not a natural place to manufacture semiconductors,” he noted, but the government “got Intel to come in and do just that.” He argued that the historical record did not support assertions that the government cannot pick winners: “when economists say [this] they are really, for the most part, doing amateur political science.” What was more important, he said, was “to design institutions that … give the government the capacity to let go of the losers.”

Relying on detailed case studies by other scholars, Rodrik also provided examples of “how little it takes for countries to suddenly experience a rapid growth spurt.” In Mauritius, it was the establishment of an export processing zone; in China, it was the introduction of the household responsibility system and a two-track price regime; in India it was a change in the government’s attitude from extreme hostility to being supportive of entrepreneurship. Hence, transitions to higher growth did not require a long checklist of actions. Countries could boost growth by identifying “the binding constraints” to growth and overcoming them through “well-designed but relatively minor interventions” (see Box 2).

The case studies also showed there was “very little in common across [the] policy changes” that triggered growth, according to Rodrik. This suggested that there were many ways to grow. Moreover, a look at countries that were already rich—many in Europe, Japan, and the United States—showed that “you can end up being wealthy” despite differences in institutions and policies. Countries that had gotten richer more recently—those of east Asia in large part—had “marched to their own drummers and are hardly poster children for neoliberalism. East Asian countries would have been far worse off had they encountered something like the Washington Consensus. China would have been worse off if it had had no choice but to start the growth process through a structural adjustment loan from the World Bank.”

Today, “the Washington Consensus is essentially dead,” Rodrik says, “replaced by a much more humble approach” that recognizes “we need a lot less consensus and a lot more experimentation.”

Box 2

Getting the diagnosis right

With economists Ricardo Hausmann and Andrés Velasco, Dani Rodrik proposed a framework—called Growth Diagnostics—to help countries decide which reforms to pursue for growth. As the trio wrote in a March 2006 *F&D* article, countries should figure out a small number of binding constraints on growth and focus on overcoming those, rather than tackle a “laundry list of needed reforms.” Applying their method to El Salvador, they concluded that the binding constraint on growth was not a shortage of savings but a “dearth of ideas”: the country’s traditional sectors (such as cotton, coffee, and sugar) had declined, but no new ideas had sprung up for other potential investment sectors. They advised that encouraging more entrepreneurship and new business opportunities should be “at the center of [El Salvador’s] development strategy.” The Growth Diagnostics framework has been used by both the World Bank and the IMF as a complement to devising growth strategies. For instance, as applied by the IMF staff to Tunisia in 2016, the framework suggests that lack of “access to finance” was the binding constraint rather than infrastructure bottlenecks or a shortage of human capital.

The revolution is over

Andrei Shleifer, a Harvard colleague of Rodrik’s, often used to greet him in the corridors by asking, “How is the revolution going?” While there may have been some doubt about the answer when Rodrik started his Harvard career in 1985, it is clear three decades later that the revolution has succeeded.

His warnings about the downsides of trade and its potential to create class divisions have become widely accepted. Harvard professor and former U.S. Treasury Secretary Larry Summers wrote in the *Financial Times* in April 2016 that “the core of the revolt against global integration … is not ignorance. It is a sense, not wholly unwarranted, that it is a project carried out by elites for elites with little consideration for the interests of ordinary people.”

Rodrik’s caution about financial globalization is now widely shared, including at the IMF. Jonathan Ostry, an IMF deputy director who led the institution’s recent research on capital flows, says: “That Dani and the IMF can now have useful conversations about the design of capital controls is tribute both to his persistence and the institution’s flexibility.”

The attacks on the Washington Consensus have led to greater humility in the advice international organizations offer countries on growth strategies. Rodrik noted that the IMF’s 2013 paper on growth strategies made a “plea for contextual analysis and recipes that sounds, to this set of ears at least, quite pleasing.”

Rodrik himself seems to have acquired a deeper love of the profession he has often attacked. After two years at the Institute of Advanced Study, where his colleagues were drawn from various social sciences, he decided to return to the fold. His new book, *Economics Rules*—short-listed for the *Financial Times*’ best book award—tells noneconomists that “there is much to criticize in economics but there is also much to appreciate.” ■

Prakash Loungani is a Division Chief in the IMF’s Research Department.

Africa's Rise—Interrupted?

Steven Radelet

The region's future depends on much more than fluctuations in commodity prices

IS Africa's surge of progress over? During the past two decades, many countries across the continent changed course and achieved significant gains in income, reductions in poverty, and improvements in health and education. But the recent optimism seems to have swiftly given way to a wave of pessimism. Commodity prices have dropped, the world economy has slowed, and economic growth has stalled in several sub-Saharan African countries. If high commodity prices alone drove recent advances, the prospects for further gains seem dim.

But the reality is more complex, and the outlook—especially over the long run—is more varied than many now suggest. To be sure, many countries are confronting some of the most difficult tests they have faced for a decade or more, and even with sound management, progress is likely to slow in the next few years. But for others—especially oil importers with more diversified export earnings—growth remains fairly buoyant. At a deeper level, although high commodity prices helped many countries, the development gains of the past two decades—where they occurred—had their roots in more fundamental factors, including improved governance, better policy management, and a new generation of skilled leaders in government and business, which are likely to persist into the future.

Managing the global slowdown—alongside other growing threats such as climate change—will require strong leadership, forceful action, and difficult choices. Overall growth is likely to slow in the next few years. But in the long run, the outlook for continued broad development progress is still solid for many countries in the region, especially those that diversify their economies, increase competitiveness, and further strengthen institutions of governance.

Two decades of progress

The recent slowdown follows two decades of strong progress, at least for many countries, that began in the mid-1990s and included faster economic growth, higher incomes, declines in poverty, widespread improvements in health and education, and other develop-

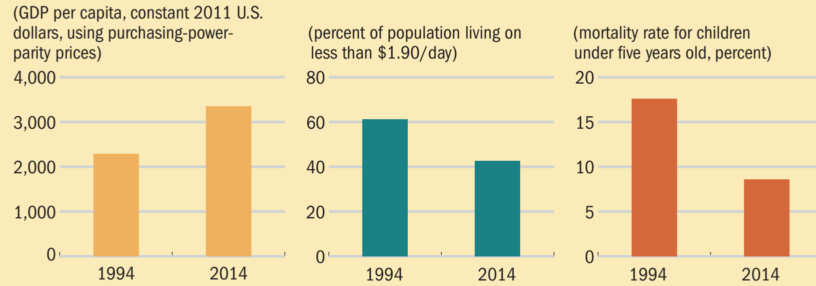
Participants in the Absa Cape Epic mountain bike race, Cape Town, South Africa.

ment gains (see Chart 1). Since 1995 GDP growth across the continent has averaged about 4.3 percent a year, fully 3 percentage points higher than in the previous two decades. But it would be misleading to suggest that rapid growth rates were universal across the continent. They varied widely, with about half the countries in the region moving forward and others changing little. In the 20 fastest growing countries—excluding oil exporters—GDP growth averaged a robust 5.8 percent for two decades, and real incomes per person more than doubled. But in other countries, growth was much slower, and in eight countries, income per person actually fell. Some of the differences are stark: in Rwanda real income per person more than doubled; in Zimbabwe it fell 30 percent.

Chart 1

Two decades of development progress

Incomes have grown, poverty has fallen, and child mortality has declined in sub-Sarahan Africa.



Source: World Bank, World Development Indicators.

Where growth accelerated, poverty finally began to fall. The share of people living in extreme poverty (less than $1.90/day in constant 2011 prices) dropped from 61 percent in 1993 to 43 percent in 2012, a decline of nearly 1 percentage point a year for two decades. In some countries (for example, Senegal), poverty declined even more; in others (Democratic Republic of the Congo), not at all.

The gains in health were even bigger. Since the mid-1990s the share of children dying before their fifth birthday has fallen more than half, from 17 percent to 8 percent. Remarkably, *every single country* in sub-Saharan Africa has reduced child mortality in the past two decades. Malaria deaths have fallen by half, and deaths related to HIV/AIDS and tuberculosis have both fallen by one-third. More than three-quarters of children are enrolled in primary school, up from just half in the 1980s. More than two-thirds of girls now complete primary school, which will increase their earning potential; equally as important, it means that they will have fewer children and that those children will be healthier and better educated (see "In the Driver's Seat" in this issue of *F&D*). These trends bode well for the future, as they signal the beginnings of a strong human capital skills base.

Four key forces helped propel the resurgence in the countries that moved forward.

First, ***there was a marked improvement in governance,*** at least in many countries. According to the U.S. think tank Freedom House, the number of electoral democracies in Africa has jumped from just four in 1990 to 23 today. With democracy came better governance, including more politi-

Artists work on a mural on the wall of the Canadian Embassy, Accra, Ghana.

cal freedoms, less violence, greater adherence to the rule of law, stronger public institutions, a better business environment, and less corruption. The new democracies are far from perfect, but the differences in the quality of governance are reflected in the World Bank's annual Worldwide Governance Indicators scores. In 2014 the average governance rank for sub-Saharan Africa's 23 democracies was the 42nd percentile globally (ahead of both India and China), while for the nondemocratic countries it was the 19th percentile (see Chart 2). A few nondemocratic countries improved governance, but these are exceptions rather than the rule.

Second, ***there are more skilled leaders and policymakers.*** A new generation of managers, technicians, and entrepreneurs is rising to the top of government agencies, civil society organizations, and private businesses. The leaders in central banks and key government ministries are far better trained, more experienced, and more capable than their predecessors 20 years ago.

Third, and related, ***economic and social policies have improved significantly.*** Macroeconomic management has been much more effective, with more flexible exchange rates, lower inflation, smaller budget deficits, and higher levels of foreign exchange reserves. Strong state control has given way to more market-oriented economic systems. Governments have removed many distortions that hindered growth, which led to more open trade, greater choice for farmers when it came to buying inputs and selling their products, less red tape, and a lower cost of doing business. It is partly because of these policy improvements that many countries were able to weather difficult global shocks in recent years, including the food crisis of 2007 and the global financial crisis of 2008–09.

Fourth—the key condition that is now beginning to change—***during much of the past two decades world economic conditions were generally favorable.*** Trade expanded rapidly and with that came access to new technologies and ideas, alongside bigger markets. China became both a big market for exports and a major source of investment in many countries. Interest rates were low, making borrowing for infrastructure projects far more affordable. And from 2002 through 2014, rising commodity prices helped the major oil exporters (Angola, Republic of Congo, Ghana, Nigeria, and others) alongside other resource exporters, such as Liberia, Namibia, and Zambia. Rising prices did not help all countries—the majority of African countries are oil importers that were hurt by higher prices, and many saw relatively little change in key prices—but commodity prices buoyed economic activity in much of the region.

Many countries are confronting some of their most difficult challenges in a decade or more.

In addition to these four key forces, foreign aid played an important secondary role. Aid was particularly important in improving health, and helped save millions of lives through programs that increased access to vaccines, improved child health, and fought diseases such as tuberculosis, malaria, and

HIV/AIDS. And the preponderance of academic research in recent years concludes that aid has helped accelerate growth on average and consolidate democracy in some countries, especially since the mid-1990s (for a good recent summary of this research, see Arndt, Jones, and Tarp, 2015).

The view that Africa's surge happened only because of the commodity price boom is too simplistic. It overlooks the acceleration in growth that started in 1995, seven years before commodity prices rose; the impact of commodity prices, which varied widely across countries (and hurt oil importers); and changes in governance, leadership, and policy that were critical catalysts for change. This broader understanding of the drivers of progress is crucial in considering the prospects for the future: sub-Saharan Africa's long-term future will not be determined by the vagaries of the commodity markets alone, but by how well these and other challenges are managed.

Choppy waters

However, global circumstances have changed significantly, and many countries are confronting some of their most difficult challenges in a decade or more. Growth has slowed significantly around the world, including in several important export markets. Growth in Europe has slowed sharply, and the U.S. recovery remains modest. As growth has slowed, so has trade. World trade expanded by nearly 7 percent a year in the decade between 1998 and 2007, but since 2012 the pace has fallen by more than half to just 3 percent a year.

Perhaps most important, China's growth has dropped to about 6 percent, well below the pace of recent years. China's trade with sub-Saharan Africa exploded from less than $20 billion in 2003 to more than $170 billion in 2013. But China's weakened growth and its efforts to put greater emphasis on its domestic economy have led to a sharp slowdown in trade with Africa and a significant contraction in some countries, especially Angola, the Republic of Congo, Equatorial Guinea, South Africa, and Zambia—China's main African trading partners. The changes are not all negative: the rapid rise in wages in China creates new opportunities for African countries to expand manufacturing. But the relationships with China are again changing rapidly, and managing them carefully will be central to continued long-term growth in many countries across the region (see "A Fork in the Road," in this issue of *F&D*).

With growth slowing, commodity prices have dropped significantly. The prices of corn, copper, and cotton have all fallen by more than 20 percent since 2013, and iron ore and oil prices have dropped more than 50 percent. These declines have had a wide-ranging impact on export earnings, budget revenues, investment, employment, exchange rates, and foreign exchange reserves. The effects are particularly large in the oil producers (Angola, Republic of Congo, and Nigeria, among others) and in countries that export iron ore (Liberia, Sierra Leone, South Africa), copper (Republic of Congo, South Africa, Zambia), and diamonds (Botswana, Namibia, South Africa).

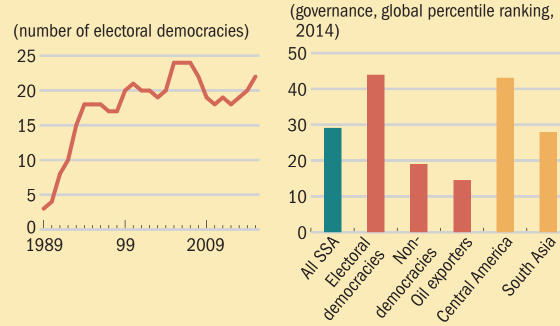
Correspondingly, growth in sub-Saharan Africa slowed from 5 percent in 2014 to 3.5 percent in 2015, and the IMF projects that it will remain subdued at 3 percent in 2016. Once again, there is wide variation, with some countries hit hard and others actually benefiting from price changes (see Chart 3). Oil exporters have seen the biggest drop in growth, alongside iron ore, copper, and diamond producers. South Africa, one of the region's major economic engines, has been rocked by drought, falling export prices, and growing political struggles, and growth is now only about 1 percent. In Nigeria, the other regional powerhouse, last year's successful political transition was followed by immediate challenges stemming from the steep decline in oil prices, widening fiscal and trade imbalances, and a hesitant response from policymakers. Angola, Liberia, and Zambia also have been hit hard.

By contrast, most sub-Saharan African countries are oil importers, and they have benefited from the drop in fuel prices. Some countries, such as Côte d'Ivoire, have gained both from a rise in export prices (in this case, cocoa) and the drop in oil import prices. Similarly, many countries are food importers and have been helped by the decline in prices for rice, wheat, and other food products. Countries with more diversified exports are experiencing a more moderate impact on export prices, coupled with gains on the import side.

Chart 2

Straight and narrow

Democracy has spread in sub-Saharan Africa, and governance has improved.

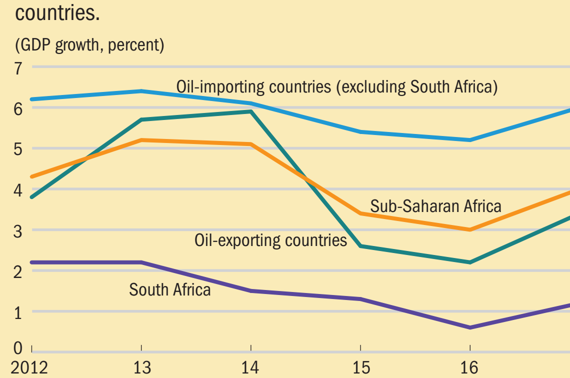


Sources: Freedom House, *Freedom in the World—Electoral Democracies*; World Bank Institute, Worldwide Governance Indicators.
Note: SSA = sub-Saharan Africa.

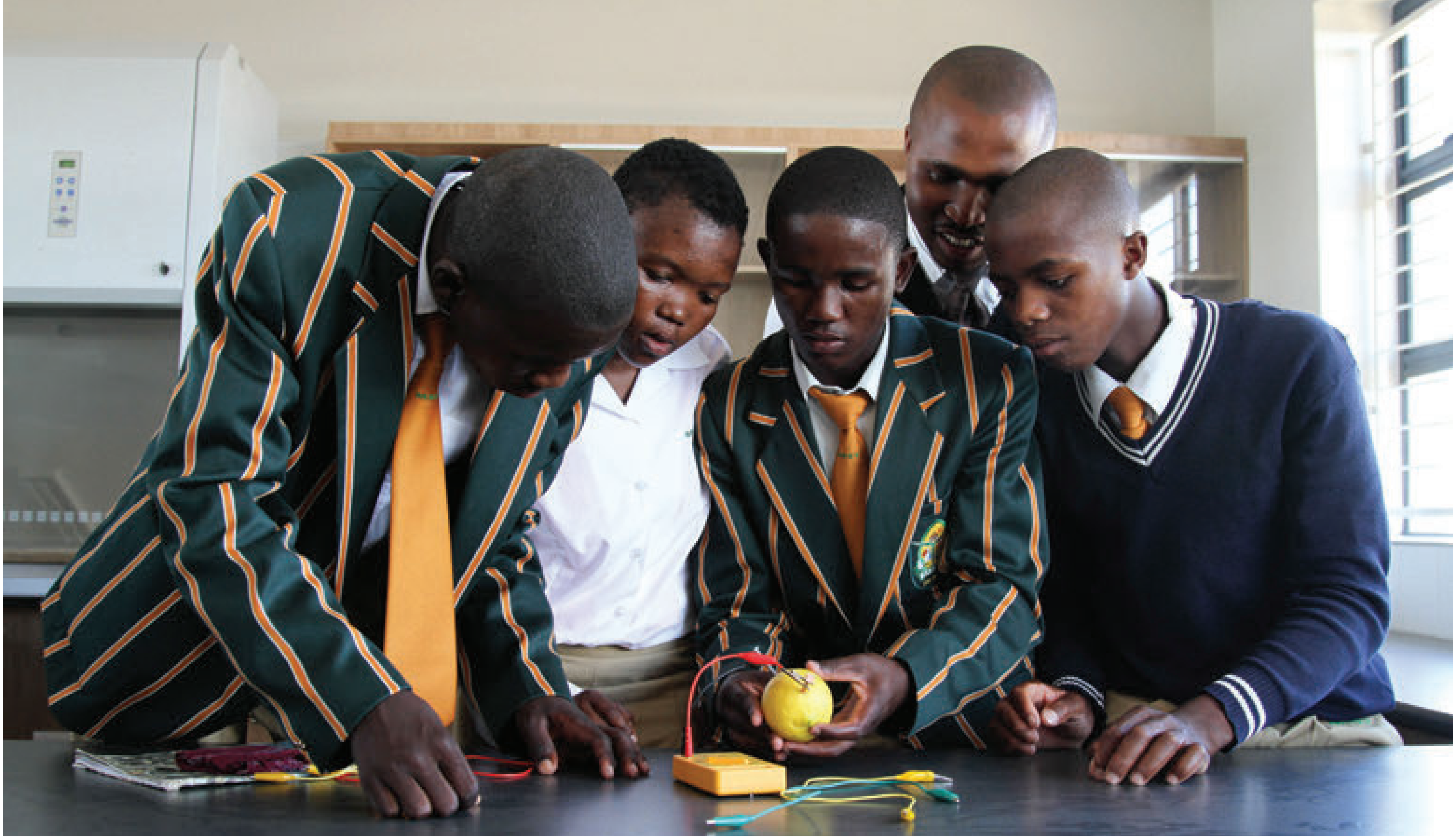
Chart 3

Downshift

Growth in Africa has slowed, but large differences remain across countries.



Source: IMF, *Regional Economic Outlook: Sub-Saharan Africa,* May 2016. Figures for 2016 and 2017 are projections.



Students working on a science experiment, Mvezo, South Africa.

Kenya, Mozambique, Rwanda, Tanzania, and Uganda are still expected to grow by 5 percent or more this year.

But countries across the region face several other long-term challenges, starting with weaknesses in infrastructure for power, roads, and water (see "Impediment to Growth" in this issue of *F&D*). World Bank researchers estimate that infrastructure deficiencies in Africa have reduced growth by more than 2 percentage points a year. Only about one-third of rural Africans live within two kilometers of an all-season road, compared with two-thirds in other regions. And while many parts of Africa have abundant water, the lack of water storage and irrigation facilities undermines economic activity. The impact of these shortages will only grow as climate change advances.

Demographic shifts present another major test. Sub-Saharan Africa's population is projected to climb from 965 million in 2016 to 2.1 billion in 2050. Nigeria alone could have 400 million people by 2050, more than double its current size. Urban populations will grow especially quickly, posing major challenges in job creation, infrastructure, education, health, and agricultural production. But demographic shifts also provide an opportunity: history shows that population growth is not necessarily a constraint on growth. Larger urban populations, a growing share of working-age people, and increased female labor force participation all present opportunities to expand manufacturing and services—much as happened in Asia in recent decades—especially when accompanied by investment in infrastructure and education.

Perhaps the most difficult challenge of all will be climate change. Temperatures in sub-Saharan Africa are expected to rise between 1.5 and 3 degrees Celsius by 2050, and weather patterns, temperatures, and rainfall are expected to be more erratic. There will be myriad effects, including a rise in sea level in coastal regions, lower water tables, more frequent storms, and adverse impacts on health. Arguably worst will be the blow to output and labor productivity in agriculture, the dominant source of income in Africa, especially for the poor.

The road ahead

Dealing with these challenges will test the skills of Africa's new generation of leaders. But once again, the effects are likely to vary widely: countries with the most diverse export bases will probably be affected the least, while those with narrow export bases and weak governance will suffer most. Continued long-term progress through this challenging period calls for action in four areas.

First up is adroit macroeconomic management. Widening trade deficits are putting pressure on foreign exchange reserves and currencies, tempting policymakers to try to artificially hold exchange rates stable. Parallel exchange rates have begun to emerge in several countries. But since commodity prices are expected to remain low, defending fixed exchange rates is likely to lead to even bigger and more difficult exchange rate adjustments down the line. As difficult as it may be, countries must allow their currencies to depreciate to encourage exports, discourage imports, and maintain reserves. At the same time, budget deficits are widening, and with borrowing options limited, closing the gaps requires difficult choices. At the core will be the ability to mobilize domestic resources and increase tax revenues, which will allow countries to control deficits while financing critical investments in roads, power, schools, and clinics. The amounts involved are significant: Every 1 percentage point increase in revenue as a share of GDP for sub-Saharan Africa as a whole raises an additional $17 billion a year. In some countries, it might make sense to augment domestic revenue with borrowing, especially for priority infrastructure projects. But the burden of debt is accelerating, interest rates are rising, and spreads on sovereign bond issues in Africa are climbing quickly—putting the brakes on further borrowing.

Second, countries must move aggressively to diversify their economies away from dependence on commodity exports. Governments must establish more favorable environments for private investment in downstream agricultural processing, manufacturing, and services (such as data entry), which can help expand job creation, accelerate long-term growth, reduce poverty, and minimize vulnerability to price volatility.

The effects of the current commodity price shocks are so large *precisely* because countries have not diversified their economic activities. The exact steps will differ by country, but they begin with increasing agricultural productivity, creating more effective extension services, building better farm-to-market roads, ensuring that price and tariff policies do not penalize farmers, and investing in new seed and fertilizer varieties. Investments in power, roads, and water will be critical. As in east Asia, governments should coordinate public infrastructure investment in corridors, parks, and zones near population centers to benefit firms through increased access to electricity, lower transportation costs, and a pool of nearby workers, which can significantly reduce production costs. Financing these investments will require a deft combination of prudent borrowing mixed with higher domestic revenue. At the same time, the basic costs of doing business remain high in many countries. To help firms compete, governments must lower tariff rates, cut red tape, and eliminate unnecessary regulations that inhibit business growth. Now is the time to slash business costs and help firms compete domestically, regionally, and globally.

Countries must move aggressively to diversify their economies away from dependence on commodity exports.

Third, Africa's surge of progress cannot persist without strong education and health systems. The increases in school enrollment and completion rates, especially for girls, are good first steps. But school quality suffers from outdated curricula, inadequate facilities, weak teacher training, insufficient local control, teacher absenteeism, and poor teacher pay. The coming years call for dramatic improvement in quality to equip students—especially girls—with the skills they need to be productive workers. Similarly, health systems remain weak, underfunded, and overburdened, as was illustrated so clearly during the recent Ebola virus disease outbreak (see "After Ebola" in this issue of *F&D*). Robust efforts are needed to improve access to health facilities, train providers, bolster the delivery of basic health services, and strengthen health systems more broadly.

