F&D

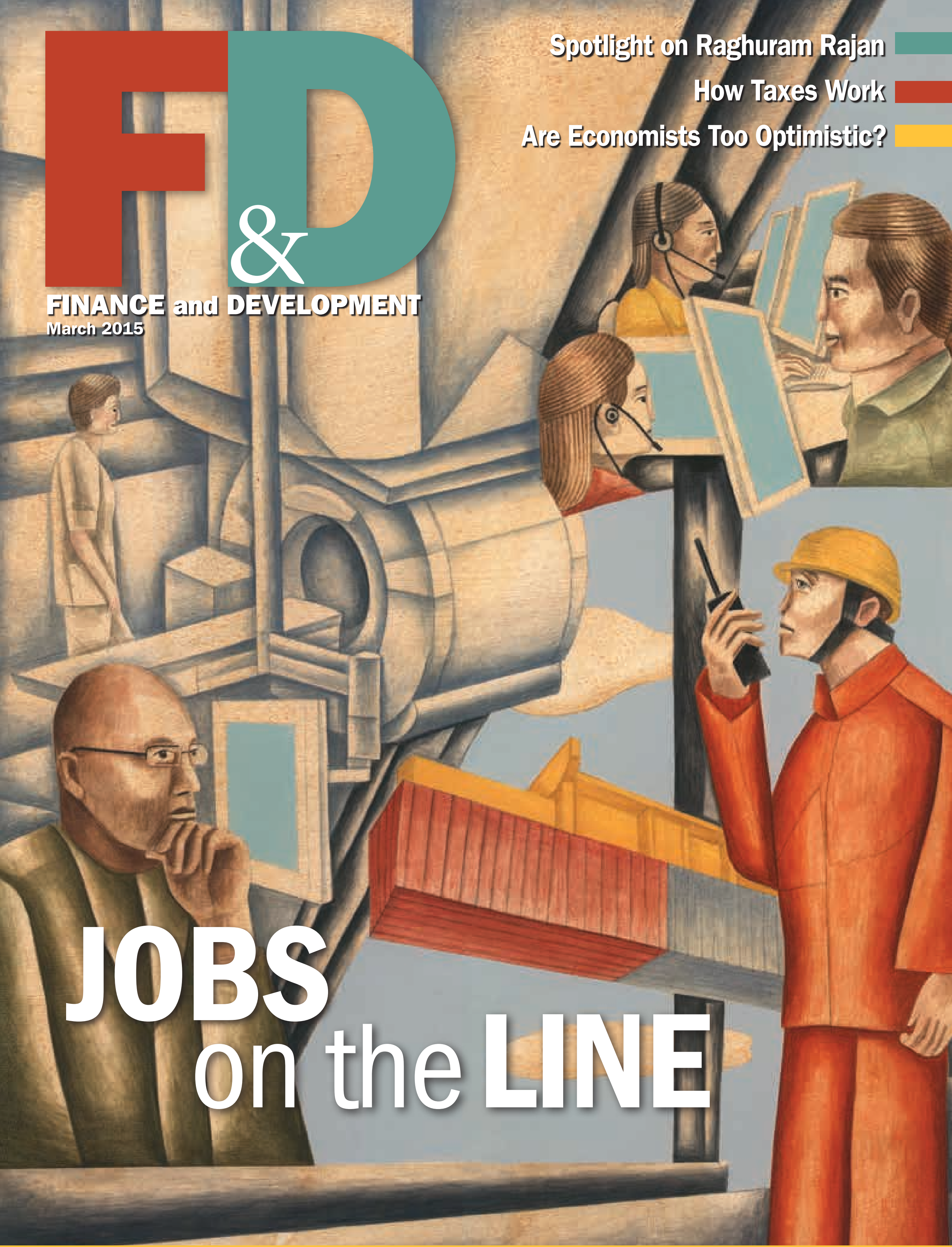
FINANCE and DEVELOPMENT

March 2015

Spotlight on Raghuram Rajan

How Taxes Work

Are Economists Too Optimistic?