Fourth, continued long-term progress requires building institutions of good governance and deepening democracy. The transformation during the past two decades away from authoritarian rule is remarkable, but it remains incomplete. Better checks and balances on power through more effective legislative and judicial branches, increased transparency and accountability, and strengthening the voice of the people are what it takes to sustain progress. Some nondemocratic countries have done well, but the majority of authoritarian governments have been governance disasters.

Finally, the international community has an important role to play. Foreign aid has helped support the surge of progress, and continued assistance will help mitigate the impacts of the current slowdown. Larger and longer-term commitments are required, especially for better-governed countries that have shown a strong commitment to progress. To the extent possible, direct budget support will help ease adjustment difficulties for countries hit hardest by commodity price shocks. In addition, donor financing for infrastructure—preferably as grants or low-interest loans—will help build the foundation for long-term growth and prosperity. Meanwhile, this is not the time for rich countries to turn inward and erect trade barriers. Rather, wealthy nations should encourage further progress and economic diversification by reducing barriers to trade for products from African countries whose economies are least developed.

It is easy to be pessimistic in the current global economic environment. But of course, it is always easy to be pessimistic. Most analysts were negative about Africa's prospects in the mid-1990s, just as many countries there were turning around and beginning to rise. There was further pessimism during the global food crisis of 2007 and the 2008–09 financial crisis. But, against all odds, many countries across the region have experienced a remarkable transformation.

The global slowdown presents major challenges that will not be easily overcome. Over the next few years, growth will probably remain moderate across the region, and the pace of overall development progress is likely to slow. In some countries, especially those reliant on a few commodity exports, the slowdown could be quite significant. Policymakers may not be able to generate rapid growth right away, but they can do much to keep the slowdown in check and strengthen the foundation for lasting progress. Looking ahead over a longer-term horizon, the fundamental improvements under way in governance, capacity building, and encouraging a new generation of leaders point to favorable prospects.

With concerted action and courageous leadership, look for many African countries to continue to make substantial development progress over the next two decades and further reduce poverty, improve governance, and expand prosperity. ■

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Time for a Policy Reset

Sub-Saharan Africa's economies face severe strains and must take action to reignite sustainable growth

Antoinette M. Sayeh is Director of the IMF's African Department.

OVER the past few years, I have been heartened by the progress on the ground in sub-Saharan Africa. Along with the extended period of strong economic growth of the past 15 years came improvements in health indicators and standards of living. Now that the region's economy has entered a rough patch, there is a risk that the progress that has reached so many will stall. A confluence of external and domestic factors is exerting severe strain on many countries, including the largest ones. So to reignite the engine of sustainable growth that has propelled the region in the recent past and secure favorable medium-term prospects, governments must implement a strong policy reset.

The pace of economic expansion in the region declined to 3½ percent in 2015, the slowest in some 15 years. The growth outlook varies greatly across countries in the region, but the IMF projects overall growth to slow further this year to 3 percent—well below the 6 percent or so observed over the past decade, and barely above population growth. Indeed, GDP per capita growth will be under 1 percent for two years in a row for the first time since the late 1990s.

World of multiple shocks

The slowdown reflects the adverse impact of the commodity price slump on some of the larger economies, tighter financing conditions, and, more recently, the drought in eastern and southern Africa.

The sharp decline in commodity prices in recent years has severely strained many of the largest sub-Saharan African economies. While oil prices have recovered somewhat since the beginning of 2016, they are still some 60 percent below their 2013 peak levels, a shock of unprecedented magnitude. As a result, oil exporters such as Nigeria and Angola, as well as most countries in the Economic Community of Central African States, continue to face particularly difficult economic conditions.

Growth will slow further for the region's oil exporters in 2016, to 2¼ percent, from as high as 6 percent in 2014, according to IMF projections. For example, growth in Angola will likely be slowed by limited foreign exchange supply and lower public spending. Similarly, in Nigeria, economic activity is constrained by the lower oil prices and compounded by disruptions to private sector activity through exchange rate restrictions. Unfortunately, nonenergy commodity exporters, such as Ghana, South Africa, and Zambia, have also been hurt by the decline in commodity prices.

The shift in the sources of China's growth—from resource-intensive investment and exports to more domestically driven growth—is certainly playing a role in the slowdown experienced by many countries in the region. During the 2000s, China became the region's single largest trade partner, and African countries have enjoyed a healthy trade surplus with that country, especially since the global financial crisis. With the slump in commodity prices, this has changed dramatically, and the trade balance has recently turned negative. These trends are likely to continue to limit growth over the medium term.

For most of the region's frontier markets, external financing conditions have tightened substantially compared with those before mid-2014, when markets enjoyed ample access to global liquidity. At the same time, some forms of capital flows to the region—notably, cross-border bank loans, relied on by more than just frontier markets—have declined significantly.

And on top of all this, several southern and eastern African countries are suffering from a severe drought that is putting millions of people at risk of food insecurity. The drought will probably dampen growth in a number of countries, including Ethiopia, Malawi, and Zambia, and food inflation is accelerating in many countries. Humanitarian needs are putting additional strain on the budgetary and external positions of many of the affected countries. The impact of the drought varies across countries, but whenever food security is precarious, there are severe human costs. And this already tragic situation could still get a lot worse; a shocking 40 to 50 million people are likely to be food insecure by the end of 2016.

Strong potential

This confluence of factors is exerting serious headwinds. But does this mean that the region's growth momentum has stalled? I don't think so—for several reasons.

First, the overall weak picture masks, as usual, widely varying circumstances—not surprising, given that the region is home to 45 very diverse countries. Many countries across the region, notably those with the lowest income, continue to register robust growth. Most oil importers are generally faring better, with growth over 5 percent, often supported by ongoing infrastructure investment and strong private consumption. For instance, growth in Kenya is projected to rise to 6 percent in 2016, aided by investment in the transportation sector, a pickup in electricity production, and a rebound in tourism. Similarly, Senegal is expected to see continued strong growth at 6½ percent, supported by improving agricultural productivity and a dynamic private sector. In Côte d'Ivoire, high cocoa prices and good agricultural production, as well as an anticipated boost in investment following the recent presidential election, should drive growth to 8½ percent this year. In some other countries, such as the Central African Republic, growth prospects are now rebounding from severe shocks or with the attenuation of conflict. And the decline in oil prices has benefited many of these countries, though the drop in other commodity prices and currency depreciations have partly offset the gains.

More broadly, the region's medium-term growth prospects continue to be favorable. True, the near-term outlook for many sub-Saharan African countries remains difficult and clouded by risks. But generally the underlying domestic drivers of growth over the past decade or so still persist. In particular, the much improved business environment and favorable demographics are likely to play an important role in supporting growth in the coming decades.

Pressing the reset button

While the region's growth potential remains strong, the current slowdown highlights that the region is not immune to the multiple transitions afoot in the global economy. As a result, to reap the region's strong potential, a significant policy reset is critical in many cases. Such a reset is particularly urgent in two groups of countries—the region's commodity exporters and countries with access to international capital markets.

For natural resource exporters, a robust and prompt shift in policy response is needed given the prospect of an extended period of sharply lower commodity prices. To date, commodity exporters—particularly oil exporters—have generally responded hesitantly and insufficiently to the historically large terms-of-trade decline they are experiencing. Faced now with rapidly depleting fiscal and foreign reserves and constrained financing, they must respond quickly and strongly to prevent a disorderly adjustment and to lay the groundwork for a quicker, durable, and inclusive economic recovery.

For countries that are not part of a monetary union, exchange rate flexibility should be part of the first line of defense against commodity price declines, as part of a broader macroeconomic policy package. Because the fall in revenues from the extractive sector will likely be long lived, many affected countries also must contain fiscal deficits and build a sustainable tax base from the rest of the economy. In their consolidation efforts, countries should aim to preserve priority spending, such as social expenditures and growth-friendly capital investments, also with a view to maintaining their longer-term development goals.

The region is not immune to the multiple transitions afoot in the global economy.

Driven by the favorable external financing environment of recent years, fiscal and external current account deficits have grown substantially in many of the region's frontier markets, as they sought to strengthen their weak infrastructure, including roads, railways, and electricity and water networks. Now that external financing is much tighter, these countries will need to reduce their fiscal deficits—depending on the country's circumstances—either by better prioritizing spending or by boosting tax revenues. That will help these countries rebuild cushions against possible worsening of external conditions.

Indeed, the current challenges sub-Saharan Africa faces are a sobering reminder of the need to strengthen resilience against external shocks. Structural measures, such as enhancing the business climate and improving the quality of public investment, would nurture the private sector and help diversify the export base and sources of growth and jobs beyond commodities. In addition, further developing the region's financial sector, including by strengthening legal frameworks and corporate governance, could also help.

Now is the time to reset policies to address current challenges and ensure the resumption of Africa's strong rising path. The required measures may cause a short-term slowdown in growth, but they will prevent the risk of crises if action is not taken promptly. With that, I believe countries in the region will be well positioned to reap their substantial economic potential. ■

Cashing In on the DIGITAL REVOLUTION

Members of the Mada Saving Club in Tsafe, Nigeria, checking their cell phones.

Njuguna Ndung'u, Armando Morales, and Lydia Ndirangu

Digitization makes finance accessible, lowers costs, and creates opportunity

IT is the topic du jour for policymakers in almost every developing economy—especially in sub-Saharan Africa. Financial inclusion makes saving easier and enables accumulation and diversification of assets, boosting economic activity in the process. As its economies continue to grow, the region must take one crucial step if it wants to escape the poverty trap, and even more so now as commodity exporters face a downward terms-of-trade trend: deliver more financial services to people and institutions.

Yet access to financial services for the poor has been limited. Minimum bank balance requirements, high ledger fees (costs for maintaining micro accounts), and the distance between poor people's homes and bank outlets hinder their access to financial services and credit. Moreover, unaffordable "collateral technology" (the system of fixed assets required for loan approval) raises costs more than anything else, and the financial products available are often not suitable for customers with low and irregular income.

Banks have had to bear high costs to provide financial services to the poor. Market segmentation, low technological development, informality, and weak regulation increase the costs of doing business. In Kenya, and in Africa more broadly, markets are heavily segmented according to income, niche, and location, and their sophistication, level of development, and formality or informality reflect that segmentation.

High customer-monitoring costs, perceived higher risk, and a lack of transparent information have been almost insurmountable challenges for banks, and microfinance and other specialized institutions have not been able to fill the gap.

A new landscape

The global financial crisis changed the landscape. Foreign banks scaled back their activities in some African countries, while new local banks increased their presence. The relative success of microfinance institutions in some countries (especially those that introduced a new technological platform to manage micro savings and deposit accounts) encouraged domestic banks to expand their networks. At the same time, nonbank financial institutions, such as savings and loans and cooperatives, formalized their activities. In response, regulators began introducing alternative models that helped cut intermediation costs. For example, agency banking allowed banks to locate nontraditional outlets in remote areas where brick-and-mortar branches and outlets are not financially feasible. Bank representatives at such outlets can perform authorized tasks, such as opening bank accounts, processing loan applications and loan repayments, and so forth.

These changes were driven by demand. Market participants pressured regulators to build their capacity to cope with innovations and to develop institutions to support financial sector growth. Greater credit information sharing and the development of information for market participants, deposit insurance, and financial intelligence units generated a virtuous circle.

But these changes pale compared with the transformation introduced by the emergence and low cost of digital financial services. In Kenya, mobile-phone-based technology (M-Pesa) for the delivery of financial services lowered transaction costs significantly and started a revolution in the payment system. M-Pesa is an electronic money transfer product that allows users to store value on their mobile phone or mobile account in the form of electronic currency. This currency can be used for a number of purposes, including transfers to other users, payments for goods and services, and conversion to and from cash.

Suddenly, businesses did not have to give their employees time off to take money to their villages to care for relatives or small farms. Employees no longer had to travel long distances carrying cash and exposing themselves to robbery and other dangers. Relatives back home did not have to make long trips and risk assault or blackmail by local criminals who tracked the frequency of their travels. The digital revolution allowed people to make financial transactions and money transfers from the comfort of their homes. The lower cost left them with more disposable income, and they now had a secure way to store cash, even those working in the informal economy.

Immediate impact

Traditional financial institutions were initially skeptical: it was hard to fathom how financial services, especially banking ser-

Kenya: a four-step virtuous process

Kenya still enjoys the advantages of an early start in pushing the frontier of financial inclusion through digital financial services. Geospatial surveys show how much financial institutions have responded to an increasingly welcoming environment (see chart). In Kenya a much larger share of the population is within 5 kilometers of a "financial access touch point" and had many more such touch points per person than was true in other countries in the region.

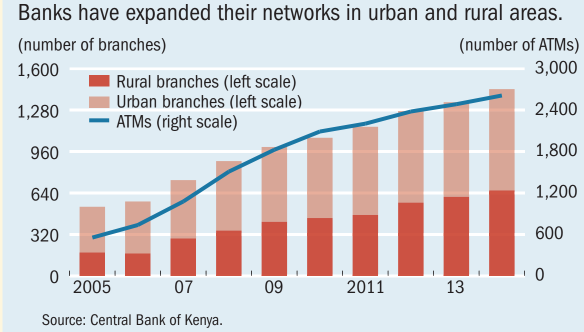
Kenya stands out for its people's use of mobile-phone-based money—in less than 10 years the share has grown from zero to more than 75 percent of the adult population. Banks have worked closely with telecommunications companies, which has allowed them a higher market presence there than in many emerging markets. In recent years, the insurance sector has expanded as well, targeting Kenya's emerging middle class, and group-financing programs have also grown. This virtuous circle—facilitated by adaptive and flexible regulatory frameworks, reforms in financial infrastructure, and rapid improvements in skills and capacity—can be divided into four phases:

Expansion of the mobile-phone technological platform for person-to-person transfers, payments, and settlements (products such as M-Pesa): In Kenya, the value of these transactions has reached the equivalent of 4.5 percent of annualized GDP a day.

Introduction of virtual savings accounts using a digital financial services platform complemented by virtual banking services to manage micro accounts: in other words, digital financial services entered the core of banking intermediation.

Exponential growth

Banks have expanded their networks in urban and rural areas.



Source: Central Bank of Kenya.

Use of transaction, saving, and financial operations data from the digital financial services platform to generate credit scores and evaluate and price microcredit risk: This data analysis has helped overcome the so-called collateral technology hurdle, which has long been the main obstacle to financial access by the poor and has hindered the development of credit markets in Africa.

Expansion of digital financial services for cross-border payments and international remittances: Regional cross-border payments and international remittance transfers are starting to come on board. The Kenyan example shows that once the process reaches this phase, demand for regulations to cope with innovations and more intensive use of technology to monitor this market can even discourage money laundering and the financing of terrorism.

vices, could be provided through a mobile phone. They soon saw the advantages of linking communication and transactions in real time. M-Pesa allows transactions to take place across different segments of the market using the same platform. Commercial banks eliminated the extra costs charged to high-risk potential customers, because M-Pesa's real-time settlement platform does not require traditional risk assessment. There was an unbundling effect: payments and liquidity distribution took place outside the halls of banking, allowing banks to tailor their products to small-scale demand (Klein and Mayer, 2012). In a sense, commercial banks and microfinance institutions saw that investing in a technological platform suited to handling micro accounts was an opportunity to expand their deposit base and market share. Moreover, they realized that greater capacity and higher intermediation would encourage microsavers to deposit even more in the banking system.

The impact was immediate: total access to financial services of all kinds has increased steadily in recent years in several African countries, despite some decline in the reach of informal lenders (see Chart 1). FinScope surveys conducted by the Financial Sector Deepening Trust (with networks throughout Africa) show a dramatic decline in the share of the "excluded" population. For example, in Rwanda, 89 percent of the population had some kind of financial access in 2016. This was made possible by the expansion of activities of savings and credit cooperatives and growth in digital financial services supported by online government services (Rwanda FinScope, 2016).

The drop in exclusion is also remarkable in Kenya (25 percentage points in the past 10 years), explained by entrance into markets of supervised institutions, including banks (accessibility grew from 15 to 42 percent of the population between 2006 and 2016). Progress in Tanzania and Uganda up to 2013 was also notable (28 and 15 percentage point reduction in exclusion, respectively, between 2009 and 2013), mainly explained by growing activities of nonbank institutions (see Chart 2).

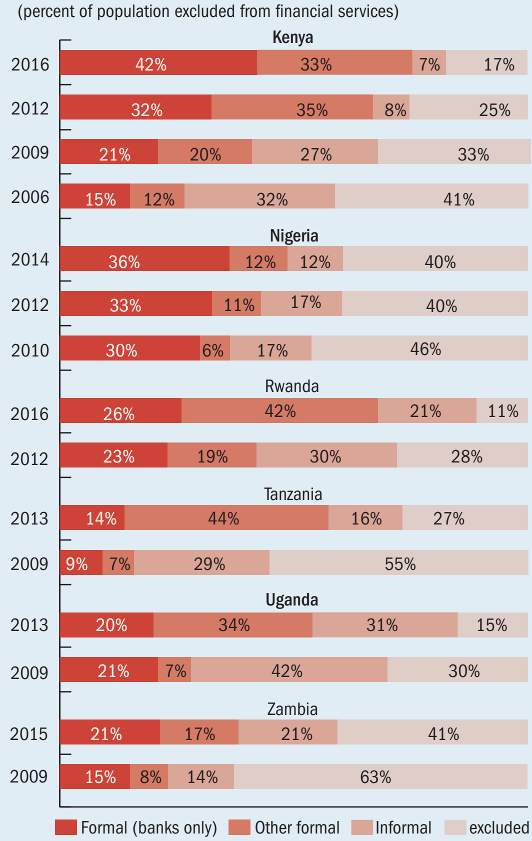
The Kenyan example shows that financial inclusion is more about opening financial services to the poor than just providing affordable financing. Banks' bet on expanding the infrastructure for greater financial presence has been largely successful. More bank branches (especially in rural areas), automated teller machines in growing urban centers, and bank agents in remote locations have all paid off in new and highly profitable business opportunities. And Kenyan banks are now exporting their redefined business models to the rest of Africa, supported by their expanded

Chart 1

Finance for all

The number of people excluded from financial services has decreased in many African countries.

(percent of population excluded from financial services)

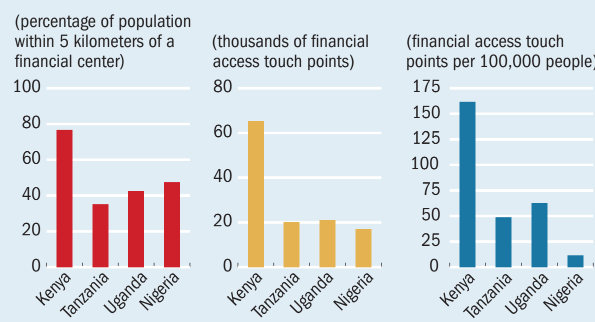


Source: Various FinScope surveys.

Chart 2

Finance at your doorstep

There is no need to travel long distances to access financial services.

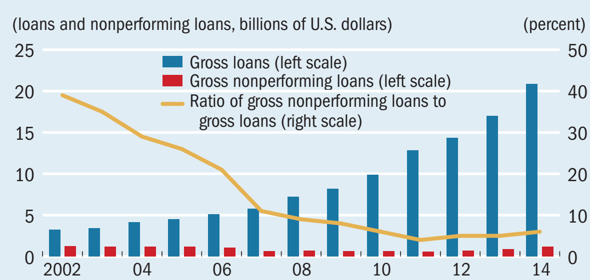


Source: Country geospatial surveys.

Chart 3

The big surprise

Increased financial access in Kenya has led to better quality of bank assets.



Source: Central Bank of Kenya.

deposit base. Some 11 Kenyan banks now have more than 300 branch outlets in east Africa (including South Sudan).

At the same time, contrary to common belief, increased financial access has led to improved quality of bank assets when accompanied by better financial oversight. The recent drop in the share of nonperforming loans in total loans reflects mainly better credit appraisal—thanks to measures such as the 2010 Credit Information Sharing regulation, which helped reduce the disparity in information between lenders and prospective small-scale borrowers (see Chart 3).

Financial inclusion opens the door for potentially game-changing opportunities.

Welfare gains

Kenya is a good example of the potential benefits of financial inclusion. Based on a model by IMF economists Dabla-Norris and others (2015), we estimated the reduction in transaction costs and the impact on Kenya's growth from financial inclusion. First, it generates additional funds channelled to entrepreneurs. Second, lower transaction costs help improve the efficiency of contracts. Finally, more efficient allocation of funds in the financial system allows talented people without resources to become entrepreneurs.

All these channels are expected to be significant in Kenya given that country's substantial increase in access to credit by small and medium-sized enterprises—from 25 percent to 33 percent between 2006 and 2013 (World Bank Enterprise Surveys). Our preliminary results show a reduction in transaction costs of 65 percent during 2006–13, with an annual contribution to GDP growth of about 0.45 percentage point (Morales and others, forthcoming).

This boost to credit access took place even though it was partly offset by the rollout of stronger financial regulations, which raised monitoring costs and collateral requirements. This implies that financial inclusion through adequate policies could complement efforts to strengthen the financial regulatory framework, by helping banks expand their lending base while enhancing their soundness. The dramatic reduction in transaction costs spurred by digital financial services has clearly played a key role in this achievement.

Digital financial services not only contribute to financial development, they also support financial stability. With less need for cash for transactions, more economic agents can send and follow financial market signals, contributing to a more solid and vibrant financial system. The environment for monetary policy improves as a result.

In addition to these benefits, there are other reasons why proactive policies enhance financial inclusion:

- Achieving inclusive growth without fast progress in financial inclusion in low-income countries is very difficult. According to World Bank Enterprise Surveys, in most African countries, small and medium-sized enterprises still report lack of access to financial services as their main obstacle to conducting business. These enterprises are a key sector of the economy because of their potential for employment generation and reduction of the informal sector.
- For low-income countries with some degree of financial intermediation, there is a clear correlation between financial inclusion and human development (IMF, 2014), which points to a need to improve the regulatory technology.
- Successful financial inclusion discourages policies that constrain market development. In several African countries initiatives still focus on specialized institutions, such as development banks or other institutions that lend to particular sectors—in agriculture or to small and medium-sized businesses—or on initiatives to introduce interest rate controls, despite overwhelming evidence against their effectiveness. As more and more citizens benefit from financial inclusion, the case for inappropriate measures will weaken.

In addition to lowering the costs of transactions, financial inclusion opens the door for potentially game-changing opportunities: innovative pension plan support and government-targeted social protection, expansion of regional payment systems within regional blocks, enforcement of policies to stop money laundering and the financing of terrorism, and a better environment for forward-looking monetary policy to replace years of financial repression and reactive policies. ■

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Inching toward Integration

A new index allows African countries to see how their regional integration efforts stack up

Carlos Lopes

IT costs more to move a container from Kenya to Burundi than from Belgium or the United Kingdom to Kenya. Twenty percent of Africa's international infrastructure networks, such as the Trans-African Highway network, are impassable. Flight connectivity is the lowest in the world and centered on only about 328 hubs for a land mass of around 11.7 million square miles, making it time consuming and costly to travel between African countries (United Nations Statistics Division, 2016).

Although the pan-African ideal has been part of the continent's modern history since the struggles for independence in European-ruled African territories in the 1950s and 60s, African leaders never succeeded in translating this ideal into political capital. Attempts at real integration have so far yielded only mixed results.

A series of initiatives dating to 1980—the Lagos Plan of Action, the Abuja Treaty, the New Partnership for Africa's Development, and the more recent Agenda 2063—were each heralded as the economic response to Africa's need for a new, more interconnected future. Why is it proving to be so painfully difficult to implement this vision of a truly integrated continent?

Broader perspective needed

Part of the response lies in the need for Africa's regional integration agenda to move beyond a focus on trade alone. There is a case to be made for a much broader perspective. Just as important as the variety of what is on offer at the local market is how easily citizens move between countries, where individuals travel for leisure or for work, how cost-effective telecommunications are, where people choose to study or look for a job, and even how they transfer money to their family or get start-up capital for a business.

Yet few policymakers focus on this bigger picture when considering policies to boost integration.

The continent's regional economic communities are one tangible sign of progress on integration. Regional economic communities are the building blocks of the African

Economic Community established by the 1991 Abuja Treaty, which provides the overarching framework for continental economic integration.

These country groups include the Arab Maghreb Union and the Community of Sahel-Saharan States in the north, the Economic Community of West African States (ECOWAS) in the west, the East African Community (EAC) and the Intergovernmental Authority on Development in the east, the Southern African Development Community (SADC) in the south, the Common Market for Eastern and Southern Africa (COMESA) in the southeast, and the Economic Community of Central African States in the center.

The regional economic communities are taking concrete steps toward integration. For instance, in mobile telecommunications, they are now applying innovative measures to reduce the cost of mobile roaming through closer cooperation. This is particularly true in the EAC. In January 2015, Kenya, Rwanda, South Sudan, and Uganda launched the East Africa One Area Network in a bid to harmonize regional calling rates and lower costs between partner states. Recent estimates suggest that mobile phone traffic grew by 935 percent within three months of the launch, while the cost of making calls fell by over 60 percent.

But critical challenges remain. Formal intra-African trade in goods is 14 percent, compared with 17 percent for South and Central America, 42 percent for North America, 62 percent for the European Union, and 64 percent for Asia. And Africa's largest economies still trade on a most-favored-nation basis.

These are just a few examples of how far the continent has to go before it is truly integrated. While policymakers have designed integration frameworks, their implementation has been hampered by the absence of monitoring and evaluation mechanisms. Simply put, there was until recently no means of measuring, in a precise and objective way, which countries are making the most progress in deepening regional integration, in which areas individual countries are falling behind, and which policies and institutions have proved most effective in promoting integration.

Quantifying integration

To fill this gap, the African Union, the African Development Bank, and the Economic Commission for Africa have launched the African Regional Integration Index, which presents a cross-border and multidimensional view of integration.

The index measures five different dimensions: trade integration, regional infrastructure, productive integration, free movement of people, and financial and macroeconomic integration. These dimensions build on an overview of the key socioeconomic factors that are fundamental to integration. Sixteen categories, cutting across the five dimensions, are used to calculate the index (Chart 1).

Trade integration. The free movement of goods is key for trade growth. Businesses and people benefit when trade flows are faster and more cost-effective. But in Africa, trade links to the rest of the world are more direct and efficient than trade between neighboring regions because of infrastructure gaps or capital costs and nontariff barriers.

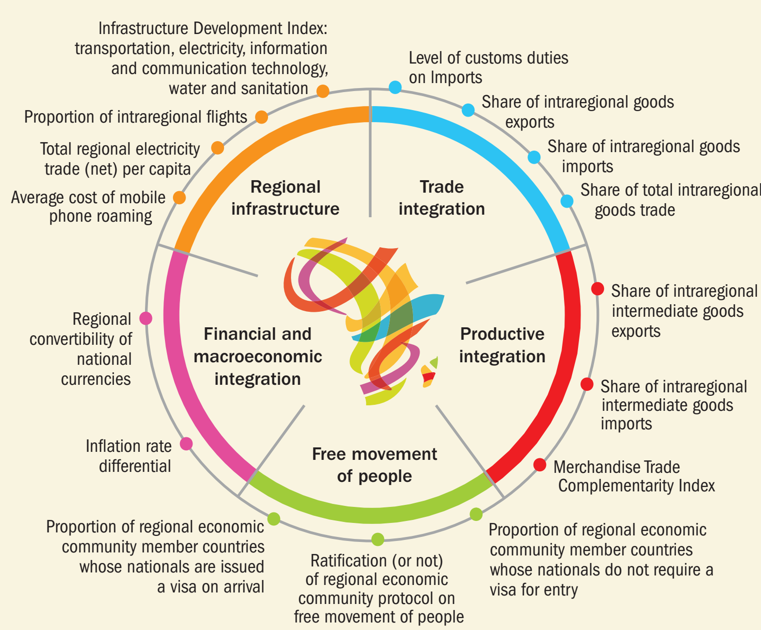
Regional infrastructure. Infrastructure development across the continent is the most visible face of regional integration. It includes highways being built across borders, flights taking passengers from one capital to another, and more people using mobile phone roaming on city streets or rural outposts. Countless connections made by road, by air, or increasingly by airwaves have an important impact on Africa's integration efforts. Better regional infrastructure means lower transaction costs and faster delivery of goods and services, so regional hubs—as well as small or landlocked countries—have a lot to gain from promoting infrastructure to boost economic growth.

Productive integration. Central to Africa's economic success is the need to increase production and productivity. Africa could do more to develop regional and global value chains, which means fostering more diverse and resilient economic bases. As consumer purchasing power rises, intermediate goods that are used by a business in the production of finished goods or services will be important for Africa's internal market. Building industrial clusters goes together with access to regional trade corridors that get goods moving and with promoting more regional electricity to power production. Whether for agriculture or industrial production, regions need

Chart 1

Gauging progress

The African Regional Integration Index measures 16 different indicators across five broad dimensions.



Sources: Economic Commission for Africa, African Union Commission, and African Development Bank (2016).

to unlock their productive potential, inject investment, overcome bottlenecks, and make sectors more competitive.

Free movement of people. Cross-border movement represents not only a powerful boost to economic growth and skills development, it also supports competitiveness. Free movement of people benefits both the country opening its borders and the country whose citizens are on the move, as is evident in the growth of remittances in recent years. For many African countries, migration can plug skills gaps and allow the exchange of ideas, leading to the expansion of entrepreneurship and innovation beyond borders.

In Africa, trade links to the rest of the world are more direct and efficient than trade between neighboring regions.

Financial and macroeconomic integration. When capital flows more freely, investment increases, finance is allocated where it is most productive, and the continent's investors get higher returns. In turn, as the transaction costs of doing business fall and financial institutions work more effectively, micro, small, and medium-sized enterprises and start-ups will benefit. Better financial integration promotes knowledge and technology transfer as well as greater innovation.

Practical, results-focused tool

Both a status report and an energizer for change, the index aims to be an accessible, comprehensive, practical, and results-focused tool that emphasizes policies and on-the-ground realities. It is designed to provide policymakers at the national, regional, and international levels; businesses; and other stakeholders reliable data that rank countries and institutions in various categories and dimensions, showing strengths and weaknesses. The goal is to enable action.

The index—in its first edition—focuses on comparative analysis within and among the regional economic communities, with the aim of taking into account the diversity in Africa's integration efforts. It allows each community to identify its strengths and gaps across each of the five dimensions.

Several important findings have emerged from initial analysis. Africa's overall regional integration across the regional economic communities stands below the halfway mark on the scale that ranges from no integration at all to fully integrated on all dimensions (see Chart 2). This shows that the overall integration in the region has significant potential to progress. The EAC comes out as the most integrated regional community overall, followed by the SADC and ECOWAS.

Part of the reason the EAC does so well may be related to pre-independence history, when the core of the EAC was run as the East African Federation by the British with shared governance, traditions, and institutions. With recent strong political commitment at the highest level, the current phase of east African integration—after a hiatus during the 1960s, 1970s, and 1980s—is building upon this shared history.

What can explain these differing levels of performance of Africa's regional economic communities?

It is important to note that indicators described in Chart 1 include both "input" gauges to measure policies and "outcome" gauges that measure the value of the resulting cross-border economic flows. The highest-performing regional economic communities in the index perform well on both. This correlation between performance in the input and outcome indicators suggests that the policies measured by the former do indeed lead to better integration outcomes. In other words, EAC, ECOWAS, and SADC may perform better than the other blocs because they have implemented the pro-integration policies that are measured in the index.

While every regional economic community has a higher-than-average score in one or more dimensions, in each case the highest scores are on trade integration and the lowest on financial and macroeconomic integration. A series of actions can improve financial and macroeconomic integration, including promoting banking across borders outside the well-established financial centers; standardizing regional payments; putting in place multilateral fiscal guidelines; and converging on inflation targets, public finance, and exchange rate stability.

The regional economic communities rank closest to each other on regional infrastructure and productive integration and furthest apart on free movement of people and financial and macroeconomic integration (see table).

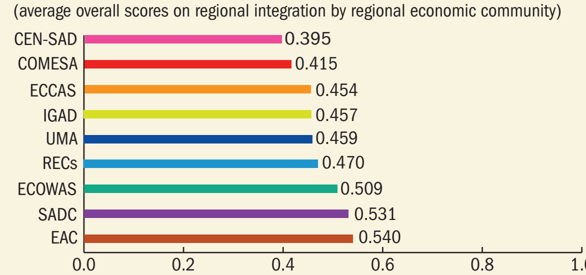
Results show the 28 top performing countries considered the most integrated overall across the eight regional economic communities included in the index. An additional 19 countries are considered broadly integrated. The analysis also shows that the economic weight of a country does not necessarily correspond to its regional integration score, with

Chart 2

Measuring up

Well-established organizations—such as the East African Community—with close economic, political, and social ties score better overall on the integration index.

(average overall scores on regional integration by regional economic community)



Sources: Economic Commission for Africa, African Union Commission, and African Development Bank (2016).

Note: CEN-SAD = Community of Sahel-Saharan States, COMESA = Common Market for Eastern and Southern Africa, EAC = East African Community, ECCAS = Economic Community of Central African States, ECOWAS = Economic Community of West African States, IGAD = Intergovernmental Authority on Development, RECs = average of all regional economic communities, SADC = Southern African Development Community, and UMA = Arab Maghreb Union. Scores are calculated on a scale of 0 (low) to 1 (high).

Closer look

By assigning scores on each dimension, the index allows regions to see exactly where they fall short.

(score on each dimension by regional economic community)

	Trade Integration	Regional Infrastructure	Productive Integration	Free Movement of People	Financial Integration
CEN-SAD	0.353	0.251	0.247	0.479	0.524
COMESA	0.572	0.439	0.452	0.268	0.343
EAC	0.780	0.496	0.553	0.715	0.156
ECCAS	0.526	0.451	0.293	0.400	0.599
ECOWAS	0.442	0.426	0.265	0.800	0.611
IGAD	0.505	0.630	0.434	0.454	0.211
SADC	0.508	0.502	0.350	0.530	0.397
UMA	0.631	0.491	0.481	0.493	0.199
Average	**0.540**	**0.461**	**0.384**	**0.517**	**0.381**

Sources: Economic Commission for Africa, African Union Commission, and African Development Bank (2016).

CEN-SAD = Community of Sahel-Saharan States, COMESA = Common Market for Eastern and Southern Africa, EAC = East African Community, ECCAS = Economic Community of Central African States, ECOWAS = Economic Community of West African States, IGAD = Intergovernmental Authority on Development, SADC = Southern African Development Community, and UMA = Arab Maghreb Union. Scores are calculated on a scale of 0 (low) to 1 (high).

the exception of Kenya and South Africa. For instance, while Nigeria represents 37 percent of regional GDP, it is not a top performer on regional integration, nor is Egypt. Conversely, countries such as Côte d'Ivoire, which contributes only 3 percent of regional GDP, are among the top performers.

So what does all this mean for Africa's integration, and does the multiplicity of regional groupings help or hinder it?

Although the index cannot directly answer this question, other research (Economic Commission for Africa, the African Union Commission, and the African Development Bank, 2012) clearly shows that Africa's regional economic communities have been the locus of many effective integration measures, particularly in the areas of trade integration and free movement of people. While these efforts represent progress, the multiplicity of standards, rules of origin, and regimes that span the continent surely increase the burden of compliance on African businesses. Africa needs to harmonize integration policies across its various regional blocs. ■

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This article is based on the Africa Regional Integration Index Report 2016 *of the Economic Commission for Africa, the African Union Commission, and the African Development Bank.*

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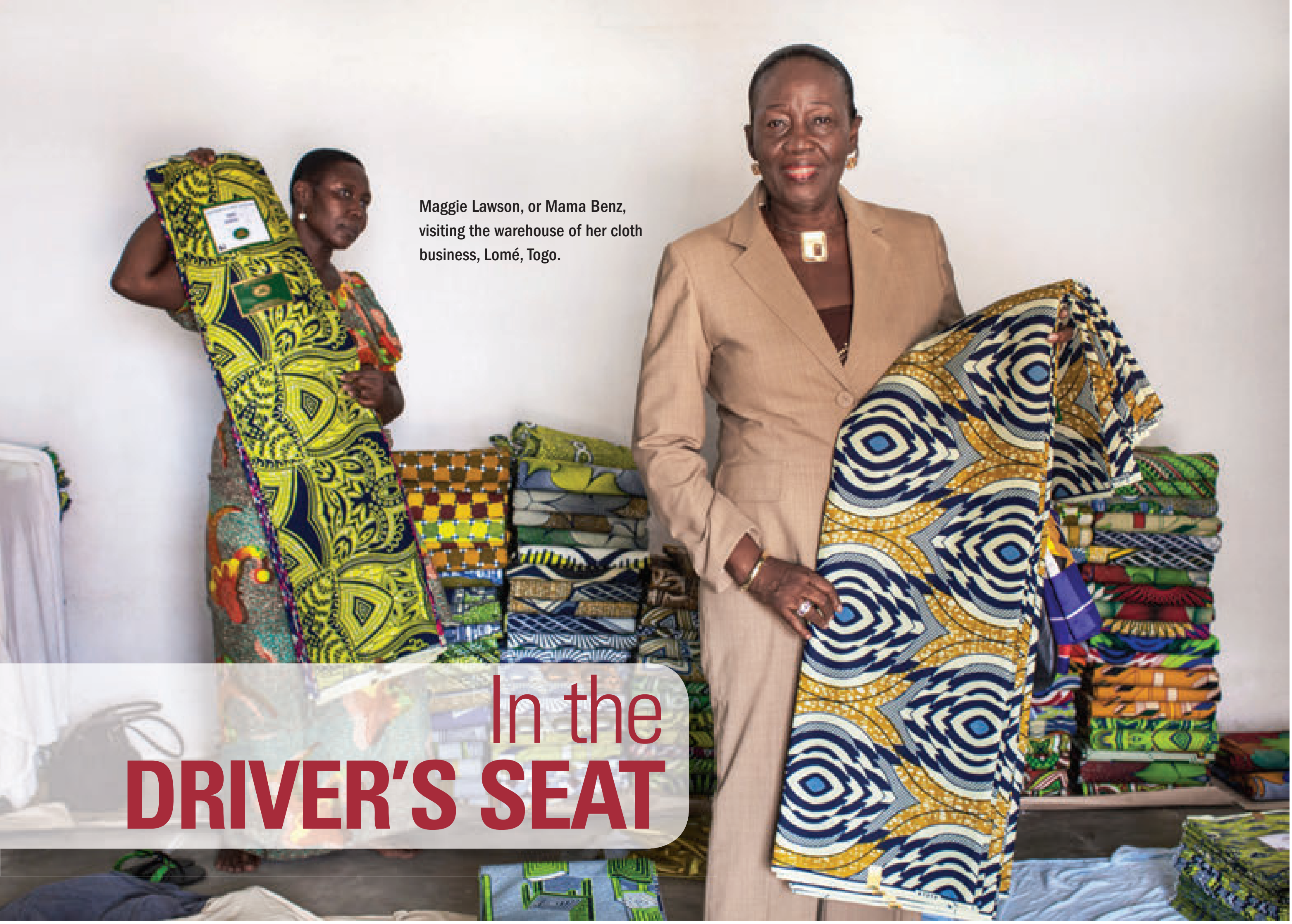


Maggie Lawson, or Mama Benz, visiting the warehouse of her cloth business, Lomé, Togo.

In the DRIVER'S SEAT

Christine Dieterich, Dalia Hakura, and Monique Newiak

Gender equality can boost growth in sub-Saharan Africa

TOGO'S thriving textile industry is attributed to Maggy Lawson, better known as "Mama Benz" for the striking Mercedes-Benz she—and her mother before her—was famous for driving. In a break from tradition, she inherited her mother's business and rose to prominence as a businesswoman in the 1970s by selling brightly printed cotton cloth for garments made throughout west Africa. Her immense success created many local jobs.

Mama Benz is just one of many examples of the positive effect women can have on sub-Saharan African economies.

Gender inequality and economic outcomes are intertwined, research shows: stronger growth advances gender equality, and gender equality boosts growth (Duflo, 2012; see Chart 1).

There are many reasons to believe that gender equality lifts growth. Closing worldwide gender gaps in education would give a tremendous boost to global human capital and reduce income inequality (Gonzales and others, 2015b). Women tend to spend more of their household income on the education of their children and grandchildren than men do, so that closing the pay gap between men and women could translate to higher school enrollment for children, in turn leading to higher growth. And more women in the workforce means a larger pool of capable workers and entrepreneurs.

A faster demographic transition—lowering the number of dependent children—can contribute to reducing inequality, particularly for low-income households, and allow greater investment in the human capital of the female labor force (Soares, 2005; Soares and Falcão, 2008).

Sub-Saharan Africa's labor markets show relatively high female labor force participation, reflecting women's need to work for subsistence, but the jobs are often in the low-productivity agricultural sector and mostly in the informal sector. Wage employment remains a male-dominated domain—limiting the efficient use of talent.

These inequities are mirrored elsewhere. According to the United Nations (UN) Gender Inequality Index, which measures inequality in the labor market, mortality and fertility rates, education, and empowerment, many countries in sub-Saharan Africa—notably Mali and Niger—stand out as having some of the world's highest gender inequality.

Income inequality is also high in sub-Saharan Africa. In the past 15 years, rapid growth in the region has boosted per capita income, and poverty rates have fallen. But wide income disparity across the population remains and has even increased in many countries, making incomes in the region the most unequal in the world after Latin America and the Caribbean (see Chart 2). Greater income equality can encourage economic growth because it increases low-income households' ability to invest in education and physical capital. It can also reduce sociopolitical instability and poor governance, which discourage private investment (Barro, 2000).

Costly inequality

Given that both income and gender inequality are high in the region, and in light of global evidence that such inequity hinders growth, the inevitable question is how much inequality harms economic prosperity in the region.

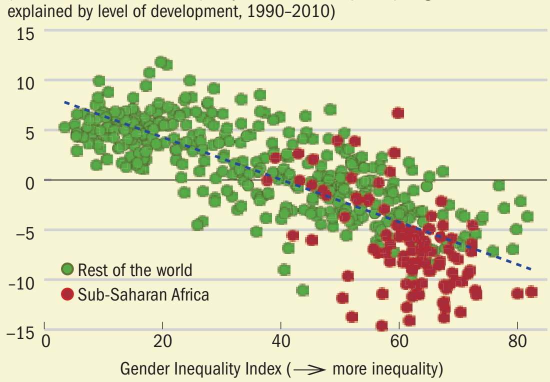
The potential harm is substantial, though it varies across countries. Our research finds that reducing income and gender inequality to the levels currently observed in the fast-growing economies of southeast Asia (Indonesia, Malaysia, Philippines, Thailand, Vietnam) could boost sub-Saharan Africa's annual real per capita GDP growth by an average of close to ***1 percentage point a year.*** This is roughly the same order of magnitude as the impact on annual per capita growth of closing the infrastructure gap over the past 10 years between the two regions.

Chart 1

More equality, higher growth

High gender inequality appears to be hindering sub-Saharan Africa's growth, even after taking into account each country's level of development.

(United Nations Gender Inequality Index and GDP per capita growth not explained by level of development, 1990–2010)



Sources: UNDP Human Development Report; World Bank, World Development Indicators; and IMF staff estimates.
Note: Countries showing growth above zero are growing faster than can be explained by their per capita income, and those that exhibit growth lower than zero are growing more slowly.

Our study highlights a number of explanations for inequities that are holding back sub-Saharan Africa's growth potential. Many of these driving forces affect gender inequality and income inequality similarly. Indeed, gender inequality itself propels some income inequality.

Our study also confirms that inequality of opportunity—that is, initial conditions and availability of resources that help people reach their full economic potential—explains much income and gender inequality. For instance, lack of access to education, health care, and basic infrastructure services can limit human capital development and reduce productivity. In sub-Saharan Africa, there has been general improvement, but many countries are still trailing countries with similar incomes in other regions.

Opportunities for women have generally improved—but not enough. For example, male and female primary school enrollment has risen since the turn of the century, driven by the UN Millennium Development Goals. But only 91 girls for every 100 boys are enrolled in primary or secondary school, and only 73 women for every 100 men are at the postsecondary level. The reasons for these gaps range from lack of basic infrastructure, which means more time spent (mainly by females) on household activities to high adolescent fertility rates and early marriage, which bind girls to household work at an early age. In Niger, for example, there are more than 200 births for each 1,000 girls ages 15 to 19, and only 15 percent of girls are enrolled in secondary education.

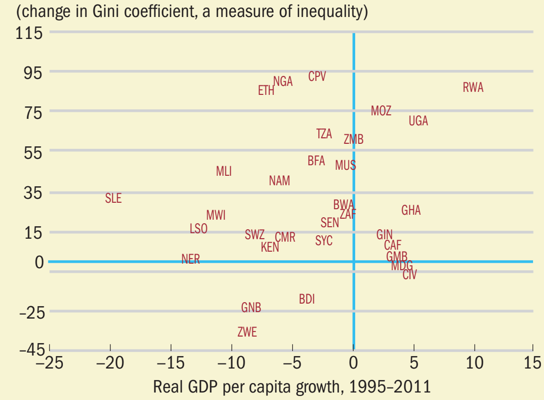
Similarly, women are behind in access to financial services. The percentage of the population with an account at a financial institution has increased in recent years, but more so for men than for women. In some countries, such as Kenya, mobile-phone-based accounts have overtaken traditional bank accounts and have helped close the gap between income groups in access to finance, but the gender gap in access to mobile money remains high. In Kenya, more than 62 percent of men

Chart 2

High income inequality

Despite strong growth in sub-Saharan Africa, inequality has fallen little—and unevenly across countries.

(change in Gini coefficient, a measure of inequality)



Sources: World Bank, World Development Indicators database; and Solt (2014).
Note: Change is between 1995 (or next earliest available year) and 2011 (or latest available year). Data labels in the figure use International Organization for Standardization (ISO) country codes.

have a mobile account; fewer than 55 percent of women have such accounts, which limits the benefits of new technology.

And numerous legal restrictions on women's economic activity remain (World Bank, 2015), which discourages women from saving in a formal institution and borrowing for business activities. These restrictions account for as much as 5 percentage points of the labor market participation gender gap in some countries of the region (Hallward-Driemeier and Hasan, 2013; Demirguc-Kunt, Klapper, and Singer, 2013; Gonzales and others, 2015a). Despite some progress since the 1990s, eight countries in sub-Saharan Africa still have 10 or more such restrictions, including the need for her husband's consent before a woman can open a bank account or start a new job.

Opportunities for women could alleviate inequalities and unleash the region's growth potential.

Addressing the problem

A handful of well-designed and targeted policy interventions to open up opportunities for low-income households and women could alleviate inequalities and unleash the region's growth potential.

Home-based businesses contribute significantly to increasing and diversifying women's income, especially given their obstacles to wage employment. Currently, fees, levies, and taxes on home businesses are a popular source of revenue for local governments. Opening new sources of local government financing through property tax reform would reduce the burden on household businesses.

Better access to financial services can help address both income and gender inequality. For example, banks will be more likely to lend to new customers if credit bureaus with centralized records make information about potential customers easily available. New technologies such as mobile banking can facilitate access to financial services in remote regions and for women.

Abolishing laws that favor men's economic activity over women's is another notable yet easy way to support growth. Some sub-Saharan African countries have taken measures to level the playing field for women. For instance, in 1996 Namibia removed a number of legal barriers facing women, and female labor force participation rose by almost 8 percentage points in the decade that followed. Within the past three years, many sub-Saharan African countries have changed their laws to foster equality. For instance, Guinea's new labor code now includes a clause on nondiscrimination based on gender; in Kenya the new law on matrimonial property gives both spouses equal rights to administer joint property; and South Africa's law now mandates equal pay for work of equal value (World Bank, 2015).

Finally, improvements in infrastructure, including better access to electricity and water, will affect growth both directly and by increasing the time girls and women have to participate in education and market activities. That means stronger human capital and an influx of skills to the labor market. Evidence from microsurveys in Ghana suggests that when girls spend half as much time fetching water their school attendance rises by 2.4 percent on average, with larger effects in rural areas (Nauges and Strand, 2013).

Such measures could reduce income and gender inequality in the region substantially and support two goals that are valuable in their own right and that are important drivers for sustained economic growth. In particular, they can help unlock the combined energies of sub-Saharan Africa's women—paving the way for more success stories like that of Mama Benz. ■

Christine Dieterich and Dalia Hakura are Deputy Division Chiefs and Monique Newiak is an Economist, all in the IMF's African Department.