JOBS on the LINE

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FEATURES

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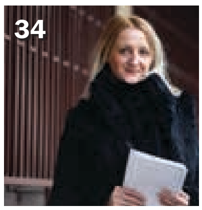

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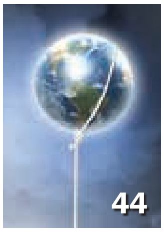
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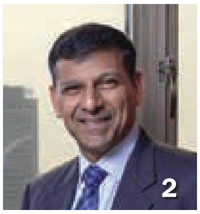
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FROM THE **EDITOR**

Down but Not Out

WE drew our inspiration for this issue's cover from Diego Rivera's *Detroit Industry* murals at the Detroit Institute of Arts. Rivera, a Mexican artist, was commissioned in 1932 to paint the 27-panel visual epic as a tribute to the city's assembly-line workers, scientists, doctors, secretaries, and laborers, many of whom were struggling at the time to keep their jobs amid the devastation of the Great Depression.

Rivera's murals are complex and sparked both controversy and admiration. But something about the mural format—the sweeping canvas, the openness to public inspection—caught on. In the United States, artists supported by government agencies, such as the Works Progress Administration—part of the government's "New Deal" aimed at getting Americans back to work—fanned out to paint hundreds of murals in post offices, government buildings, and other public spaces. Many of these murals celebrated the worker, who had taken a hard shot to the jaw and was down but not out.

Our aim with this cover of *F&D* (painted by American artist Richard Downs) is to pay tribute to the workers of our era—many still struggling to find jobs in the wake of the Great Recession of 2008—and to capture on the magazine's first-ever foldout cover many of the forces shaping the jobs landscape in 2015 and beyond: technology, immigration, trade, and education.

This issue's sweeping view of the future of work in the global economy takes a variety of angles. IMF economist Prakash Loungani leads off with an overview of the global jobs landscape and examines the reasons behind the slow recovery of jobs in the wake of the global financial crisis. Other articles examine the jobs forecast for sub-Saharan Africa (Bruce Edwards); immigration (Çağlar Özden); technology (James Bessen); labor market trends (Ekkehard Ernst); and unemployment in the euro area (Angana Banerji).

To round out the jobs package, ITUC head Sharan Burrow argues strongly for a jobs- and wage-led global recovery, while IMF researchers Florence Jaumotte and Carolina Osorio Buitron probe the relationship between declining trade union membership and inequality.

Elsewhere in this issue, IMF Fiscal Affairs chief Vitor Gaspar tells us in a Straight Talk column what we can learn about fiscal policy and power politics from King Phillip II of Spain, and William White explains the shortcomings of the international monetary system. We also cover the pitfalls of growth forecasts and tax informality.

Finally—a piece not to be missed—Laura Wallace, a former editor-in-chief of *F&D*, profiles Raghuram Rajan, who heads India's central bank at a pivotal time for India and the global economy.

Jeffrey Hayden
Editor-in-Chief

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Finder of Financial Fault Lines

Laura Wallace **profiles Raghuram Rajan, the prescient finance economist now steering India's central bank**

RAGHURAM Rajan, now the head of India's central bank, was the IMF's youngest, and first nonwestern, chief economist.

But when Rajan, then 40, turned up at the IMF's Washington headquarters in 2003, many of his peers thought he had entered the wrong building. The finance professor from the University of Chicago was reporting to work as the new economic counsellor and director of the Research Department. But although he was a highly regarded finance economist, he was filling a job that had always been held by a leading macroeconomist. And to the macroeconomists who populate the IMF, Rajan was an unknown entity.

But the IMF picked Rajan for a reason: it wanted to build up its financial expertise in the wake of the Asian financial crisis of the late 1990s. Anne Krueger, then the IMF's second in command as first deputy managing director, had recently read a book Rajan coauthored with Luigi Zingales, *Saving Capitalism from the Capitalists* (2003), so she called Rajan. When asked if he would be interested in being chief economist, Rajan says he told her: "Well, Anne, I don't know any macroeconomics." To which Krueger joked, "Neither do I." He decided to give it a shot and flew out for an interview.