This article is based on Chapter 3 of the IMF's October 2015 Regional Economic Outlook: Sub-Saharan Africa *and the forthcoming IMF Working Paper "Inequality, Gender Gaps and Economic Growth: Comparative Evidence for Sub-Saharan Africa," by Dalia Hakura, Mumtaz Hussain, Monique Newiak, Vimal Thakoor, and Fan Yang.*

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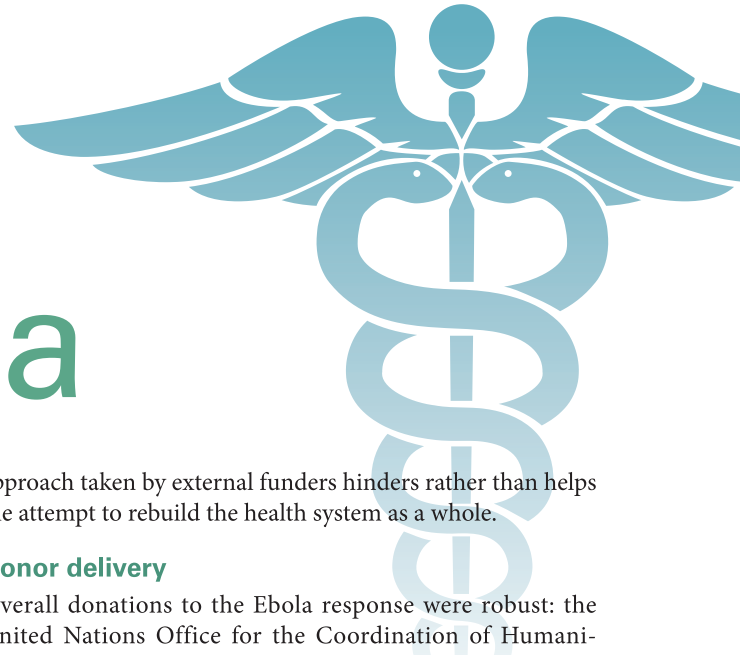
AFRICA

African countries have made some progress in improving health systems, but holes remain



After Ebola

Amanda Glassman

NEARLY two years after the peak of the Ebola outbreak, affected countries in Africa have made some progress in improving their health systems, and a continent-wide agency designed to prevent, detect, and fight disease outbreaks has been established.

But whether donor funds pledged to combat Ebola have materialized and—if so—how they have been spent is unclear. The affected countries in west Africa will have to keep the pressure on donors to deliver on promises and make a concerted effort to document and evaluate the impact of health systems spending.

The lack of spending accountability and of concrete results in the public domain raise persistent questions regarding the international community's ability to respond effectively to large-scale outbreaks.

Progress on health systems

Recent Ebola flare-ups in west Africa were quickly identified, and contacts were traced and safely contained. The response to these latest flare-ups demonstrates increased capacity of the region's health systems. Recent investments in rapid response teams, surveillance, lab diagnostics, risk communication, infection prevention and control measures, and other programs seem to be paying off.

Other routine health system functions are also improving. In Sierra Leone, for example, a mid-2015 measles and polio vaccination campaign reached almost all children under the age of five who had missed out during the Ebola outbreak.

Another bright spot is the creation in 2015 of the African Centres for Disease Control and Prevention (African CDC) with $6.9 million in funding from the African Union Commission and technical support from the U.S. Centers for Disease Control. The African CDC is set to coordinate research throughout Africa on the biggest public health threats, gathering data and reinforcing countries' capacity to prevent and respond to outbreaks. However, initial funding and staffing is minimal, and leadership has not yet been named.

Still, huge risks remain. At the peak of the outbreak, surveys conducted in Guinea, Liberia, and Sierra Leone found that the number of people seeking health care had dropped by half. Analysts estimate that this forgone care likely resulted in increased mortality from other prevalent infectious diseases, such as malaria, tuberculosis, and HIV/AIDS (Parpia and others, 2016). The cure rate for tuberculosis in Liberia has dropped from 55 percent before the Ebola outbreak to about 28 percent. Many also worry that the disease-specific approach taken by external funders hinders rather than helps the attempt to rebuild the health system as a whole.

Donor delivery

Overall donations to the Ebola response were robust: the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), which collects data on humanitarian contributions, estimates that $3.62 billion was pledged during 2014–15. The U.S. government also authorized an emergency appropriation of $5.4 billion, the most funding the U.S. Congress has ever provided for an international health emergency.

Of the OCHA-tracked funding, about one-third had been disbursed to affected countries by February 2015; there have been no updates since. A November 2014 White House fact sheet says that the goal of the U.S. funding was to "fortify domestic public health systems, contain and mitigate the epidemic in West Africa, speed the procurement and testing of vaccines and therapeutics … enhancing capacity for vulnerable countries to prevent disease outbreaks, detect them early, and swiftly respond … " As of December 2015, U.S. agencies that received Ebola funding had obligated 47 percent of the total approved and disbursed 23 percent. But there is little public information on how the roughly $1.2 billion disbursed was used, although review plans are underway by the relevant U.S. agencies' inspectors general.

Despite a nearly unprecedented global effort to coordinate a response to the Ebola outbreak, west African governments do not yet know the amount, timing, and conditions of most of the aid—nor how much will be given to governments to distribute and whether governments will have a say in its use.

The lack of documentation and accountability for the uses and outcome of the spending does not bode well for the future—a particularly sore point from the perspective of the United States. The Obama administration's recent tussle with Congress over an emergency appropriation request to combat the Zika virus reflects such concerns. ■

Amanda Glassman is Director of Global Health Policy and Vice President for Programs at the Center for Global Development.

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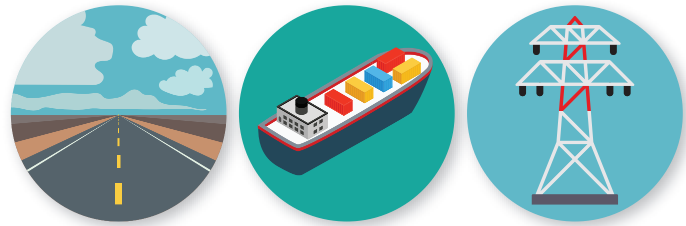
Impediment to GROWTH



Africa's inadequate infrastructure limits the continent's economic progress, but funding roads, ports, and power projects is difficult

Amadou Sy

INADEQUATE infrastructure—including unreliable energy, an ineffective urban-rural road network, and inefficient ports—is one of the largest impediments to economic growth in Africa. It limits the returns from human capital investment—such as education and health. Hospitals and schools cannot function properly without electricity.

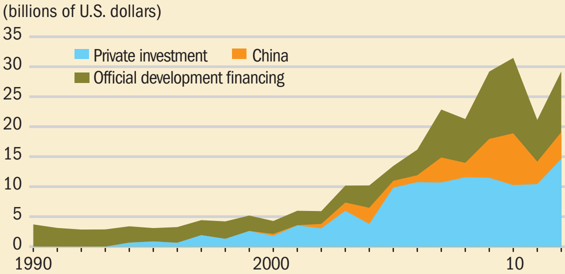
A 2009 World Bank study estimated that sub-Saharan Africa's infrastructure needs are about $93 billion a year (Foster and Briceño-Garmendia). Recently, the IMF estimated that budget spending on infrastructure by sub-Saharan African countries reached about $51.4 billion (IMF, 2014), meaning a financing gap of about $41.6 billion.

Chart 1

Making commitments

A growing number of foreign commitments are being made to fund sub-Saharan Africa's infrastructure needs.

(billions of U.S. dollars)



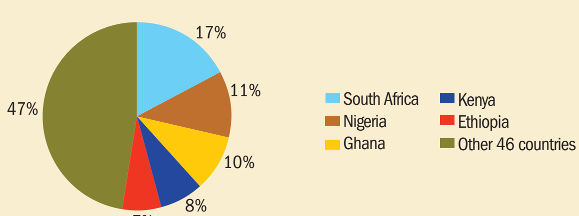
Source: Gutman, Sy, and Chattopadhyay (2015).

Chart 2

Dominant destinations

Five of the 51 countries in sub-Saharan Africa received more than half of the total external commitments to infrastructure spending between 2009 and 2012.

(percent of total external commitments, 2009–12)



Source: Gutman, Sy, and Chattopadhyay (2015).

External commitments, both private and public, appear to fill a substantial share of this gap (see Chart 1). They rose to about $30 billion a year in 2012 from $5 billion in 2003 (Gutman, Sy, and Chattopadhyay, 2015). Official development financing has increased—especially from the World Bank and the African Development Bank. Private participation in infrastructure has surged and now accounts for more than half of external financing. China has become a major bilateral source of financing.

But the remaining gap of about $11.6 billion is probably too low an estimate that global assistance in any event will not fill under current circumstances. First, the 2009 World Bank calculation *underestimates current needs,* such as urban infrastructure. Second, the $30 billion in *external commitments is not comparable to budget spending*. These commitments materialize over time and do not arrive evenly. One large deal, such as a major energy investment in South Africa in 2012, can distort that year's data. Third, *overall numbers don't tell the whole story*. Of the $59.4 billion in budget spending on infrastructure by African governments, South Africa accounted for about $29 billion in 2012, with the number two country, Kenya, allocating about $3 billion. Countries also vary widely in their commitment to infrastructure spending. Angola, Cabo Verde, and Lesotho invest more than 8 percent of GDP, while oil-rich Nigeria and fragile South Sudan allocate less than 1 percent.

In addition, most external financing is concentrated in a few large countries and a few sectors. Five countries attracted more than half of the total external commitments to infrastructure development in 2009–12 (see Chart 2).

Except for Nigeria and South Africa, sub-Saharan African countries have been unable to attract significant private investment outside the telecommunications sector. In 2013, sub-Saharan Africa received about $17 billion in private funds, of which all but $2 billion went to South Africa and Nigeria in sectors other than telecommunications. Overall, private investment (which includes public-private partnerships) went mostly to information and communications technology and electricity from 2005 to 2012.

A policy agenda for building and maintaining infrastructure in sub-Saharan Africa under these circumstances should have at least three priorities.

First, domestic budget spending—the largest source of African infrastructure financing—should be increased. African countries generate more than $520 billion annually from domestic taxes and can mobilize more domestic revenue through improved tax administration and measures to broaden the tax base. The average tax-to-GDP ratio increased from 18 percent in 2000–02 to 21 percent in 2011–13—equivalent to half the development aid Africa received in 2013 (Africa Progress Panel, 2014). The increase in domestic financing is no doubt the result of debt relief, some increased tax revenue collection, gains from the commodity price boom, and improved macroeconomic and institutional policies.

But it will be hard for many countries to find more domestic revenue. Tax mobilization remains low despite significant effort and recent reforms in non-resource-rich countries (Bhushan, Samy, and Medu, 2013). The ratio of general government tax revenue to GDP in 2013 ranged from 2.8 percent in the Democratic Republic of the Congo to 25 percent in South Africa (one of the highest among developing economies).

Helping African countries raise more funds domestically for many purposes, including infrastructure, should be a priority for African policymakers and the international community. In 2015, global donors committed to helping African countries improve tax collection. In 2011, the latest year for which figures are available, less than 1 percent of official development assistance went to domestic revenue mobilization.

Reducing inefficiencies could substantially increase the economic dividends from public investment.

Second, sources of domestic revenue should be broadened. From 2006 to 2014, 13 countries issued a total of $15 billion in international sovereign bonds, often intending to use the proceeds to finance infrastructure. But a more prudent and sustainable way to finance infrastructure would be to increase the participation of domestic institutional investors, such as pension funds.

African pension funds have about $380 billion in assets under management, 85 percent of which are in South Africa (see table). In countries such as Cabo Verde, Kenya, South Africa, Swaziland, Tanzania, and Uganda, funds are investing in infrastructure (Inderst and Stewart, 2014). Pension fund trustees and managers should consider whether risk-adjusted investments can be made within the context of their fiduciary duty to beneficiaries. Countries must also improve the governance, regulation, and development of domestic financial and capital market instruments for infrastructure investment—and seek to attract foreign institutional investors too.

Third, funds must be spent efficiently. Most of the debate on infrastructure needs in sub-Saharan Africa focuses on financing issues. But there is evidence that efficiency, not financing, is often the barrier to investment. For example, the IMF (2015) estimates that about 40 percent of the potential value of public investment in low-income countries is lost to inefficiencies in the investment process due to time delays, cost overruns, and inadequate maintenance. Those inefficiencies are often the result of undertrained officials; inadequate processes for assessing needs and preparing for and evaluating bids; and corruption. Reducing inefficiencies could substantially increase the economic dividends from public investment.

Mine the gap

Pension fund assets in Africa could be tapped as a source for investment in infrastructure.

Country	Pension Fund Assets under Management (billions of U.S. dollars)
South Africa	322.0
Nigeria	25.0
Namibia	10.0
Kenya	7.3
Botswana	6.0
Tanzania	3.1
Ghana	2.6
Zambia	1.8
Uganda	1.5
Rwanda	0.5
Total	379.8

Sources: Making Finance Work for Africa; and author's calculations.
Note: Asset amounts represent the latest figures available.

The 2009 World Bank study estimated that if inefficiencies were addressed through such measures as rehabilitating existing infrastructure, targeting subsidies better, and improving budget execution—in other words more efficient use of existing infrastructure—the $93 billion financing need could be reduced by $17 billion. That means that the focus of attention on infrastructure should be broadened beyond financing issues to include efforts to improve efficiency. This is a complex task that requires African governments and the international community to focus on individual sectors and how they operate in particular countries and requires robust monitoring capability.

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A FORK in the ROAD

China's new growth strategy could hurt Africa's commodity-dependent economies

Wenjie Chen and Roger Nord

Chinese workers from the Zhongyuan Petroleum Exploration Bureau (ZPEB) of Sinopec and Sudanese workers drill an oil well in South Sudan.

CHINA'S breakneck growth is slowing, and the drivers of that growth are changing from investment and exports to domestic consumption. This shift is affecting the global economy—but especially commodity exporters, many of which are in Africa. The Chinese Customs office announced recently that China's imports from Africa fell by almost 40 percent in 2015. Slumping Chinese demand has led to precipitous price declines, putting pressure on the fiscal and external accounts of many African countries. Economic growth in sub-Saharan Africa, which averaged 5 to 6 percent over the past two decades, fell below 4 percent in 2015 and is expected to decline further in 2016.

Yet, despite the uncertain economic environment, in December 2015 Chinese President Xi Jinping promised $60 billion in financing for Africa over the next three years, which is more than twice the amount China pledged three years earlier.

Does China's new growth model mean that Africa's economic renaissance is over? Or can Africa adapt to the new realities and seize new opportunities, including in its engagement with China? In attempting to answer these questions, we first look back at the extraordinary growth in the economic ties between China and Africa.

China's rapid growth over the past 40 years has turned it into a major trading hub for most countries in the world—directly, or indirectly through other trading partners.

A dramatic shift

This is the case in sub-Saharan Africa, where a remarkable shift in trade has taken place in the past two decades. Advanced economies accounted for close to 90 percent of sub-Saharan Africa's exports in 1995; today new partners—including Brazil, China, and India—account for over 50 percent, with China responsible for about half of that. Similarly, in 2014, China became the single largest source of imports in sub-Saharan Africa.

Metal and mineral products and fuel represent 70 percent of sub-Saharan African exports to China. On the other hand, the majority of sub-Saharan Africa's imports from China are manufactured goods and machinery.

Access to new markets for its raw materials has spurred Africa's exports, which quintupled in real value over the past two decades. And by diversifying its trading partners, sub-Saharan Africa has reduced the volatility of its exports, which helped cushion the impact of the global financial crisis in 2008–09. When recession-ravaged advanced economies cut back imports, China increased its share of exports from sub-Saharan Africa, allowing most of the region to sustain robust economic growth. Trade has also boosted living standards in Africa through access to cheap Chinese consumer goods and has contributed to low and stable inflation.

Investor and lender

Sub-Saharan Africa has also diversified its *sources of capital*.

China's *foreign direct investment* (FDI) in sub-Saharan Africa has increased significantly since 2006. Although the latest official statistics (2012) indicate that it is less than 5 percent of the region's total FDI, which usually involves some form of control of an enterprise, anecdotal evidence suggests that the reality may be much higher. Many small-scale Chinese entrepreneurs have established themselves in Africa.

In addition, Chinese *loans* to sub-Saharan Africa—many of them financing public infrastructure projects—have risen rapidly (see "Impediment to Growth" in this issue of *F&D*), and China's share of total sub-Saharan African external debt

rose from less than 2 percent before 2005 to about 15 percent in 2012. This has provided many African countries with a welcome new source of project financing. And increasingly, China is relying on Africa, which is a large source of engineering contracts to build roads and hydropower projects.

China's investment-heavy, export-oriented economic growth model made it a growing importer of commodities for most of this century. Chinese demand dramatically drove up the prices of metals, energy, and agricultural commodities to the benefit of sub-Saharan Africa's many commodity exporters.

But that has changed. Reduced investment in China has curbed its appetite for raw materials, resulting in a sharp swing in its trade balance with sub-Saharan Africa. Iron ore and oil prices, for example, have fallen by more than half from their recent peaks, and many other commodities have also suffered sharp declines. Futures markets suggest further declines in 2016 and little recovery before 2020.

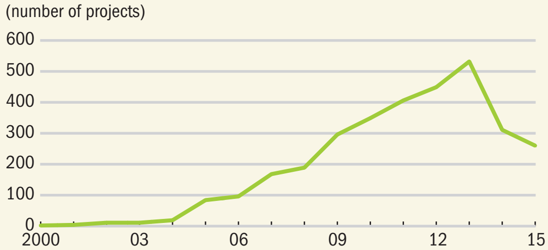
FDI is less cyclical and driven more by medium-term considerations than many other types of investment. But recent Chinese mine closures in sub-Saharan Africa (copper mines in Zambia, iron ore mines in South Africa, and the cancellation of an iron ore project in Cameroon, for example) suggest that returns on investment in the traditional commodity sectors are falling. In May 2015, China's Ministry of Commerce estimated that the value of China's FDI flows to Africa fell 45.9 percent in the first quarter of 2015 compared with the same period in 2014. The number of approved projects has also been falling since 2013 (see chart).

The immediate impact on commodity exporters has been severe. Oil exporters, in particular, are experiencing sharp declines in exports, putting pressure on foreign exchange reserves and exchange rates. Many commodity exporters also derive significant government revenue from natural resources and now face growing budget deficits and pressure to reduce spending. In Angola, for example, the fall in oil prices wiped out about half of its revenue base, with a loss of more than 20 percent of GDP. Lower spending levels, in both the public and private sectors, have led to sharply lower growth for oil-exporting countries, now expected to average barely 2 percent in 2015–16, compared with an average of more than 7 percent in the preceding decade.

Pulling back

After steadily increasing direct investment in Africa since the start of the century, Chinese entities have sharply reduced the number of new projects since 2013.

(number of projects)



Source: Chinese Ministry of Commerce.

The spillovers from China are not limited to direct channels such as lower export demand and global commodity price declines. There are also effects from one African economy on another. Slowdowns in large economies in sub-Saharan Africa, such as South Africa and Nigeria, affect smaller neighbors with which they trade. Uganda, which is not a commodity exporter, is affected by the economic contraction in South Sudan, which had become an important destination for Uganda's regional exports. Countries such as South Africa, Zambia, and the Democratic Republic of Congo are important exporters to China and also are large importers from other African countries.

Slowdowns in large economies in sub-Saharan Africa, such as South Africa and Nigeria, affect smaller neighbors.

A silver lining

But the dark clouds have at least two silver linings. China's recent pledge to more than double the financing for Africa to $60 billion over the coming three years *reflects both a strong commitment to the continent and the continued availability of ample financing for Chinese investors*. Of course, it will require identifying new commercial opportunities, likely outside of the traditional natural resources sectors. But the recent surge in Chinese outward capital flows, especially from Chinese businesses, signals a continued appetite among Chinese investors to make investments and seek high returns outside their economy. Africa's non-commodity-dependent frontier economies in east Africa, for example, could be attractive new growth markets.

Moreover, global demographic trends provide an opportunity for sub-Saharan Africa to benefit from China's new growth model (See "Surf the Demographic Wave," in the March 2016 *F&D*). Bangladesh and Vietnam have already stepped into the global garment and textile value chains once dominated by China, which is moving up to other higher-value-added supply chains. In a supply chain, various stages of making a product, from extracting raw materials to final assembly, are performed in firms located in several countries. By 2035, the number of sub-Saharan Africans reaching working age (15–64) will exceed that of the rest of the world combined. If sub-Saharan Africa countries can reduce infrastructure bottlenecks, improve the business climate, and diversify their economies and increase their integration into global value chains over the coming decades, they will have a historic opportunity to decisively boost growth and reduce poverty on the continent. It will be up to the continent's policymakers to seize this opportunity. ■

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Runaway SUCCESS

Nigeria's film industry is taking off

Nigerian actor Wole Ojo and Moroccan actress Fatym Layachi during the shooting of the movie *The CEO* in Lagos, Nigeria.

Steve Omanufeme

SHE was named one of the 100 most influential people by *TIME* magazine in 2013, alongside Michelle Obama and Beyoncé. She has more than 1 million likes on her Facebook page. She is a United Nations World Food Programme ambassador and an Amnesty International activist. She is certainly one of the most popular actors most people outside Africa have never heard of.

Meet Omotola Jalade Ekeinde, the queen of Nollywood, the Nigerian film industry. With more than 300 films, and millions of video copies sold, she is living proof of Nigeria's film industry dynamism. After decades of slow growth, Nollywood, one of the largest film industries in the world in terms of number of films produced, is a story of runaway success.

The industry currently accounts for N 853.9 billion ($7.2 billion), or 1.42 percent of Nigeria's GDP. It employs more than a million people directly or indirectly. It is being touted as the country's second-biggest source of jobs after agriculture. Based on the sheer quantity and quality of films being made, economic observers consider Nollywood one of the major planks on which to diversify the Nigerian economy. According to Roberts Orya, former CEO of the Nigerian Export-Import Bank, a development bank owned by the federal government, Nollywood generates at least $590 million annually. That is still a small number, given the scale of Nigeria's economy and its population, but the industry is making a difference.

According to Charles Awurum, actor and producer, the impact of Nollywood on Nigeria is there for all to see. "If for nothing else, Nollywood has created thousands of jobs for so many Nigerians. The industry is open to all who are talented in all areas of the motion picture industry. It has drastically prevented and reduced the crime rate in the country, put food on people's table—and the multiplier effect is tremendous. It is an industry that if given the enabling environment will be the country's number one revenue earner. It has improved the lifestyles of Nigerians," he said.

African success story

Nollywood films have a large following in Africa and among the African diaspora. These films gained popularity during the digital revolution of the early 1990s, when camcorders replaced 35 mm cameras and digital systems replaced celluloid as recording devices. Nigeria continued to use the inexpensive VHS tapes and players, which were easily accessible and affordable for consumers, but eventually film technology evolved as movies on DVD started to generate huge demand.

Producing a movie in Nigeria costs between $25,000 and $70,000 on average. Films are produced within a month and are profitable within two to three weeks of release. On average movies released as DVDs are reported to sell more easily, to the tune of 20,000-plus units, and top-rated successful ones sell more than 200,000 units.

Patrick Ebewo, a Nigerian writer, attributes the popularity of Nigerian movies not only to their low unit cost but also to their "indigenous content of issues relevant to a mass audience." Through a combination of African story lines and Western technology, "these films document and recreate socio-political and cultural events," he said. The former director-general of the United Nations Educational, Scientific and Cultural Organization, Kōichirō Matsuura, says that "film and video production are shining examples of how cultural industries, as vehicles of identity, values, and meanings, can open the door to dialogue and understanding between peoples, but also to economic growth and development."

The Nollywood film industry is not just about entertainment; it is also a moneymaker.

Actress Ebube Nwagbo notes that Nollywood has put Nigeria in a positive light by placing it on the world map. "There are lots of reasons for the industry's success in Africa, but most importantly, it is the acceptance and recognition. They have accepted Nollywood. It's definitely an industry to reckon with. We have been able to tell our stories in our own African way, and Africans can identify and relate to it," she said.

Lillian-Amah Aluko, actress, producer, and scriptwriter, attributes Nollywood's success in Africa to its portrayal of Africans telling African stories in their own way and often in their own languages. "The thirst and hunger for local productions has made way for the rise of pay-per-view TV on the continent, which in turn has helped put some funding in the way of producers, either by purchasing their content or commissioning productions. Also the rise of Internet use on the continent has helped bridge a little of the distribution problems, as content is also now available online," she notes.

A long history

Though filmmaking was on the rise in the 1960s, Nigeria's domestic video industry, Nollywood, made a dramatic leap in 1992 with the release of the thriller *Living in Bondage*. The film, written by Kenneth Nnebue and Okechukwu Ogunjiofor, tells the story of a businessman who killed his wife in a human sacrifice ritual that made him rich overnight but who is then haunted by her ghost. It instantly became the first Nigerian blockbuster. Since then, thousands of releases have been similarly successful.

The release of *Living in Bondage* sparked the revival of the domestic video industry, which had started decades before. In fact the Nnebue experiment followed years of hard work by pioneering filmmakers such as Hubert Ogunde, Jab Adu, Ola Balogun, Moses Olaiya (Baba Sala), and Eddie Ugboma. The industry considers these professionals the first generation of Nigerian filmmakers.

Nigeria became fully involved in the production of films in the 1970s, when the first indigenous feature film, *Kongi's Harvest*, written by Nobel Prize laureate Wole Soyinka, was produced in the country. But an American directed the film, and many of its crewmembers were foreigners. Later, more people, such as Balogun, Ugbomah, and Ladi Ladebo, to mention a few, got involved in producing indigenous films. Because Nigeria has such a long history of film making, many people criticize the term Nollywood for its lack of originality, merely aping the labels of the two largest film industries—Hollywood in the United States and Bollywood in India.

The importance of Nollywood to the Nigerian economy was only fully realized when the Nigerian GDP was rebased in 2014. The sectors captured in the rebasing exercise were arts, entertainment, and recreation; financial institutions and insurance; real estate, professional, scientific, and technical services; administrative and support services; public administration, education, human health, and social services; and other services—these had previously not been included in GDP at all. Among the segments included for the first time were Nollywood, the information technology sector, the music industry, online sales, and telecommunications. As a result of this rebasing exercise, Nigeria's GDP in 2013 jumped from an initial estimate of $285.5 billion to $510 billion.

Opportunities for growth

Clearly, the Nollywood film industry is not just about entertainment; it is also a moneymaker. The spread of digital technology has been identified as a growth driver for the film industry and will continue to play that role as domestic and foreign consumption continue to rise. Greater Internet access, increased smartphone use, and improved bandwidth are also contributing to a production boom.

An increase in demand for programming is likely to generate new opportunities for content producers too. According to a PricewaterhouseCoopers report, Nigeria's entertainment and media revenue could more than double, to an estimated $8.5 billion in 2018, from $4 billion in 2013, with the Internet a key driver. The number of mobile Internet subscribers is forecast to surge to 50.4 million in 2018, from 7.7 million in 2013, according to the report. In addition, the region's growing young population and the development of the Internet represent huge potential for the industry.

Likewise, pay-TV penetration is forecast to reach 24.4 percent in 2018, with competition among digital terrestrial television operators set to grow after Nigeria migrates to digital. But there is some doubt whether the country will be able to meet the June 2016 digital switchover deadline—set by a 2006 agreement brokered by the United Nations' International Telecommunication Union.

Platforms such as Nigeria's iROKOtv offer new distribution channels for the more than 2,000 Nollywood films produced annually. The tech company, which pays filmmakers about $10,000 to $25,000 for the right to stream their content for a period of time, claims to be the world's largest online distributor of African content, with a catalogue of 5,000 Nollywood films.

A girl sorts through DVDs at the Nigerian film market in Lagos, Nigeria.

As Nollywood matures, consumers' expectations are likely to change, and current practices and pricing and delivery methods may need review. With the emergence of alternative movie distribution technologies, such as those offered by services such as Apple Store and Netflix, consumers will demand more.

The need for homegrown content remains crucial to the development of the industry. For Charles Igwe, filmmaker and CEO of the production firm Nollywood Global, content is quickly going digital, with an explosion of film content in all forms. "Big telecoms companies will have to improve delivery … creating the capacity to make content is imperative if we are going to exist in this space."

Dealing with the pirates

However, Nollywood's popularity also means serious piracy problems. Based on data from the World Bank, news website *TRUEAfrica.co* estimates that for every legitimate copy sold, nine others are pirated. This means little or no income going to the filmmakers and practically no revenue for the government.

Nollywood movies are increasingly consumed outside Nigeria. The retailers of these movies are few and far between in most cities. And despite the success of the movies, Nollywood actors' incomes are low. Even the most popular are paid only between $1,000 and $3,000 a film. Only a few can claim higher earnings. It appears likely that illegal downloads and bootleg DVDs will continue to undercut revenue.

The country is taking steps to strengthen intellectual property rights, including a $9.85 million state fund to improve Nigeria's content distribution network. The current collaboration between the World Bank and the Nigerian Export Promotion Council, the Nigerian Copyright Commission, and the National Film and Video Censors Board is therefore necessary and urgent, many analysts believe.

Over time, Nollywood will have to abandon the current pricing and supply models that have served it so well and gravitate toward more globally acceptable standards. The industry is already stepping up its standards to match those of other countries' film industries. A new group of professional actors—among them, Genevieve Nnaji, Ramsey Nouah, Kunle Afolayan, and Desmond Elliot—is coming on stage.

Nollywood and its Queen Omotola, who recently topped the charts at $32,000 a film, are bracing for new opportunities and new records. ■

Steve Omanufeme is a business journalist based in Lagos.

Off Its Pinnacle

Robert J. Gordon

Is the United States entering a period of sustained low economic growth?

THE average American family of 1870 would have been astounded by the living standards of their 1970 descendants. From electric lighting to healthier and longer life spans, in but a century the American standard of living changed dramatically from the primitive conditions of 1870 to the modern world of today. Those sweeping improvements were in no small way due to technological changes that may never be rivaled for their broad impact on growth, productivity, and well-being.

My recently published book, *The Rise and Fall of American Growth*, chronicles those changes, examines their sources, and looks at why productivity grew rapidly before 1970 and much more slowly since then. It also forecasts muted growth in productivity and income per person from 2015 to 2040.

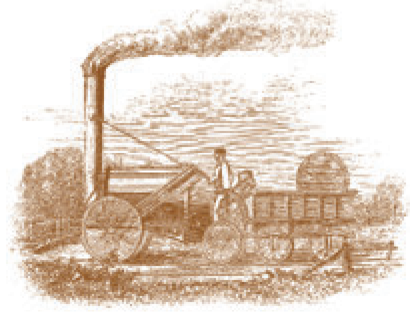
The special century

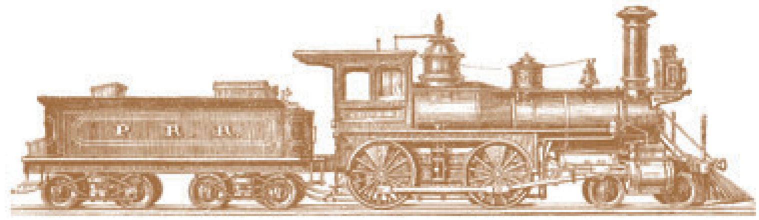
The 100 years after 1870 witnessed an economic revolution in which households were freed from an unremitting daily grind of painful manual labor, household drudgery, darkness, isolation, and early death. In only a century daily life changed beyond recognition. Manual outdoor jobs were replaced by work in air-conditioned environments, housework was increasingly performed by electric appliances, darkness was replaced by light, and isolation was replaced not just by travel, but also by color television images that brought the world into the living room. Most important, a newborn infant could expect to live not to age 45, but to age 72. The economic revolution of 1870 to 1970 was unique in human history.

The foundation of the book's analysis is that economic growth is not a steady process that creates economic advance at an even, regular pace. Instead, progress occurs much more rapidly in some eras than in others. There was virtually no economic growth for millennia until 1770, only slow growth in the transition century before 1870, and remarkably rapid growth in the century ending in 1970. Growth has been slower since then because *some inventions are more important than others.* The revolutionary century after the U.S. Civil War was made possible by a unique clustering, in the late 19th century, of "great inventions," principal among which were electricity and the internal combustion engine.

The first industrial revolution, between 1770 and 1830, witnessed the arrival of the steam engine, railroads, steamships, and mechanized cotton spinning and weaving. The most important industrial revolution was the second, with inventions centered on

Workers put the finishing touches on a 1949 Ford sedan.





the period between 1870 and 1940, including not just electricity and the internal combustion engine but also communication and entertainment devices such as the telephone, radio, and motion pictures, as well as chemicals, plastics, antibiotics, and the tools of modern medicine. The second industrial revolution is also notable for its radical improvement in working conditions on the job and at home. The third industrial revolution comprises the digital inventions since 1960, including the mainframe and personal computer, the Internet, and mobile telephones.

The economic growth since 1970 created by the third industrial revolution has been simultaneously dazzling and disappointing. This seeming paradox is resolved when we recognize that advances since 1970 have tended to be channeled into a narrow sphere of human activity involving entertainment, communication, and the collection and processing of information. Technology for processing information evolved from the mainframe to networked personal computers, search engines, and e-commerce. Communication advanced from dependence on landline phones to ever smaller and smarter mobile phones. But for the rest of what humans care about—food, clothing, shelter, transportation, health, and working conditions both inside and outside the home—progress slowed both qualitatively and quantitatively after 1970.

Any consideration of future U.S. economic progress must look beyond the pace of innovation to include the headwinds that are blowing with gale-like force to slow progress. Chief among them is the rise of inequality that since the late 1970s has steadily directed an increasing share of the fruits of U.S. growth to those at the top of the income distribution. Other headwinds include the slowing rate of advance of educational attainment, the drain on economic growth caused by the aging of the population and the retirement of the baby-boom generation, and the fiscal challenge of a rising debt-to-GDP ratio as the old-age income and health programs—Social Security and Medicare—approach insolvency.

Measures and mismeasures of progress

The diminished impact of innovation, due to the narrower scope of the post-1970 inventions, is evident when growth rates of labor productivity and total factor productivity are compared across selected eras of the past 125 years. The growth rate of labor productivity (output per hour) was 2.82 percent a year in the period 1920–70, more than a full percentage point faster than in 1890–1920 or in the period that extends from 1970 to 2014. Each vertical bar in Chart 1 is divided into three parts to break down the contribution to productivity growth of *rising educational attainment*, the steadily rising amount of *capital input per worker hour*—usually called capital deepening—and what remains after deducting the contributions of education and capital deepening, *total factor productivity* (TFP), the best proxy available for the underlying effect of innovation and technological change on economic growth. Because the contributions of education and capital deepening were roughly the same in each of the three time intervals, all of the faster growth of labor productivity between 1920 and 1970 was the result of more rapid innovation and technological change. The margin of superiority of TFP growth in the 1920–70 interval is almost *triple* the growth rate in the other two periods.

Are these very different TFP growth rates credible? A major theme of my book is that real GDP, the numerator of output per hour, greatly understates the improvement in the standard of living, particularly for the United States in the special 1870–1970 century. First, changes in real GDP omit many dimensions of improvement in the quality of life that matter to people. Second, the price indices used to convert current-dollar spending to constant inflation-adjusted "real" dollars overstate price increases. The improvements in the standard of living that are missed by real GDP data seem to be more important before 1970 than after. Among the more important are the value of clean running water, waste disposal, and the indoor bathroom, not to mention the reduction in infant mortality from 22 percent in 1890 to less than 1 percent after 1950. An explicit allowance for declining infant mortality greatly increases the peaking of TFP growth in the 1929–50 interval, as does an allowance for the greater leisure associated with shorter work hours.

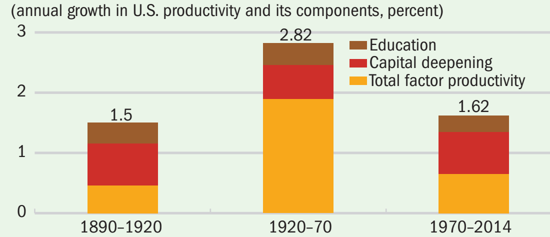
After 1970, real GDP continued to miss the value of advances, but the extent of the mismeasurement declined along with the narrower scope of innovation. And the mea-

Chart 1

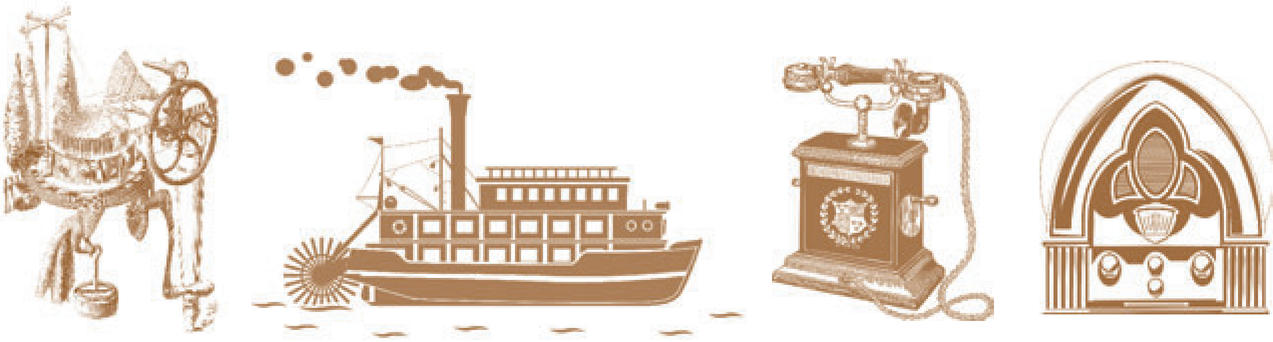
Sourcing productivity

The fast growth of labor productivity from 1920 to 1970 compared with periods before and after is due mainly to total factor productivity, which represents innovation and technical change.

(annual growth in U.S. productivity and its components, percent)



Source: Gordon (2016).
Note: Capital deepening is the contribution to labor productivity growth of more capital per worker hour. Productivity is output per worker hour. Total factor productivity is the portion of output not the result of inputs (capital and labor).



surement of price change improved, with the introduction of price indices that adjust for quality changes in information technology equipment. Moreover, in contrast to the era before 1936, when there was no consumer price index (CPI) for automobiles, during the postwar years quality changes in new automobiles were carefully measured by the CPI, including the value of government-mandated antipollution devices.

The third industrial revolution

To understand the sources of today's slow growth, consider the decline in the growth rate of labor productivity since 1955 when a so-called Kalman filter is used to smooth the data and remove any correlation with ups and downs in the unemployment rate over the business cycle (see Chart 2). It shows that after 1955 labor productivity growth proceeded through four stages. It was fast in the 1950s and 1960s, slower from the 1970s to 1995, and fast again in a temporary revival from 1995 to 2004. Since then there has been a precipitous slowdown. The actual rate of productivity growth over the six years ending in 2015 was a mere 0.5 percent a year. Why did the productivity revival of the late 1990s die out so quickly?

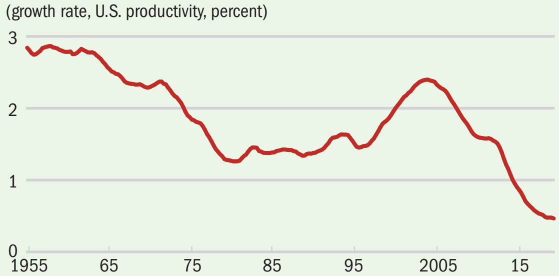
Most of the economy realized a one-time benefit from the Internet and Web revolution, but methods of production have changed little since. These major sectors include agriculture, mining, construction, retail trade, transportation, finance, insurance, real estate, professional and business services, education, health, arts and entertainment, accommodation and food services, and government. In each of these sectors, paper-dependent business procedures typical of 1970 had by 2005 been replaced by digitization, and flat screens were everywhere. The revolutions in everyday life made possible by e-commerce and search engines were already well established—Amazon dates to 1994, Google to 1998, and Wikipedia and iTunes to 2001. Facebook was founded in 2004. Will future innovations be sufficiently powerful and widespread to duplicate the brief revival in productivity growth between 1996 and 2004? A look at many of the important economic sectors that experienced that revival suggest that the answer is, "Unlikely."

Chart 2

Slowdown

Labor productivity growth was rapid in the 1950s and 1960s, slower from the 1970s to 1995, and fast again until 2004 and has been dramatically slower since then.

(growth rate, U.S. productivity, percent)



Source: Gordon (2016).
Note: A Kalman filter was applied to smooth the data and remove any correlation with ups and downs of the unemployment rate over the business cycle. Productivity is output per worker.

Stasis in the office: The digital revolution of 1970–2000 utterly changed the way offices function. In 1970 the electronic calculator had just been invented, but the computer terminal was still in the future. Office work required innumerable clerks to operate the keyboards of electric typewriters that could not download content from the rest of the world. Memory typewriters were just being introduced, so there was still repetitive retyping. By 2000, though, every office was equipped with Web-linked personal computers that could not only perform any word-processing task but could also download multiple varieties of content and perform any type of calculation at blinding speed. By 2005 the introduction of flat screens had completed the transition to the modern office. But then progress stopped. The equipment used in office work and the productivity of office employees closely resemble the office of a decade ago.

Stasis in retailing: Since the development of big-box retailers in the 1980s and 1990s, and the conversion of checkout aisles to bar-code scanners, little has changed in the retail sector. Payment methods have gradually changed from cash and checks to credit and debit cards. In the early years of credit cards in the 1970s and 1980s, checkout clerks had to make voice phone calls for authorization, then terminals that dialed the authorization phone number took over. Now the authorization arrives within seconds. Big-box retailers brought with them many other aspects of the productivity revolution. They transformed supply chains, wholesale distribution, inventory management, pricing, and product selection. But that productivity-enhancing shift from traditional small-scale retailing is largely over. E-commerce raises productivity but still accounts for only about 6 percent of total retail trade (Hortaçsu and Syverson, 2015). The retail productivity gains that are a major accomplishment of the third industrial revolution will be difficult to surpass in the next several decades.

Stasis in finance and banking: The revolution in information and communications technology changed finance and banking along many dimensions—from the humble street-corner ATM to the development of fast trading on the stock exchanges. But both the ATM and billion-share trading days are creations of the 1980s and 1990s. Nothing much has changed since. And despite all those ATMs, the United States still maintains a system of 97,000 bank branches, many of which are empty much of the time.

Stasis in consumer electronics: Television made its transition to color between 1965 and 1972. Variety increased with cable television in the 1970s and 1980s, and picture quality was improved with high-definition signals and receiving sets. Variety increased even further when Blockbuster, and then Netflix, made it possible to rent an almost infinite variety of motion picture DVDs. Now movie streaming is common. Further, homes have experienced the same access to Web information and entertainment, as well as to e-commerce, that arrived a few years earlier in the office. But smartphones and tablets have saturated their potential market, and further advances in consumer electronics have become less impressive.

Decline in business dynamism: Recent research has used the word "dynamism" to describe the process of creative destruction by which start-up and young firms become the source of productivity gains by introducing best-practice technologies and methods and shifting resources away from old low-productivity firms. The share of total employment accounted for by firms no older than five years declined by almost half from 19.2 percent in 1982 to 10.7 percent in 2011. This decline was pervasive across retailing and services, and after 2000 the high-tech sector experienced a large decline in start-ups and fast-growing young firms (Davis and Haltiwanger, 2014).

Decline in net investment: An important component of the slowdown in economic growth has been the behavior of net investment. As a share of the capital stock, real net investment averaged 3.3 percent over the period 1950–2007. But the actual values were almost always above that average before 1987 and, but for a few years in the late 1990s, have almost always been below it since 1987 (see Chart 3). Some commenters say the decline in net investment is a cause of the productivity slowdown, but there is also a reverse causation: the slump in investment is the result of the diminished impact of innovations. Firms have plenty of cash that could be invested, but they prefer instead to buy back shares.

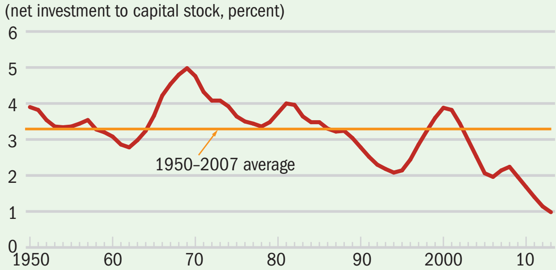
Both the ATM and billion-share trading days are creations of the 1980s and 1990s.

Chart 3

Investment declines

Net investment has averaged 3.3 percent of total capital stock since 1955, but it was almost always above that average before 1987 and, but for a few years in the 1990s, has been below it since 1987.

(net investment to capital stock, percent)



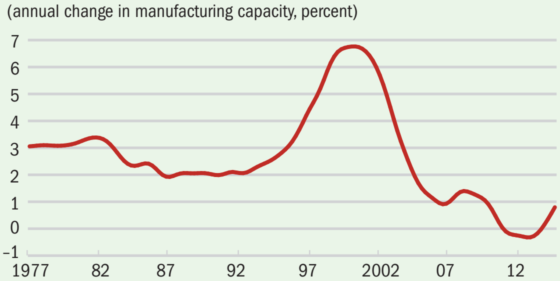
Source: Gordon (2016).
Note: The data represent a five-year moving average of the ratio of net private investment to private business capital stock.

Chart 4

Swings in production ability

Manufacturing capacity rose steadily between 1977 and 1995, peaked in 2000, and slumped after that.

(annual change in manufacturing capacity, percent)



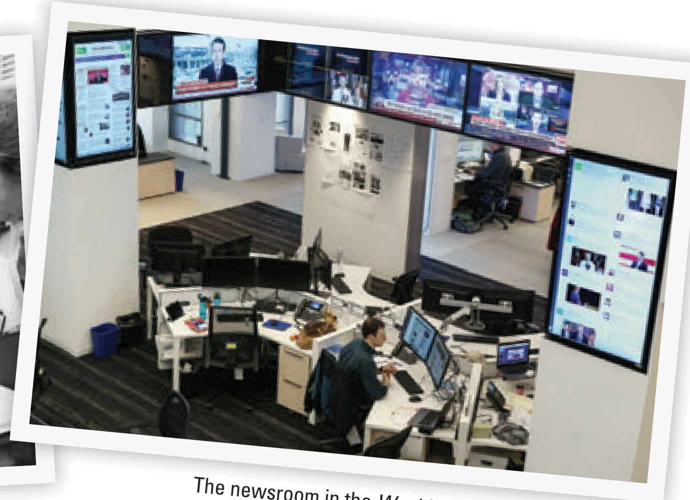
Source: Gordon (2016).
Note: Data represent an annualized five-year change in manufacturing capacity.

Declining growth of manufacturing capacity: As shown above, the revival in productivity growth between 1995 and 2004 was unique in the post-1970 era. Equally unique was the soaring temporary growth in the capacity of the manufacturing sector (see Chart 4). The average growth rate of capacity ranged between 2 and 3 percent from 1977 to 1995, rose to a peak of 6.8 percent in 2000, and then fell in most years after 2007 to less than 1 percent. Much of the growth in capacity in the late 1990s was associated with the information technology investment boom, but since 2011 most information technology investment equipment has been imported.

Assessing the future

The point of departure in forecasting growth in productivity and the standard of living from 2015 to 2040 is a division of the time period since 1970 into three intervals—1970–94, 1994–2004, and 2004–15. As we have seen, the atypical 1994– 2004 interval, when output per hour grew at 2.26 percent a year, is unlikely to be repeated. The sharp upward shift in productivity associated with the digital revolution that replaced paper, file-card catalogs, file cabinets, and linotype operators with proprietary and Internet software, electronic catalogs, and flat screens emerged largely during this period. Since that decade is not a relevant basis for the likely future growth of productivity, the baseline reference point is the average growth rate achieved from 1970 to 1994 and from 2004 to 2015, or 1.38 percent a year. When we subtract 0.18 percentage point to reflect the slowing advance of educational attainment, the projected 2015–40 labor productivity growth rate is 1.20 percent (see Chart 5). This compares to a rate of 2.26 percent a year from 1920 to 2014.

Employees do paperwork at the brokerage house of Merrill Lynch, Pierce, Fenner & Smith, New York, United States,1965.



The newsroom in the *Washington Post*'s new building in Washington, D.C., United States, 2016.

To translate projected growth in output per hour to output per person, 0.4 percentage point is deducted annually, mainly to account for the retirement of the baby-boom generation. This results in a 2015–40 forecast for output per person of 0.80 percent a year, contrasting with the historical rate of 2.11 percent a year. To get to median income per person, another 0.40 percentage point a year is subtracted to reflect a continued rise in inequality at roughly the same rate experienced from 1975 to 2014. An additional subtraction of 0.1 percentage point is made for anticipated cuts in social benefits or increases in Social Security and Medicare taxes that will be needed to counteract the upward creep in the federal debt-to-GDP ratio because of an aging population. The resulting forecast for 0.3 percent annual growth in per capita disposable median income (that is, the amount of total income that can be spent) contrasts with the rate of 1.69 percent a year achieved from 1920 to 2014.

While the forecasts may appear pessimistic, they do not countenance an end to innovation and technical change. On the contrary, the prediction of 1.20 percent productivity growth is very similar to 1970–94 and 2004–15. A compound 1.2 percent growth rate would imply a *level* of labor productivity in the year 2040 that is 35 percent above that in 2015, and would be achieved by further innovations in robotics, artificial intelligence and big data, 3-D printing, and driverless vehicles.

But while innovation continues, the median growth rate of real income per person will be less than productivity growth because of an aging of the population and rising inequality. Government policy can affect these impediments to median income growth. The best offset to the retirement of the baby-boom generation is substantially increased immigration to lower the average age of the population and to raise the proportion that is working. A larger working population would raise tax revenue and counteract future increases in the debt-to-GDP ratio from the aging of the population. As for inequality, the government cannot prevent successful CEOs, entertainment stars, and entrepreneurs from earning high incomes, but it can use progressive taxation to redistribute income and promote more equality of after-tax incomes.

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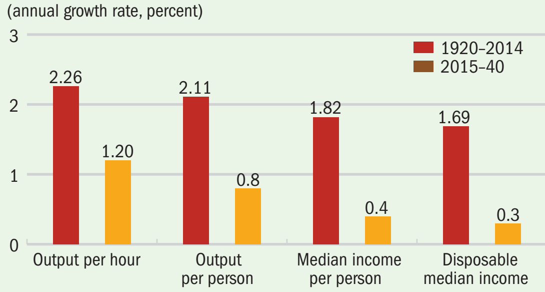
Chart 5

Future shock

By a variety of measures of real income, growth will be substantially slower in the coming quarter-century than in the preceding 95 years.

(annual growth rate, percent)



Source: Gordon (2016).

Note: Data for 1920 through 2014 are actual; from 2015 to 2040 data are projected. To translate output per hour to output per person 0.4 percentage point is subtracted to reflect the larger number of nonworking people, largely the result of baby boomer retirement. In calculating median income per person, another 0.4 percentage point is deducted to reflect the effects of continued rising inequality. To calculate median disposable income another 0.1 percentage point is deducted to account for anticipated cuts in social benefits or increases in taxes to support them.

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Inside the stock exchange in Santiago, Chile, one of the first countries to adopt a form of neoliberal policies.

Neoliberalism: Oversold?

Jonathan D. Ostry, Prakash Loungani, and Davide Furceri

Instead of delivering growth, some neoliberal policies have increased inequality, in turn jeopardizing durable expansion

MILTON Friedman in 1982 hailed Chile as an "economic miracle." Nearly a decade earlier, Chile had turned to policies that have since been widely emulated across the globe. The neoliberal agenda—a label used more by critics than by the architects of the policies—rests on two main planks. The first is increased competition—achieved through deregulation and the opening up of domestic markets, including financial markets, to foreign competition. The second is a smaller role for the state, achieved through privatization and limits on the ability of governments to run fiscal deficits and accumulate debt.

There has been a strong and widespread global trend toward neoliberalism since the 1980s, according to a composite index that measures the extent to which countries introduced competition in various spheres of economic activity to foster economic growth. As shown in the left panel of Chart 1, Chile's push started a decade or so earlier than 1982, with subsequent policy changes bringing it ever closer to the United States. Other countries have also steadily implemented neoliberal policies (see Chart 1, right panel).

There is much to cheer in the neoliberal agenda. The expansion of global trade has rescued millions from abject poverty. Foreign direct investment has often been a way to transfer technology and know-how to developing economies. Privatization of state-owned enterprises has in many instances led to more efficient provision of services and lowered the fiscal burden on governments.

However, there are aspects of the neoliberal agenda that have not delivered as expected. Our assessment of the agenda is confined to the effects of two policies: removing restrictions on the movement of capital across a country's borders (so-called capital account liberalization); and fiscal consolidation, sometimes called "austerity," which is shorthand for policies to reduce fiscal deficits and debt levels. An assessment of these *specific* policies (rather than the broad neoliberal agenda) reaches three disquieting conclusions:

- The benefits in terms of increased growth seem fairly difficult to establish when looking at a broad group of countries.
- The costs in terms of increased inequality are prominent. Such costs epitomize the trade-off between the growth and equity effects of some aspects of the neoliberal agenda.
- Increased inequality in turn hurts the level and sustainability of growth. Even if growth is the sole or main purpose of the neoliberal agenda, advocates of that agenda still need to pay attention to the distributional effects.

Open and shut?

As Maurice Obstfeld (1998) has noted, "economic theory leaves no doubt about the potential advantages" of capital account liberalization, which is also sometimes called financial openness. It can allow the international capital market to channel world savings to their most productive uses across the globe. Developing economies with little capital can borrow to finance investment, thereby promoting their economic growth without requiring sharp increases in their own saving. But Obstfeld also pointed to the "genuine hazards" of openness to foreign financial flows and concluded that "this duality of benefits and risks is inescapable in the real world."

This indeed turns out to be the case. The link between financial openness and economic growth is complex. Some capital inflows, such as foreign direct investment—which may include a transfer of technology or human capital—do seem to boost long-term growth. But the impact of other flows—such as portfolio investment and banking and especially hot, or speculative, debt inflows—seem neither to boost growth nor allow the country to better share risks with its trading partners (Dell'Ariccia and others, 2008; Ostry, Prati, and Spilimbergo, 2009). This suggests that the growth and risk-sharing benefits of capital flows depend on which type of flow is being considered; it may also depend on the nature of supporting institutions and policies.

Although growth benefits are uncertain, costs in terms of increased economic volatility and crisis frequency seem more evident. Since 1980, there have been about 150 episodes of surges in capital inflows in more than 50 emerging market economies; as shown in the left panel of Chart 2, about 20 percent of the time, these episodes end in a financial crisis, and many of these crises are associated with large output declines (Ghosh, Ostry, and Qureshi, 2016).

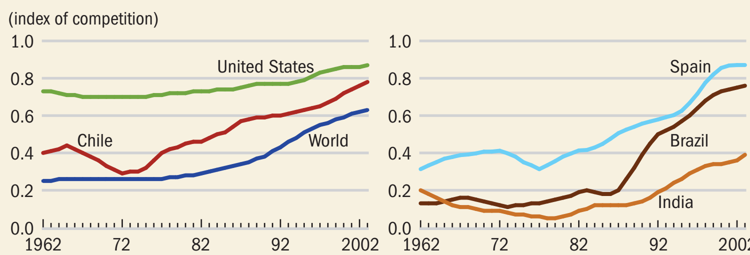
The pervasiveness of booms and busts gives credence to the claim by Harvard economist Dani Rodrik that these "are hardly a sideshow or a minor blemish in international capital flows; they are the main story." While there are many drivers, increased capital account openness consistently figures as a risk factor in these cycles. In addition to raising the odds of a crash, financial openness has distributional effects, appreciably raising inequality (see Furceri and Loungani, 2015, for a discussion of the channels through which this operates). Moreover, the effects of openness on inequality are much higher when a crash ensues (Chart 2, right panel).

The mounting evidence on the high cost-to-benefit ratio of capital account openness, particularly with respect to short-term flows, led the IMF's former First Deputy Managing Director, Stanley Fischer, now the vice chair of the U.S. Federal Reserve Board, to exclaim recently: "What useful purpose is served by short-term international capital flows?" Among policymakers today, there is increased acceptance of controls to limit short-term debt flows that are viewed as likely to lead to—or compound—a financial crisis. While not the only tool available—exchange rate and financial policies can also help—capital controls are a viable, and sometimes the only, option when the source of an unsustainable credit boom is direct borrowing from abroad (Ostry and others, 2012).

Chart 1

Push to compete

Since the 1980s countries have adopted policies to foster increased domestic competition through deregulation and opening their economies to foreign capital.

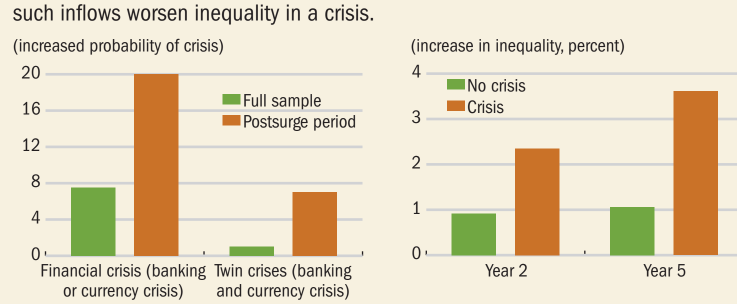


Source: Ostry, Prati, and Spilimbergo (2009).
Note: The chart shows the average values of a composite index of structural policies that countries adopted with the aim of increasing competition. The areas are openness of capital account; openness of current account; liberalization of agricultural and network industries; domestic financial liberalization; and reduction in the amount of taxes between wages and take-home pay. An index value of zero is total lack of competition and 1 is unfettered competition.

Chart 2

Opening up to trouble

Surges of foreign capital inflows increased the chance of a financial crisis, and such inflows worsen inequality in a crisis.



Sources: Ghosh, Ostry, and Qureshi (2016), left panel; Furceri and Loungani (2015), right panel.
Note: The left panel shows the increased probability of a crisis during a surge in capital inflows. It is based on 165 episodes of inflows in 53 emerging market economies between 1980 and 2014. The right panel compares the increase in the Gini measure of income inequality when capital account liberalization was followed by a crisis with periods when no crisis ensued. It is based on 224 episodes of capital account liberalization in 149 countries between 1970 and 2010.

Size of the state

Curbing the size of the state is another aspect of the neoliberal agenda. Privatization of some government functions is one way to achieve this. Another is to constrain government spending through limits on the size of fiscal deficits and on the ability of governments to accumulate debt. The economic history of recent decades offers many examples of such curbs, such as the limit of 60 percent of GDP set for countries to join the euro area (one of the so-called Maastricht criteria).

Economic theory provides little guidance on the optimal public debt target. Some theories justify higher levels of debt (since taxation is distortionary) and others point to lower—or even negative—levels (since adverse shocks call for precautionary saving). In some of its fiscal policy advice, the IMF has been concerned mainly with the *pace* at which governments reduce deficits and debt levels following the buildup of debt in advanced economies induced by the global financial crisis: too slow would unnerve markets; too fast would derail recovery. But the IMF has also argued for paying down debt ratios in the medium term in a broad mix of advanced and emerging market countries, mainly as insurance against future shocks.

But is there really a defensible case for countries like Germany, the United Kingdom, or the United States to pay down the public debt? Two arguments are usually made in support of paying down the debt in countries with ample fiscal space—that is, in countries where there is little real prospect of a fiscal crisis. The first is that, although large adverse shocks such as the Great Depression of the 1930s or the global financial crisis of the past decade occur rarely, when they do, it is helpful to have used the quiet times to pay down the debt. The second argument rests on the notion that high debt is bad for growth—and, therefore, to lay a firm foundation for growth, paying down the debt is essential.

It is surely the case that many countries (such as those in southern Europe) have little choice but to engage in fiscal consolidation, because markets will not allow them to continue borrowing. But the need for consolidation in *some* countries does not mean *all* countries—at least in this case, caution about "one size fits all" seems completely warranted. Markets generally attach very low probabilities of a debt crisis to countries that have a strong record of being fiscally responsible (Mendoza and Ostry, 2007). Such a track record gives them latitude to decide not to raise taxes or cut productive spending when the debt level is high (Ostry and others, 2010; Ghosh and others, 2013). And for countries with a strong track record, the benefit of debt reduction, in terms of insurance against a future fiscal crisis, turns out to be remarkably small, even at very high levels of debt to GDP. For example, moving from a debt ratio of 120 percent of GDP to 100 percent of GDP over a few years buys the country very little in terms of reduced crisis risk (Baldacci and others, 2011).

But even if the insurance benefit is small, it may still be worth incurring if the cost is sufficiently low. It turns out, however, that the cost could be large—much larger than the benefit. The reason is that, to get to a lower debt level, taxes that distort economic behavior need to be raised temporarily or productive spending needs to be cut—or both. The costs of the tax increases or expenditure cuts required to bring down the debt may be much larger than the reduced crisis risk engendered by the lower debt (Ostry, Ghosh, and Espinoza, 2015). This is not to deny that high debt is bad for growth and welfare. It is. But the key point is that the welfare cost from the higher debt (the so-called burden of the debt) is one that has already been incurred and cannot be recovered; it is a sunk cost. Faced with a choice between living with the higher debt—allowing the debt ratio to decline organically through growth—or deliberately running budgetary surpluses to reduce the debt, governments with ample fiscal space will do better by living with the debt.

Governments with ample fiscal space will do better by living with the debt.

Austerity policies not only generate substantial welfare costs due to supply-side channels, they also hurt demand—and thus worsen employment and unemployment. The notion that fiscal consolidations can be expansionary (that is, raise output and employment), in part by raising private sector confidence and investment, has been championed by, among others, Harvard economist Alberto Alesina in the academic world and by former European Central Bank President Jean-Claude Trichet in the policy arena. However, in practice, episodes of fiscal consolidation have been followed, on average, by drops rather than by expansions in output. On average, a consolidation of 1 percent of GDP increases the long-term unemployment rate by 0.6 percentage point and raises by 1.5 percent within five years the Gini measure of income inequality (Ball and others, 2013).

In sum, the benefits of some policies that are an important part of the neoliberal agenda appear to have been somewhat overplayed. In the case of financial openness, some capital flows, such as foreign direct investment, do appear to confer the benefits claimed for them. But for others, particularly short-term capital flows, the benefits to growth are difficult to reap, whereas the risks, in terms of greater volatility and increased risk of crisis, loom large.

In the case of fiscal consolidation, the short-run costs in terms of lower output and welfare and higher unemployment have been underplayed, and the desirability for countries with ample fiscal space of simply living with high debt and allowing debt ratios to decline organically through growth is underappreciated.

An adverse loop

Moreover, since both openness and austerity are associated with increasing income inequality, this distributional effect sets up an adverse feedback loop. The increase in inequality engendered by financial openness and austerity might itself undercut growth, the very thing that the neoliberal agenda is intent on boosting. There is now strong evidence that inequality can significantly lower both the level and the durability of growth (Ostry, Berg, and Tsangarides, 2014).

The evidence of the economic damage from inequality suggests that policymakers should be more open to redistribution than they are. Of course, apart from redistribution, policies could be designed to mitigate some of the impacts in advance—for instance, through increased spending on education and training, which expands equality of opportunity (so-called predistribution policies). And fiscal consolidation strategies—when they are needed—could be designed to minimize the adverse impact on low-income groups. But in some cases, the untoward distributional consequences will have to be remedied after they occur by using taxes and government spending to redistribute income. Fortunately, the fear that such policies will themselves necessarily hurt growth is unfounded (Ostry, 2014).

Finding the balance

These findings suggest a need for a more nuanced view of what the neoliberal agenda is likely to be able to achieve. The IMF, which oversees the international monetary system, has been at the forefront of this reconsideration.

For example, its former chief economist, Olivier Blanchard, said in 2010 that "what is needed in many advanced economies is a credible medium-term fiscal consolidation, not a fiscal noose today." Three years later, IMF Managing Director Christine Lagarde said the institution believed that the U.S. Congress was right to raise the country's debt ceiling "because the point is not to contract the economy by slashing spending brutally now as recovery is picking up." And in 2015 the IMF advised that countries in the euro area "with fiscal space should use it to support investment."

On capital account liberalization, the IMF's view has also changed—from one that considered capital controls as almost always counterproductive to greater acceptance of controls to deal with the volatility of capital flows. The IMF also recognizes that full capital flow liberalization is not always an appropriate end-goal, and that further liberalization is more beneficial and less risky if countries have reached certain thresholds of financial and institutional development.

Chile's pioneering experience with neoliberalism received high praise from Nobel laureate Friedman, but many economists have now come around to the more nuanced view expressed by Columbia University professor Joseph Stiglitz (himself a Nobel laureate) that Chile "is an example of a success of combining markets with appropriate regulation" (2002). Stiglitz noted that in the early years of its move to neoliberalism, Chile imposed "controls on the inflows of capital, so they wouldn't be inundated," as, for example, the first Asian-crisis country, Thailand, was a decade and a half later. Chile's experience (the country now eschews capital controls), and that of other countries, suggests that no fixed agenda delivers good outcomes for all countries for all times. Policymakers, and institutions like the IMF that advise them, must be guided not by faith, but by evidence of what has worked. ■

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The Future Is Plastic

For countries concerned about the environmental impact of their currency, a switch to polymer notes makes sense

Ping Wang

AS countries sign on to the Paris Agreement on climate change and strive to become more sustainable, many are considering the environmental impact of their currency as well as its durability and security.

Money has been made from a variety of materials over the years—from leather in China during the Han Dynasty, to shells, precious metals, cotton paper, and most recently, plastic. The materials reflect the social and political climate of the time as well as available technologies and resources.

For centuries, people in China used precious metal coins strung together through a center hole to conduct transactions. But with larger commercial transactions in the 7th century, there was a move to the easier-to-transport paper currency. In the 13th century Marco Polo reported back to Europe from his travels on the use of paper rather than coins, and Europe's earliest modern paper banknotes were issued by the Bank of Stockholm in 1661.

The design for the new Australian $5 polymer note, due out in September 2016, the first of a new series. Australia was the first country to issue polymer currency.

Vanuatu's 2,000 vatu polymer note; also in circulation are VT 10,000, VT 1,000, and VT 200, with VT 5,000 and VT 500 yet to be issued.

Paper quickly became the currency of choice around the world and remained so for centuries. But with recent technological developments, plastic film notes offer additional security features along with longevity and energy efficiency.

Move to plastic

Polymer banknotes were first issued in 1988 by Australia, which now uses polymer exclusively and is about to launch a new series of notes, starting with the $5 bill in September. Polymer is now used in over 20 countries as diverse as Australia, Canada, Fiji, Mauritius, New Zealand, Papua New Guinea, Romania, and Vietnam.

The Bank of Canada began its move to polymer banknotes in 2011, after assessing the environmental impact of producing paper and plastic bills. A life-cycle assessment examined the effect—including primary energy demands and the potential for global warming—of each stage of production, from growing the cotton to produce the banknote paper or producing the raw material for polymer notes through the destruction and disposal of worn notes.

Canadian polymer bills: Canada released the $100 note in November 2011, the $50 in March 2012, the $20 in November 2012, and the $10 and $5 bills in November 2013.

In all categories and phases, polymer outperformed paper. For example, the study found, a polymer bill promises a 32 percent reduction in global warming potential and 30 percent reduction in primary energy demand compared with paper. Most important, polymer notes last more than twice as long as paper notes—and higher denominations, which are handled less frequently, last even longer. This means fewer polymer notes have to be manufactured and distributed over the life of a series. And polymer notes weigh less than paper ones, so even their transportation and distribution are easier on the environment.

At the end of their life, paper bills are usually shredded and relegated to a landfill. But polymer notes taken out of circulation are shredded, converted into pellets, and used to make everyday plastic items such as lawn furniture.

The Bank of England spent three years studying the potential effect of a switch from cotton and linen paper notes and concluded as well that plastic was the way to go. A polymer £5 note featuring Sir Winston Churchill will launch in September 2016, followed by a £10 Jane Austen note in late 2017 and a £20 note by 2020.

On announcement of the U.K. move, Bank of England Governor Mark Carney said, “The quality of polymer notes is higher, they are more secure from counterfeiting, and they can be produced at lower cost to the taxpayer and the environment.”

Mixed reactions

Ordinary users have mixed reactions to the bills’ plasticky feel. Zoë Martin, a tutor in Toronto, Canada, says, “They stick to each other because of static cling, they don’t fold up nicely like paper bills when they’re new, and they’re slippery so they slide out of your pocket.” But Michael Brienza, a Toronto day care teacher, says, “I prefer them; they’re so much cleaner. The paper bills got all grimy.” And Peter Cecil Sinnott, a data science graduate of Montreal’s McGill University, says, “The fact that they’re waterproof means getting them wet isn’t going to cost you. True story: my sister once found one of the new Canadian $100 bills while snorkeling in the tropics. Who knows how long it was sitting on that reef?”

To paraphrase Mr. McGuire’s advice to Benjamin in the movie *The Graduate,* whether people like it or not, “the future is plastic.” ■

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Environmentally costly

The life cycle—production, transportation, and eventual disposal—of the 3 billion paper euro banknotes produced in 2003 alone has the environmental effect of driving a car around the globe 9,235 times

Environmental impact of 3 billion paper euro banknotes

=

Environmental impact of driving around the earth **9,235** times

Attendee enters Inside Bitcoins conference, New York City, United States.

The Internet of Trust

Andreas Adriano and Hunter Monroe

Created to avoid banks, bitcoin's blockchain technology may end up helping them

THE greatest thing about cash is the simplicity of transactions. You just hand it over and receive something. Nobody asks your name, address, phone number, date of birth, social security number, salary, how long you've been in your current job … Cash produces instant *trust* between buyer and seller.

Because it's impractical to move large amounts of hard cash around, paper-based and later electronic payment systems were created. However, establishing this trust without cash is complex and expensive. Acquiring a credit or debit card requires the applicant to answer numerous questions—and the issuing bank to verify the answers and the applicant's credit. Using the card demands a complex infrastructure to ensure that transactions are fast, reliable, and safe—and costs the merchant a percentage of each sale.

Domestic transfers between banks depend on payment systems operated by central banks, while international transfers may involve other commercial banks between the sender's and the receiver's banks. Furthermore, these transactions can take several days. As another example, although we associate modern stock markets with nearly instantaneous electronic trades, settling transactions can take two to three days and requires additional players, including custodians, notaries, clearinghouses, and central securities depositories. Until the transactions have settled, financial institutions must set aside significant amounts of cash or other liquid assets to cover their positions if someone along the line does not pay.

Simpler and cheaper

Could technology make things simpler and cheaper again? Enter bitcoin, the digital currency that some claim will spell the end of banks but others view as a Ponzi scheme and a financial vehicle for criminals. Bitcoin—or more precisely, the underlying technology that allows it to function, called distributed ledgers, or blockchain—could allow what many see as radical rewiring of the financial sector (see Box 1).

Bitcoin's story is well known: it started when Satoshi Nakamoto—the name used by the inventor, whose actual identity is still uncertain—posted a paper and software on an email discussion list of activists who believed that cryptography could bring about social and political change ("cypherpunks"). Others became interested and soon started to develop the idea online. Bitcoin started trading in 2009, with an exchange rate against the U.S. dollar of $0.0007 per bitcoin. In February 2011, it reached parity with the dollar. In November 2013, the value of bitcoin peaked at $1,242, and it has been trading above $400 for most of 2016. The value of bitcoin in circulation is about $6 billion (compared with about 1.5 trillion U.S. dollars in circulation worldwide).

In the beginning, bitcoin grabbed the imagination of libertarians who wanted to get rid of, or at least have an alternative to, banks and central banks. While the exchange rate surge triggered something of a gold rush, bitcoin's relative anonymity and ease of trading attracted drug dealers and other criminals, leading to a heavy law enforcement crackdown during 2013 and 2014 that landed some early entrepreneurs in jail and gave the whole initiative a bad reputation.

Tech entrepreneurs and the financial industry soon realized that the real news was under the hood—bitcoin's underlying distributed ledger technology. Essentially, this is a technology for verifying and recording transactions on a peer-to-peer basis without a central authority. It upends a very basic tenet of payment systems: having one central, independent, and trusted bookkeeper that stores and validates all transactions—a role often played by central banks (see chart).

With bitcoin, everyone on the Internet can validate and record transactions in their own copy of the ledger. They group the transactions during a given period into a block, which is followed by a tamper-proof stamp. Each transaction block links to a block for the previous period—hence the term "blockchain." Completing the block for a period requires

Box 1

You got money

Several start-ups are already delivering small payments and remittance services at low cost using bitcoin as a payment system, not a currency. Rather than charging 8 percent to send remittances, the start-up Circle Internet Financial, for example, performs the service free. Its sleek mobile app incorporates social media features like sending pictures and emojis together with a payment notification—appealing to a younger demographic accustomed to expressing itself in smileys.

Users link their profile to a bank account or card on each end of the transaction and simply "text" money to each other anywhere in the world. Transactions are conducted via bitcoin, but the user doesn't need to know how it happens. If the receiver is not in the bitcoin system, the money can still be retrieved with other "digital wallets" (apps that allow the storage of bitcoin or other currency on a smartphone) or at the counters of remittance companies for a small fee, provided they also deal in bitcoin.

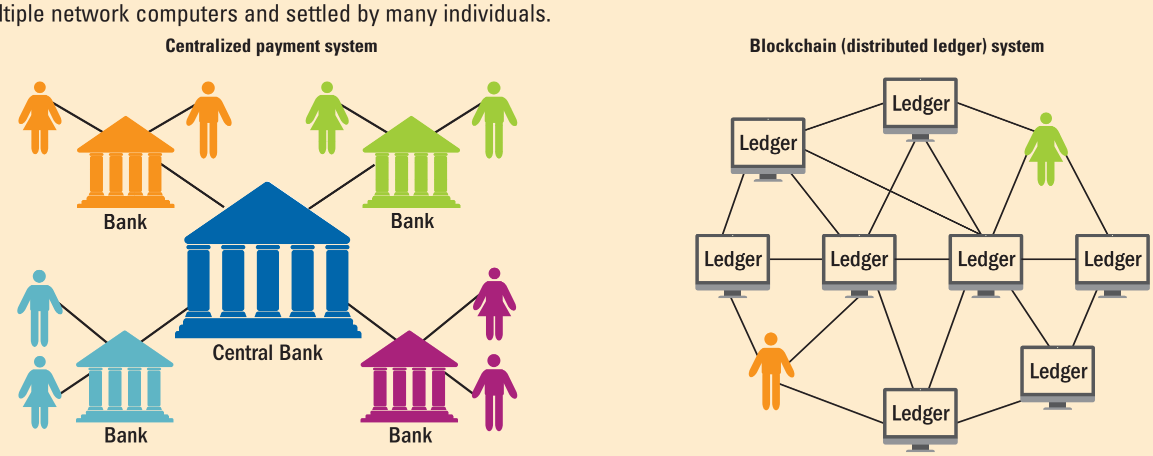
"It's like with sending an email," says the Circle CEO, Jeremy Allaire. "You don't care about how the message is routed through the Web." He explains how his Filipino nanny in California used to spend about $50 for each remittance home and now pays $0.75, and that much only because her family at the other end of the transaction doesn't use Circle. Because transactions happen very quickly, bitcoin's well-known volatility is not really an issue.

Circle combines the digital appeal with some good old "real" features. It is registered as a money service business, which allows it to provide many banking services, except lending and investing clients' money, and enjoys deposit protection from the U.S. government. It recently became licensed in the United Kingdom and formed a partnership with Barclays Bank.

Like many start-up honchos in the Internet's early days, Allaire, whose coffers are well funded by venture capitalists, is not concerned with short-term profitability. "Our business is entering a market that generates trillions of dollars of revenue a year for retail banks. There's absolutely huge amounts of market share to be disrupted or to be accessed with digital banking products," he says. Didn't many companies fail in the early 2000s by focusing too much on acquiring customers and too little on monetizing them? "The most significant Internet companies, they all started by focusing relentlessly on providing a free consumer utility that really delivered a lot of value for consumers. And they did it for several years until it got to a meaningful scale," he adds.

Spreading the burden

In traditional banking, the central bank tracks payments between clients; in blockchain banking, transactions are recorded on multiple network computers and settled by many individuals.



some computational work, with a reward in bitcoin—so the people competing to complete blocks are called "miners." Thus bitcoin, by combining a peer-to-peer approach with cryptographic security, became the first successful digital currency, after several decades of failures.

So how big a deal is that? U.S. entrepreneur Marc Andreessen explained it this way: "Bitcoin gives us, for the first time, a way for one Internet user to transfer a unique piece of digital property to another Internet user, such that the transfer is guaranteed to be safe and secure, everyone knows that the transfer has taken place, and nobody can challenge the legitimacy of the transfer. The consequences of this breakthrough are hard to overstate," he said in a *New York Times* article in January 2014.

Andreessen was an Internet pioneer, who while still in college in 1993 founded Netscape, the first widely used Web browser. He now runs Andreessen Horowitz, one of Silicon Valley's most influential venture capital funds. Venture capitalists make money by finding the next big thing before it's even a thing. Andreessen and many other venture capitalists who funded the creators of the Internet as we know it are now betting on bitcoin and the underlying blockchain technology. They see this technology as a breakthrough that can establish, between unknown and physically separated participants, the same trust as a cash transaction. Some predict that this capability to disintermediate any trusted third party will be the most disruptive technology since the Internet. The (overused) word "disruptive" refers to new technologies that shake up, or even destroy, traditional business models. Think Amazon and bookstores, or Uber and taxis. Disrupting the financial industry, the most regulated business in the world, is a whole different game. It is possible and even desirable, as the *Financial Times'* Martin Wolf wrote recently, given the industry's many shortcomings, but very complicated in all aspects: legal, fiscal, financial, and operational.

Traditionally, the financial industry has tried to solve the problem of creating trust by acting as a trusted intermediary between individuals and companies who do not know each other, with central banks and regulators backing up this trust by supervising banks and through deposit insurance. Individuals and companies pay banks to conduct their transactions, for example through credit cards and wire transfers, because other banks and the central bank recognize each other as trustworthy counterparts. It's great business for them: according to a McKinsey&Company report, banks extract an astonishing $1.7 trillion a year, 40 percent of their revenue, from global payment services. Even more surprising, despite all technological innovation, the cost of financial intermediation in the United States has not changed significantly since the beginning of the 20th century, according to research cited by the Bank of England's chief economist, Andrew Haldane, in a recent speech. In a 2012 report, the European Central Bank (ECB) estimated that, aside from the fees everybody pays, the indirect costs are as high as 1 percent of GDP, which in the European Union alone translates to about €130 billion a year. And the cost of sending remittances to another country is even higher—nearly 8 percent according to the World Bank. However, a number of start-ups, many using bitcoin, make sending payments as simple and inexpensive as sending an email (see Box 2).

Transforming the financial sector

According to its proponents, bitcoin's blockchain technology can be used to transform the financial sector fundamentally, for example by reducing the settlement time for securities transactions. With faster settlement, less money needs to be set aside to cover credit and settlement risks—just as collateral is not needed for a cash transaction.

The list of potential uses is even longer. Think property titles, for example—home buyers in the United States usu-

Box 2

Bitcoin FAQs

Q: Is bitcoin the only digital currency?

A: No, there are over 700 so-called cryptocurrencies out there. Bitcoin is the best known, with the highest market value, liquidity, and acceptance. Ethereum is a distant second.

Q: Are cryptocurrencies safe?

A: Episodes of hacking, stealing of bitcoin, and even bankruptcy of exchanges and wallet providers have occurred, but less frequently over time.

Q: How volatile are they?

A: Cryptocurrencies can be very volatile. Bitcoin has hovered just above $400 during 2016; it was trading below $300 in May 2015, but was above $1,200 in 2013.

Q: If it's so volatile, is it a good investment?

A: It is a very speculative investment. And it's not guaranteed by a central bank or backed by a government. Investors are totally on their own.

Q: Is it a good payment system?

A: It's cheaper than many conventional options for remittances or money transfers and can be very convenient for instance for smartphone payments. To the extent that transactions are settled quickly, volatility is less of a problem.

Q: How can I buy bitcoin or other cryptocurrency?

A: There are many exchanges that sell and buy bitcoin, such as Coinbase, Localbitcoins, and CoinDesk. There are also a growing number of physical automated teller machines, or ATMs, that will convert hard currency into bitcoin.

Q: How do I store them?

A: The most practical way is to download a digital wallet to a smartphone. As with a real wallet, these are good for small purchases. Storing large amounts is more complex. Some users have a dedicated offline computer (one not connected to the Internet all the time) and use encryption and very strong passwords to protect their funds.

Q: Where can I use them?

A: Acceptance is still limited but is increasing. A few online retailers accept bitcoin, as do some brick-and-mortar stores.

"There's nothing in the current technologies preventing instant settlement."

ally buy insurance to protect against liability originating from an unexpected claim on the property they are buying—or the process for buying, registering, and paying taxes for a car. A blockchain could provide digital, unforgeable proof of ownership along with a complete record of the chain of possession. There is also substantial excitement about smart, self-executing contracts—for instance, travel insurance that pays automatically if a flight is cancelled, or a car loan that disables the ignition if payments are missed. Blockchain technology also powers an alternative to bitcoin called Ethereum (with a currency worth about $800 million), which has lately been attracting some mainstream attention. Unlike bitcoin,its paternity is known: Vitalik Buterin, a 22-year-old Russian-Canadian college dropout.

Jerry Cuomo, IBM's vice president for blockchain technologies, also sees potential applications of purpose-built private blockchains to improve transparency through compliance and auditing, in sharp contrast to bitcoin's reputation as secretive and anonymous. "Bitcoin decided to be anonymous by design," he says. However, "it's perfectly possible to have a blockchain with different levels of access, in which participants don't see what others are doing, but auditors and regulators come in at a higher level and see everything," he explains.

Although much of the experimentation with blockchain technology is occurring in the start-up world, IBM is one of a number of big businesses dipping a toe into this water. Last December, it joined the Linux Foundation to disseminate blockchain technology with open source software (meaning any programmer can work on it, as opposed to proprietary systems like Windows). Large banks such as JPMorgan Chase & Co. and technology companies like Cisco and Intel are collaborating on the initiative. In February, the Tokyo Stock Exchange joined IBM to test blockchain use in recording trades in low-transaction markets, and the Australian Stock Exchange has asked Digital Asset Holdings, a start-up, to develop distributed ledger technology for clearing and settlement. A consortium of 42 global banks is working with a new company called R3 to develop distributed ledger standardized technologies for the financial industry.

Setting standards will be crucial here. It is typical of a new innovation cycle that different companies come up with different ways to do something, leading to a patchwork of technological approaches. Some worry that this could undo years of effort to integrate the financial industry globally. For example, under the Single Euro Payments Area (SEPA) initiative, it took European authorities 12 years from the launch of euro notes and coins in 2002 to integrate technological platforms and business procedures to make cross-border payments among the 35 participating countries as simple and inexpensive as a domestic transfer.

As the ECB's director general of market infrastructure and payments, Marc Bayle oversees SEPA and other continental integration initiatives, such as TARGET2, the euro area cash payment settlement system, and T2S, its equivalent for securities. He follows blockchain developments with interest, but is not impressed by some of the promises, like shorter settlement times. "There's nothing in the current technologies preventing instant settlement. The problem is the structure of markets. If a fund manager in Miami wants to invest in Frankfurt, there will be many legal, operational, tax, and financial considerations to be taken into account, and they might prefer to work with intermediaries providing such expertise in a cross-border context between the United States and the EU/Germany," Bayle says.

Useful in central banks?

He does not rule out the possibility that blockchain or similar distributed ledger technologies might evolve to become useful in central banks, despite their current limitations and the conceptual tension between distributed and central ledgers. While the use of blockchain to replace the ECB's main settlement systems is not really envisioned now, it is being considered in certain niches to foster secondary markets for more exotic securities. "We have to see whether this technology can be useful for us, if it can help lowering costs and having more resilient systems. But also, we have to think how it affects financial intermediation, the role of banks and other market participants, as well as our capacity as regulators," Bayle adds. Some are asking whether bitcoin and other blockchain applications could eventually undermine monetary policy and financial stability—but the consensus is that there is no immediate risk.

It is probably too early to say whether blockchain is "the next Internet" or just an incremental evolution. Silicon Valley is paved with overhyped ideas that later proved unviable and with revolutionary companies that disappeared in a few years, but still in some cases had some impact. Andreessen's Netscape Web browser was acquired by AOL in 1999 for over $4 billion. AOL itself, today a ghost of its lavish previous self, was acquired for about the same amount in 2015 by Verizon. It's not impossible to think that bitcoin or other blockchain technology could implode because of a still unknown design flaw or the work of a, well, disruptive hacker.

The blockchain game is only beginning. As Bill Gates once put it: "We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten." ■

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GUILT by Association

Atish Rex Ghosh and Mahvash Saeed Qureshi

"I have only eight seconds left to talk about capital controls. But that's OK. I don't need more time than that to tell you: they don't work, I wouldn't use them, I wouldn't recommend them . . . "

—Governor Agustín Carstens, Bank of Mexico

(Remarks made at Rethinking Macro Policy III Conference, Washington D.C., April 15, 2015)

Prejudices sway the debate on using capital controls to tame the risks of fickle inflows

CAPITAL controls have a bad name. While their usefulness as a policy tool to manage the risks associated with capital inflows is increasingly acknowledged (IMF, 2012), as the quote above amply demonstrates, they are still viewed with considerable suspicion and misgiving.

An oft-heard argument against capital controls is that they can be evaded and circumvented. Yet no one makes that case when it comes to other policies—for example, that taxes should be abolished because they are subject to evasion. Likewise, even though macroprudential measures have been much in vogue since the global financial crisis, evidence of their effectiveness is no more compelling than it is for capital controls. Moreover, even when countries do impose controls on capital inflows, it is telling that they usually refer to them with euphemisms such as "prudential measures."

Resentment toward outflow controls is understandable: residents may want to invest or safeguard their money abroad, and nonresidents want to be able to repatriate their funds on liquidation of their investments. More puzzling is the almost visceral opposition to emerging market economies' use of controls to manage capital inflows—especially since such measures were integral to advanced economies' management of speculative ("hot money") flows when they pursued their own financial liberalization in the latter half of the 20th century.

So whence this bad name for inflow controls?

The story begins

Capital controls have a long history, with evidence of their use stretching back to ancient times. Even during the late 19th century—the so-called golden era of financial globalization—the leading capital exporters of the day (Britain, France, and Germany) at times restricted foreign lending, albeit mainly for political rather than for economic reasons. Boom-bust cycles in cross-border capital flows were already evident, but there were few restrictions on capital imports—and mostly for strategic purposes or out of concern about "foreign domination." Much of the capital was long term, financing productive investments in infrastructure and utilities in the emerging market economies of the day.

Capital flows, especially from Europe, came to an abrupt halt during World War I, and the cessation of hostilities revealed deep differences among nations. At one extreme was the Soviet Union, which under an authoritarian and state socialist model had imposed tight controls on capital movement by 1919. At the other extreme were the private and central bankers of the leading economies of the day, seeking to reestablish the previous liberal—and for the great banking houses, highly profitable—international monetary order.

Wartime dislocation and deficit financing of reparations and reconstruction costs delayed the removal of restrictions in Europe, but starting with the 1924 Dawes Plan—under which American banks made loans to Germany to help that country pay for reparations—U.S. banks entered a period of massive international lending ($1 billion a year during 1924–29). Half of that was destined for Europe, partly intermediated by British banks, and it spurred a huge economic and financial boom.

But this resurrection of the liberal international order did not last long. When a speculative frenzy in the New York stock market drew capital to the United States, Europe suffered a sudden stop. In July 1931, unable to roll over maturing obligations, Germany declared a moratorium on foreign payments and imposed exchange restrictions, which triggered a run on the pound that forced Britain off the gold standard; numerous other countries followed suit.

What ensued was a decade of almost dizzying capital flight, devaluations, exchange restrictions, and capital controls (nearly all on outflows), protectionism, and imploding global trade—contributing to the global Great Depression. Notably, however, it was mostly the autocratic and authoritarian regimes in Europe—such as Austria, Bulgaria, Germany, Hungary, Portugal, and Romania—that imposed exchange restrictions and outflow controls (democracies preferred tariffs). In Germany, the July 1931 restrictions were extended and broadened by the Nazis, under whom violations were potentially punishable by death; exchange controls thus became thoroughly associated with the excesses of that regime.

By 1935, as the U.S. economy began to emerge from the Great Depression, and against a backdrop of worrisome political developments in Europe, capital began surging to the United States. The resulting speculative boom and swelling of U.S. banks' excess reserves (which threatened to precipitate an inflationary spiral) prompted Federal Reserve Chairman Marriner Eccles to argue that there was "a clear case for adopting measures to deter the growth of foreign capital in our markets."

Yet the United States did *not* impose inflow controls. Extrapolating from the experience of European countries trying to prevent capital outflows, American officials concluded that to be effective, restrictions had to be broad-based, covering both capital and current account (that is, trade-related) transactions. Perhaps more important, the capital outflow restrictions imposed by undemocratic, dictatorial regimes engendered a general distrust and distaste for such measures. Henry Morgenthau, Jr., the U.S. secretary of the treasury, summed up the prevailing attitude when he wrote, "Frankly, I disapprove of exchange control."

Bretton Woods and beyond

The lesson that the main architects of Bretton Woods—John Maynard Keynes and Harry Dexter White—took from the interwar experience was that a regime of unfettered capital flows was fundamentally inconsistent with the macroeconomic management increasingly expected of governments, and with a liberal international trade regime. (Capital outflows required governments to impose import restrictions to safeguard the balance of payments and gold reserves. On the inflow side, hot money flows could lead to speculative excess—in turn requiring monetary tightening that could damage the real economy.) Given the choice, Keynes and White preferred free trade to free capital flows—especially to short-term, speculative flows and flight capital. Hence the emphasis in the IMF's founding charter (the Articles of Agreement) is on current, rather than capital account, convertibility and on the explicit recognition that countries may need to impose capital controls.

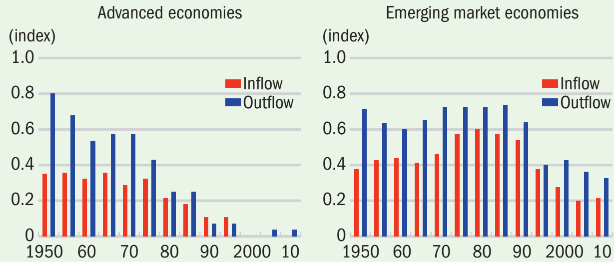
Despite opposition by powerful New York banking interests, which succeeded in watering down key provisions in the IMF's Articles regarding capital controls (Helleiner, 1994), the Bretton Woods era was characterized by widespread use of controls (see chart). As in the interwar period, these were controls mainly on outflows rather than inflows; unlike during that period, however, they were typically not exchange restrictions but specifically capital controls.

Although advanced economies were generally more restrictive than emerging markets in the early Bretton Woods years, by the 1960s, they were liberalizing—partly because the rising trade integration made it difficult to restrict capital transactions without also affecting current transactions. This trend was occasionally interrupted as countries such as Britain and France faced balance of payments pressures or crises. Even the United States imposed outflow restrictions in 1963 and broadened coverage through the decade as its balance of payments worsened.

On the other end, countries that received increasingly large capital flows on speculation that the dollar

Tight control

The use of capital controls was widespread during the Bretton Woods era.



Source: Authors' estimates based on various issues of the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*.

Note: Advanced economies include the G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom, United States). Emerging market economies include the major emerging markets that were IMF members in 1950 (Argentina, Brazil, Chile, Colombia, Ecuador, Egypt, India, Indonesia, Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, South Africa, Thailand, Tunisia, Turkey, Uruguay, Venezuela). Index is average for the respective country groups (for each, 0 = no restrictions and 1 = highly restrictive, based on the authors' judgment).

might be devalued imposed restrictions on short-term inflows. For example, Australia embargoed short-term borrowing and imposed deposit requirements on other borrowing; Japan tightened controls on portfolio inflows and imposed marginal reserve requirements on nonresident deposits; Germany imposed a cash deposit requirement on foreign loans and suspended interest payments on nonresident deposits; and Swiss banks agreed not to pay interest on foreign deposits or invest foreign capital in domestic securities and properties.

By 1974, with the dollar floating, the United States abandoned its outflow controls. Confident that the United States would always be able to attract investors—and that capital flows would force surplus countries to adjust by appreciating their currencies—U.S. policymakers unreservedly embraced a liberal international regime for private capital flows. Reversing the thinking of Keynes and White at Bretton Woods, they also sought to put trade in financial assets on the same footing as trade in goods and services, inserting the phrase "the essential purpose of the international monetary system is to provide a framework that facilitates the exchange of goods, services, *and capital* among countries" when the IMF's Articles were amended in 1978 to legitimize floating exchange rates.

Financial openness in the Anglo-Saxon countries received a further boost in the early 1980s from the free market doctrine of U.S. President Ronald Reagan and U.K. Prime Minister Margaret Thatcher. In continental Europe, a major turning point came with French President François Mitterrand's 1983 anti-inflationary policies and the realization that controls on capital outflows disproportionately penalized middle-class investors less able than the rich to evade them (Abdelal, 2006). Most French outflow controls were thus lifted during 1984–86, with full capital account liberalization by 1990.

This shift in attitude had major repercussions beyond France as three officials from the same Socialist administration went on to key positions in international institutions where they promoted capital account liberalization: Henri Chavranski, at the Organisation for Economic Co-operation and Development, where he broadened the Code of Liberalization to cover all cross-border capital movement, including short-term flows that had originally been excluded; Jacques Delors, at the European Commission, where he championed the Directive abolishing restrictions on capital movement; and Michel Camdessus, at the IMF, where he sought an amendment of the Articles to give the IMF jurisdiction over the capital account and the mandate to liberalize it.

Emerging consensus

As advanced economies began to liberalize during the 1960s and 1970s, the trend in emerging market and developing economies was the opposite—mainly restricting capital outflows to help keep down domestic sovereign borrowing costs. Even some measures that could be classified as inflow controls because they were likely to discourage inward investment (such as minimum investment periods or limits on the pace or amount of repatriation) were intended to prevent a sudden reversal of capital inflows and balance of payments deficits. By the early 1970s, however, inflow restrictions of a "prudential" nature began to appear. These more explicitly aimed to safeguard economic and financial stability from excessive foreign borrowing and inflow-fueled credit booms.

Liberalization in emerging markets started about a decade later than in advanced economies, under a broader predisposition toward free markets and a desire to subject government policies to the discipline of the market (the so-called Washington Consensus). But as some emerging market economies liberalized their domestic financial markets and outflow controls in the late 1970s and early 1980s, they also swept away many of the existing prudential inflow measures. The result was massive inflow-fueled booms, followed by severe economic and financial busts.

This experience helped shape policy responses when inflows to emerging markets resumed in the early 1990s, and led to a marked shift in the preference for longer-term, nondebt flows. Several countries—notably Brazil, Chile, Colombia, Malaysia, and Thailand—experimented with inflow controls in the 1990s. Yet such measures were not viewed favorably, and the general trend during much of the 1990s was toward greater capital account openness, culminating in IMF Managing Director Camdessus's 1995–97 initiative to give the IMF jurisdiction over, and the mandate to liberalize, the capital account.

In the end, the amendment never passed, partly because of opposition from emerging market and developing economies alarmed by the unfolding east Asian crisis and concerned that the IMF would use its new mandate to force premature liberalization on reluctant countries. Regardless, the IMF's policy advice—in contrast to the vision of Keynes and White—had moved away from viewing capital controls as an essential tool to manage destabilizing speculative flows. An IMF Independent Evaluation Office review in 2005 found that the IMF staff had recommended tightening inflow controls in just 2 of 19 instances when emerging market economies experienced large capital inflows.

Despite the general disapproval, several emerging market economies restricted inflows during the mid-2000s surge. In some cases, the attempts backfired. In Thailand, for example, market reaction to the imposition of an unremunerated reserve requirement on foreign inflows in December 2006 was swift and brutal: the stock market plunged 15 percent in less than a day, forcing the central bank to reverse the measure. The perception was that the measure had evoked memories of the currency crisis and imposition of outflow controls during the east Asian crisis about a decade earlier. Financial markets thus sent a clear signal that they did not approve of capital controls—on outflows *or* inflows—making little distinction between the two.

Pure prejudice?

So why do controls on capital *inflows* evoke such apprehension today? The historical record offers certain clues. First, dating at least to the interwar period, when the United States resisted imposing inflow controls, it appears that controls on capital inflows became inextricably linked with outflow controls. The latter were often associated with autocratic regimes, financial repression, and desperate measures to avoid crises in mismanaged economies. Thus, more liberal economies shunned the use of inflow controls as a short-term policy tool out of fear of being viewed as market unfriendly and institutionally weak.

That inflow controls are damned by guilt by association with outflow controls is also evident in most of the other criticism levied against them, which is more pertinent to outflow controls. For instance, the fear that measures, once imposed, will persist and become pervasive is generally true for outflow controls. Governments often resort to heavy-handed, broad-based measures to prevent capital flight, and these are difficult to remove because of pent-up demand. Inflow restrictions, by contrast, are typically taxes or higher reserve requirements, which are easy to reverse and generally *are* removed when the tide turns.

As emerging markets liberalized outflow controls, they also swept away many prudential inflow measures.

Capital controls are also often criticized for being ineffective—but again that applies more to outflow controls, which have at best a weak track record when it comes to preventing a crisis (Edwards, 1999). There is, however, ample evidence that inflow controls shift the composition of capital flows toward less risky and longer-maturity liabilities (Ostry, Ghosh, and Qureshi, 2015), which strengthens the case for their use as prudential instruments.

A second plausible reason is that capital account restrictions are often associated with current account restrictions. This is because, historically, the most common form of capital controls was exchange restrictions that impeded the movement of both goods and capital. As countries embraced greater trade liberalization, in contrast to the Keynes-White thesis, they started to view capital controls as *incompatible* with free trade rather than as *aiding* free trade. Capital account restrictions were thus abolished along with current account restrictions. This trend was further accentuated by the rise of regional trade agreements and bilateral investment treaties (especially those with the United States) that increasingly incorporated clauses prohibiting the adoption of capital controls.

Finally, with the rise of free market ideology, which considers all government intervention inherently bad, capital controls—traditionally viewed as instruments to fine-tune the economy—became discredited more generally. Emerging market economies did not become entirely oblivious to the vagaries of capital flows, but they attempted to rely on more benign-sounding—also viewed as more market-friendly—"macroprudential measures" to tackle the risks to financial stability posed by capital inflows. Yet the effect on capital flows of some of these measures, especially those related to foreign currency transactions, is economically largely indistinguishable from that of more direct capital controls. If the intent is indeed to limit inflows for prudential reasons, then calling such measures macroprudential is merely a rebranding of capital controls, confirming that the negative connotation associated with the word "controls" is the real problem.

Like any other policy instrument, capital controls on inflows have pros and cons—yet, in our view, they seem to be judged not so much on their merits as by pure prejudice that is rooted in history: damned largely because of their association with outflow controls but also because of ideological battles that have little to do with their specific use. Correcting unfounded perceptions is important to ensure that policymakers respond optimally to manage the risks associated with fickle capital flows and do not shy away from using measures simply because of the connotations of their name. ■

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This article is based on the authors' IMF Working Paper, No. 16/25, "What's in a Name? That Which We Call Capital Controls."

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Stagnation **Risk**

Huidan Lin

Ongoing economic problems make the euro area vulnerable to prolonged slow growth

SINCE the onset of the global financial crisis, real output in the euro area has failed to keep up with the population. As a result, output per person has stalled, and euro area output is now only $40,000 a person, about $16,000 below the U.S. level, after adjustment for price differences. This is the largest gap since 1991, when the Economic and Monetary Union began (see Chart 1).

The euro area is not the only place the crisis has left scars. In advanced economies in general, the growth rate of potential output—the maximum amount of goods and services an economy can turn out at full capacity—is expected to increase only slightly and remain below the precrisis level over the next five years (IMF, 2015).

These subdued medium-term prospects are particularly worrisome for the euro area, given the high level of unemployment and public and private debt in some member countries. Moreover, after several years of anemic growth, there is limited room for policy maneuvering. High unemployment and debt and constrained policymaking leave the euro area vulnerable to shocks that could lead to a prolonged period of low economic growth—often dubbed "stagnation."

Lower growth for longer

Although potential output cannot be observed, it can be estimated using a production function—an economic model that calculates an economy's output based on key inputs (labor and capital) and how efficiently they are used. When applied to the euro area, the results suggest that the prospects for larger labor and capital inputs, as well as their more efficient use, remain weak. As a result, the euro area's growth rate at its full capacity is expected to rise only modestly from 0.7 percent during 2008–14 to about 1.1 percent during 2015–20, which is significantly lower than the 1999–2007 average of 1.9 percent.

Moreover, the share of older people in the population is growing, while the share of working-age (15–64) people is shrinking. Because the propensity to join the workforce typically begins to erode after age 50, the average labor force participation rate is declining. At the same time, the capital stock is expected to grow slowly. The capital stock expands when new investment outpaces the rate at which that stock wears out (depreciation). This hasn't been the case in the euro area, where business investment has expanded moderately since 2013, and

Graffiti on the walls of an abandoned hat factory, Porto, Portugal.

reached its 2008 level only in 2015 (see Chart 2). In other words, the euro area continues to suffer from too few workers and too little investment.

The area also suffers from weak productivity growth (that is, output per worker hour). Empirical studies find that slow progress in improving the efficient use of labor and capital in the euro area, particularly in the service sector, bears most of the blame for a widening gap in productivity with the United

Lower potential growth makes it harder to bring down debt.

States. Slower efficiency improvements and lower productivity growth in services in turn reflect delayed adoption and diffusion of information and communications technology. Unlike in the United States, where output per service sector employee has surpassed its precrisis peak, growth in the euro area has been gradual, and productivity remains below its precrisis peak in countries such as Germany and Italy.

Moreover, gains in the efficient use of labor and capital in the United States are likely to slow in the future, which will probably affect other advanced economies (IMF, 2015). In addition, adopting and promoting innovation call for flexibility and adaptability. Without swift action to address structural problems in the euro area—such as difficulties in firing workers or cutting wages and a business environment unfriendly to start-ups—diffusion of new technology may be delayed.

Crisis legacies linger

Some problems, such as high unemployment and high public and private debt, predate the crisis. While the return to modest growth should help address these problems to some extent, without decisive policies to improve growth prospects and reinvigorate investment, unemployment and debt will remain a drag on economic growth. High debt could hold back new investment, and high unemployment could arrest human capital development (by delaying investment in education and health, for example).

The euro area unemployment rate remains high, especially for youth and the long-term jobless, raising the risk of skill erosion and entrenched high unemployment. Despite recent improvement, the unemployment rate remains above 10 percent in the euro area and much higher in some countries—for example, nearly 25 percent in Greece. Among those unemployed in the euro area, more than half have been out of a job for more than 12 months—a proportion of the unemployed ranging from a low of about one-quarter in Finland to nearly three-quarters in Greece. High youth unemployment could also give rise to a "lost generation" of workers.

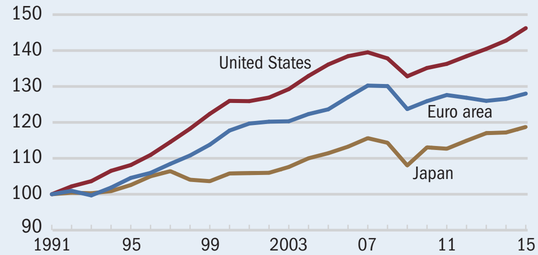
Over the medium term, the so-called natural rate of unemployment—the rate at which demand for and supply of workers are in equilibrium and employment and wage developments do not create inflation pressure—is projected to

Chart 1

Falling behind

The gap between output per person in the euro area and in the United States is the biggest since Europe's Economic and Monetary Union started in 1991.

(real GDP per person, index, 1991 = 100)



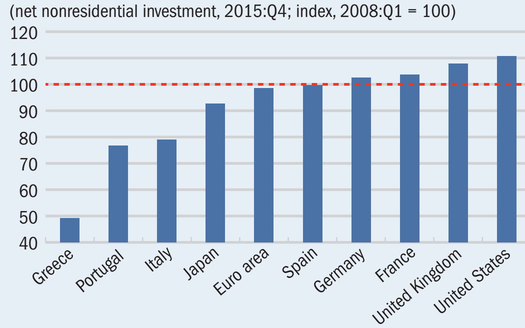
Sources: IMF, *World Economic Outlook*; and author's calculations.
Note: Real GDP is nominal GDP adjusted to account for inflation.

Chart 2

Slow recovery

Nonresidential investment in the euro area did not return to the precrisis level until the end of 2015.

(net nonresidential investment, 2015:Q4; index, 2008:Q1 = 100)



Sources: Eurostat; and author's calculations.

remain higher in Italy than during the crisis and decline very slowly in France. While the natural rate is expected to fall in Spain, it is still expected to remain above 15 percent over the next five years. In one scenario, for the euro area as a whole, based on historical relationships between output and unemployment, it could take about four years to reduce the unemployment rate to the average 2001–07 level without a persistent pickup in growth. It would take even longer for countries with higher unemployment and/or lower growth (such as Greece, Italy, Portugal, and Spain). Effective implementation of ongoing structural reforms could reduce that time by raising potential growth and/or making hiring more responsive to growth.

In addition to high public debt, which makes it difficult for countries to use spending and tax policy to stimulate the economy, private sector debt must be further reduced to enable new investment. Nonfinancial corporate debt-to-equity ratios have fallen in most euro area countries as firms have paid down borrowing. However, the debt reduction in many cases was accompanied by a cut in investment, a sharp increase in saving, and higher unemployment. In earlier episodes of significant corporate debt reduction, IMF research found, two-thirds of the increase in debt during credit booms is, on average, subsequently reduced (IMF, 2013). If debt reduction in the euro area follows a similar path, firms have a long way to go in paying off debt, which could significantly delay a recovery in investment. Households in some euro area countries also suffer from high debt. Although household debt-to-GDP ratios have fallen 10 to 20 percentage points in high-debt countries, they remain significantly above their preboom levels, raising the prospect that debt will continue to inhibit consumer spending for some time.

Insuring against shocks

The baseline projection for the euro area continues to foresee subdued growth and inflation over the medium term. This reflects the impact of high unemployment, heavy debt burdens, and weak balance sheets that suppress demand and of longstanding structural weaknesses—such as a rigid labor market and an overprotected product market—that depress potential growth. Moreover, these factors are intertwined: lower potential growth makes it harder to bring down debt, while high unemployment and low investment hurt capital accumulation and reduce potential growth.

Subdued medium-term prospects leave the euro area susceptible to negative shocks—such as another global slowdown—that could push economies into stagnation because they are hamstrung by their inability to respond through macroeconomic policies (such as cutting taxes and/or increasing spending). Moreover, unaddressed problems from the crisis could amplify these shocks. For instance, markets could reassess the sustainability of countries with high debt; subsequent higher borrowing costs would in turn raise the risk of a debt-deflation spiral.

An economic model used to simulate the effect of shocks on the euro area makes several assumptions: with interest rates at zero, monetary policy cannot do much more to stimulate the economy, and high debt limits the use of fiscal policy beyond the operation of automatic stabilizers such as unemployment benefits.

In this scenario, several developments—such as an increase in geopolitical tension, a political crisis within the European Union, or lowered growth expectations—could trigger a sudden drop in investor confidence. Lower equity prices would follow, along with a 25 percent decrease in investment growth (from about 2 percent to 1.5 percent annually) relative to the baseline projection. This would raise public-debt-to-GDP ratios differently across the euro area, depending on a particular economy's level of debt. Market concerns about debt sustainability would also increase more for indebted countries. Sovereign and corporate interest rates would rise by a full percentage point in Greece, Ireland, Italy, Portugal, and Spain—similar to the increase in the Spanish 10-year sovereign bond yields during late June and July 2012.

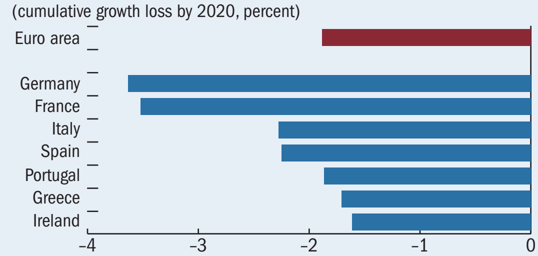
These results highlight the vulnerability of the euro area to lower growth. By 2020 the euro area output level would be nearly 2 percent lower than the baseline projection. As a result, it would take three to four more years (relative to the baseline projection) for economic output to reach its full potential. Borrowing costs would increase, especially in Greece, Ireland, Italy, Portugal, and Spain. The unemployment rate and public-debt-to-GDP ratios would also increase. Inflation rates would be lower, pushing the euro area closer to deflation in the near term (see Chart 3).

Chart 3

Behind the curve

A shock to investment in the euro area makes the economies grow far more slowly than in baseline projections.

(cumulative growth loss by 2020, percent)



Source: Author's estimates.

Note: The results are based on an economic model used to simulate the effect of shocks—such as an increase in geopolitical tension, a political crisis, or lower expectations for growth—on the euro area. The model assumes fewer additional effects from monetary policy and constraints on fiscal policy beyond automatic stabilizers such as unemployment benefits. The baseline is the projected path of economic growth under current conditions.

Reducing vulnerability

Weak medium-term prospects and limited potential to use economic policy to stimulate their economies leave the euro area vulnerable to shocks that could lead to a prolonged period of low growth and low inflation. Insuring against such risks would require a broad and balanced set of policies. Such policies should go beyond the easing of monetary policy that has been the main tool to stimulate euro area economies. Banks, the bulwark of the European financing system, need to be put under stricter supervision and must make faster progress in getting bad loans off their books so that they can lend more. Policymakers must facilitate the restructuring of unhealthy but viable firms to reduce debt and allow them to begin to invest again. Authorities also need to undertake structural reforms to improve productivity and raise potential growth and, when they are able, to increase spending to boost demand, which will promote economic growth. ■

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This article is based on the author's IMF working paper, No. 16/9, "Risks of Stagnation in the Euro Area."

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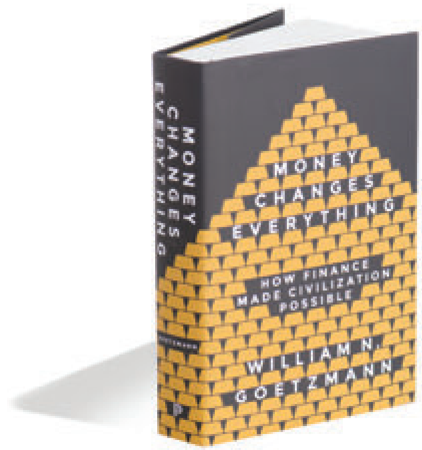
Money, It's a Hit



William N. Goetzmann

Money Changes Everything

How Finance Made Civilization Possible

Princeton University Press, Princeton, New Jersey, 2016, 600 pp., $35.00 (cloth).

A five-year 3.78 percent loan between two businessmen in 1796 may not seem remarkable, but it turns out that's 1796 BCE, and the businessmen lived in the ancient Sumerian city of Ur. William N. Goetzmann's sprawling *Money Changes Everything* spans ancient Mesopotamia to 20th century America, China, and Europe, with excursions through classical Greece and Rome, ancient and imperial China, and centers of financial innovation in medieval and Renaissance Europe.

Goetzmann aims to show the enabling role finance played in the development of human society, culture, and knowledge. His core thesis is that financial innovations through the ages have overridingly had a civilizing influence. Today, when financiers are so often seen as malign influences, such a view may seem contentious, but Goetzmann makes a strong case.

His method of persuasion is to deluge the reader with a wealth of historical detail. The sheer density can overwhelm at times, but he leavens his account with fascinating historical episodes and characters and personal tales of discovery (for example, his role in unearthing the 1372 founding charter of the Honor del Bazacle in Toulouse, France—a corporation that survived into the 20th century).

The book starts in the Mesopotamian city of Uruk, where markings on clay tokens that served as financial records evolved into cuneiform, one of the earliest forms of writing. Early financial innovations influenced humanity's concept of time. A 360-day Sumerian calendar did not correspond in any way to astronomical time, but 360 is a number divisible into many whole numbers, ideal for parceling time into even ratios convenient for financial contracts. (In fact, the 360-day year is still used in calculating modern-day bond interest accruals.)

Conceptions of time in medieval financial contracts may have been a counterpoint to ecclesiastical notions, contributing to a clash between the church and commercial society. Arm's-length financial transactions—and therefore a level of trust in a financial system that could substitute for the personal relationships that prevailed in traditional societies—were critical to increasing population densities.

Finance fostered the capacity for abstract thought.

Finance also fostered the capacity for abstract thought. Most students of finance recognize its role in the development of mathematics and probability theory, but Goetzmann also points out the degree of abstraction needed to understand, for example, the concept of financial claims as a form of nonphysical wealth that had to be tracked through accounting entries.

Such an all-encompassing tableau frequently delivers the jolting shock of familiarity that is one of the great pleasures of reading history. For example, in the Mesopotamian city of Dilmun, ordinary citizens could participate passively in ventures by contributing capital of a bracelet, much as a modern household might buy a share or two of Google stock. Thirteenth century Venetians eagerly bought *prestiti*, the first true government bonds. Such financial inclusion gave people passive, liquid stakes in diversified income-generating activities that could provide a measure of economic security, as well as a stake in the state's economic expansion.

The book also explores how financial markets continually found ways to liquefy apparently illiquid assets. The records of a 7th century Chinese pawnshop reveal that just about anything with resale value could be used as security for a loan; in the 15th century, a speculative futures market developed in the dividends of the Casa di San Giorgio, an entity formed to handle the finances of the city of Genoa.

The development of corporate structures gets an in-depth look, in particular the importance of liquid, limited-liability claims in fostering necessary risk taking and of the development of public finance (the Genoese government was financed through equity-like instruments long before the development of modern-day GDP- and commodity-price-linked bonds). Coinage (for example, in Greece and Rome) and paper money (in China) are shown to be solutions to specific problems at specific times.

Goetzmann does not ignore the dark side of finance, including financial crises in ancient Rome (33 CE) and the more familiar tales of the South Sea and Mississippi bubbles of the 18th century. He attributes the bursting of financial bubbles as frequently to government intervention (for example, the Bubble Act of 1720) as to irrational behavior among overleveraged investors.

A remarkable work of synthesis and scholarship, the book affords a deep perspective to anyone trying to grapple with current problems in the role of finance and financial regulation in a civilized society.

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Robbing Hood

Kenneth Scheve and David Stasavage

Taxing the Rich

A History of Fiscal Fairness in the United States and Europe

Princeton University Press, Princeton, New Jersey, 2016, 288 pp., $29.95 (cloth).

Visiting a depressed Welsh village in the 1930s, the future British King Edward VII famously remarked that "something must be done." Current agonizing over rising inequality has a similarly plaintive feel. Will anything actually be done about it, in the form of much greater tax progressivity? This admirable book gives a clear answer: probably not.

This is just one implication of the authors' big idea: a distinctive theory of what drives strongly progressive taxation. To arrive at it, they first elegantly dispose of two alternative explanations. One is that progressive taxation comes about as an application of ability-to-pay arguments: the rich should pay a higher tax rate because it hurts them less. But the authors show that higher top tax rates have generally not resulted from higher pretax inequality. The other is that increased progressivity has come from extension of suffrage, with the numerically dominant poor voting to extract resources from the outnumbered rich. But the authors conclude that this story doesn't work either.

What remains is their "compensatory" theory—the idea that strongly progressive personal tax systems are most likely to emerge when, in democracies, there is some fundamental state-induced unfairness that cannot be removed by other means and when, in particular, "the deck is stacked in favor of the rich, and the government did the stacking."

Such unfairness can take several forms, such as broad-based commodity taxes needed for revenue reasons. But the most important source, at the center of their argument, is mass mobilization for war. The U.S. Civil War fits the bill, for example, with mass levies and widespread sentiment that this was a "rich man's war and a poor man's fight." Sure enough, both sides introduced a progressive income tax. (That the federal income tax was soon removed is consistent with a further implication of the compensatory view: progressivity fades once the fundamental unfairness subsides.) The same broad narrative fits the two world wars, which the book examines in detail. But the world, and the technology of warfare in particular, has changed. It is the shift toward high-tech warfare rather than fighting with mass armies that makes the authors believe that further bouts of steep progressivity comparable to those of the 20th century are unlikely.

The book is a methodological model. The authors develop their arguments through a broad array of methods: econometrics, laboratory experiments, textual analysis, and historical narratives. Especially worth mentioning is the data set (at the heart of their analytics) they have assembled on top income tax and inheritance tax rates in 20 countries during 1800–2013.

Kenneth Scheve and David Stasavage give us much to think about. There do, for instance, seem to be contradictory cases of mass mobilization that did not give rise to sharply more progressive income or inheritance taxation. One is the era of the French Revolution, when, the authors argue, other progressive taxes were levied instead. Another case may be Israel, where the top income tax rate (relating too to forced loans) increased by about 10 percentage points in the seven years around the 1967 war—but the lowest rate increased by about 12. Conversely, progressivity sometimes increased without mobilization: the authors point to noncombatant democracies during World War I. Systematically identifying and analyzing apparent counterexamples could lead to a better understanding of both the power and possible limits of the compensatory view.

High-tech warfare makes further bouts of steep progressivity unlikely.

Perhaps the most fundamental task the book leaves us, however, is unpacking the underlying notion of state-induced unfairness. The case made for the importance and power of compensatory arguments in public discourse on these issues is wholly compelling. But what raises these arguments to a level at which they make a strong mark on policy? In World War I, for instance, the British officer class had a far higher death rate than did ordinary soldiers from poorer backgrounds. And might it be that the rich are willing to make unusual concessions in wartime because they have more at stake in not losing (the "rich man's war")? Why has resentment at the combination of bailouts and austerity over the past few years not (yet) led to much greater progressivity?

The authors make the force of the compensatory view clear. Judging by the apparent success of the rhetoric during the 2016 U.S. presidential primaries that speaks of a system rigged to favor the rich, the compensatory theory has not gone unnoticed by political strategists.

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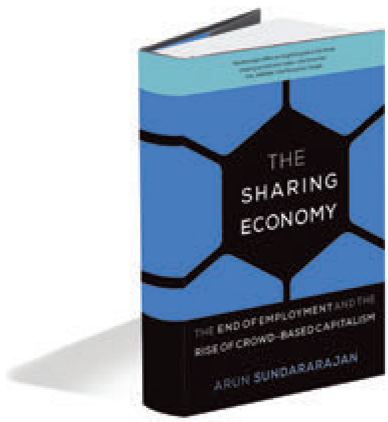
Yours and Mine



Arun Sundararajan

The Sharing Economy

The End of Employment and the Rise of Crowd-Based Capitalism

MIT Press, Cambridge, Massachusetts, 2016, 256 pp., $26.95 (cloth).

The sharing economy is transforming commerce right before our eyes. Thousands are skipping the hassle of standing on a corner in the rain to hail a cab and are simply summoning an Uber or Lyft to whisk them to the airport. Others are selling their knitting on Etsy, letting strangers stay in their home through Airbnb, or having their weeds pulled by a gardener hired via TaskRabbit. Countless "workers" are flocking to Amazon's Mechanical Turk to complete "Human Intelligence Tasks" for just pennies.

Sharing economy expert and New York University Stern School of Business professor Arun Sundararajan tackles the myriad issues these developments have spawned in his path-breaking book.

Sundararajan knows his stuff. He's an award-winning scholar who writes with a clarity that masks the complexity of his subject. Citing his own research and that of many others, he explains how organizations whose main purpose is to create the supply needed to meet consumer demand are driving today's economy. He explores how these developments spell the end of employment as we know it and what society should do to shield the American worker from the worst Darwinian aspects of crowd-based capitalism.

Sundararajan divides the book into two logical parts, cause and effect, with each of eight main chapters addressing a concrete topic. If you're befuddled by the notion of blockchain technology and bitcoin or wonder exactly how a "platform" differs from a "hierarchy," you'll find the answers in this enormously helpful and comprehensive book.

Sundararajan identifies five core characteristics of the sharing economy. It's largely market based, puts underutilized capital to use, relies on crowd-based networks, and blurs the lines not just between the personal and the professional, but also between employment and casual work.

What generated this crowd-based capitalism? Apple's Steve Jobs and the iPod, says Sundararajan. The iPod was the first successful mass-market product developed primarily for consumers, rather than for business or government, and ever since, the most important innovations—think the iPhone, iPad, and Facebook—have centered on the consumer.

Trust is essential to this economy. Our 20th century relatives would have been reluctant to allow strangers to drive their cars or stay in their homes while they were on vacation on a mere promise to pay. Yet thousands of people do these things every day because the digital economy has created a network we can trust.

It has generated positive spillover effects by putting underused assets to work and expanding economic opportunity. Yet it has also spawned negative externalities—your neighbor might not like the comings and goings of your Airbnb "guests"—and weak regulation has certainly helped the sharing economy grow. For example, Airbnb might struggle to survive if its casual hosts had to meet the same fire, safety, and other regulations that govern conventional hotels.

Sundararajan advocates giving regulatory responsibility to the peer-to-peer marketplace and allowing new self-regulatory organizations to fill the gap. But he may be overestimating the private sector's ability to provide sufficient consumer protection. Although keeping government regulators at bay may seem necessary to incubate the sharing economy, consumers may have to suffer through lots of dangerous rides, filthy apartments, and ruined gardens before the "collaborative" market sorts things out.

Trust is essential to the sharing economy.

I would have liked to see additional data on compensation. For example, Sundararajan asserts that workers can generally expect to earn a higher hourly wage through freelance assignments than through traditional channels, citing plumbers in San Francisco as evidence. But this assertion is misleading for two reasons. First, hourly wage data don't include benefits, which typically account for 20 to 30 percent of total compensation. Second, it's one thing to earn a wage premium for an hour or so of freelancing, but it's another to find a year's worth of freelance work at that rate. Many freelancers would love to make the kind of money—about $66,500 a year—San Francisco's plumbers earn.

This point doesn't detract from the high quality of Sundararajan's book, which is essential to understanding how today's crowd-based capitalism beats yesterday's industrial revolution. In Adam Smith's world, the market's invisible hand led supply and demand to intersect. In Sundararajan's world, the invisible hand is still at work. It's just that it now has help from peer-to-peer funding, impersonal platforms, blockchain technology, and those ubiquitous apps.

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