A decade later, when Rajan reported for his first day as governor of the Reserve Bank of India (RBI), no one doubted that he had entered the right building. It was as if all his academic work since his 1991 doctoral thesis on the dangers of cozy bank-firm relationships had been leading up to this day. Plus his stint at the IMF had given him valuable experience, not only in policymaking but in engaging with advanced economies. As one former colleague puts it, Rajan can stand his ground because "he isn't in awe" of the major industrial powers. In addition, he was one of the few economists to have warned about the risks of financial innovation well before a devastating financial crisis hit the United States in 2007 and then disrupted the global economy.

The demands on, and expectations for, Rajan are high—domestically and globally. He is leading India's central bank as the country tries to regain its economic momentum, and policymakers around the world look to him for guidance on reforming the global financial system. Unsurprisingly, the Chicago professor advocates free markets, but, as he wrote in the 2003 book, he also views the market as "a fragile institution, charting a narrow path between the Scylla of overweening government interference and the Charybdis of too little government support."

That said, it is difficult to put Rajan into a particular economic camp. He likes to call himself "a pragmatist." As he tells *F&D:* "It's not just economics but the political layer that is imposed over it that determines outcomes—and the political layer is much less well understood than the economics. So when you combine the two, basically it's a process of navigation. How do I make sure that sensible economics prevails?"

Saving capitalism

Rajan was born in Bhopal, in central India, in 1963, but spent much of his early youth in Indonesia, Sri Lanka, and Belgium (his father was with the foreign office) before returning to India at age 11. He says his fascination with finance dates to his graduate school days at the Indian Institute of Management in Ahmedabad, which followed a bachelor's in engineering from the Indian Institute of Technology in Delhi. He recalls reading Nobel laureate Robert Merton's theory of rational options pricing (a formula for evaluating options, which are contracts that give a buyer the right to buy or sell a financial asset at a set price in the future). He was struck, he said, not only by the theory's "mathematical elegance" but also by "its usefulness in the real world." In 1991, he received a doctorate in finance at the Massachusetts Institute of Technology's Sloan School of Management and became an assistant professor at the University of Chicago's Booth School of Business—both institutions that attracted the top options-pricing researchers.

For most of the next 12 years, Rajan would make Booth his home, teaching banking and finance while undertaking much-cited work with such colleagues as Doug Diamond and Zingales. In January 2003, Rajan won the American Finance Association's inaugural Fischer Black Prize for the leading finance researcher under 40, for "path-breaking contributions to our knowledge of financial institutions, the workings of the modern corporation, and the causes and consequences of the development of the financial sector across countries."

The prize announcement noted that "even while many economists were extolling the virtues of bank finance, Rajan pointed out in his influential Ph.D. thesis that there might be a downside to cozy bank-firm relationships of the kind that one saw in Japan." It goes on to cite his work with Diamond that "knits together the microtheory of banking with macroeconomic theory," along with shedding more light on "the role banks play in the provision of liquidity, why this function makes banks so prone to systemic crises, and why changes in monetary policy have such a significant effect on bank lending." And it cited his work with Zingales that provided "a new method of pinpointing the effect of institutions on economic growth" and showed that "industries dependent on external finance grow faster in countries that have a more developed financial system," thereby helping to "debunk the belief that a country's financial system is a sideshow with little effect on its economic growth."

> "It's a process of navigation. How do I make sure that sensible economics prevails?"

Rajan and Zingales built on these findings in their 2003 book, which argues that many countries have underdeveloped financial systems because of the political opposition of the elite, who fear losing their position if access to finance becomes freer and they face competition. Rajan believes that the book is just as relevant today given the post–financial crisis swing into what he considers "overtaxed and overregulated economies," when what is really needed is "to keep our economies flexible to find the solutions."

Rajan would go on to win numerous other awards, including India's Infosys Prize for Social Sciences-Economics in 2011 and the Deutsche Bank Prize in Financial Economics in 2013. At the Frankfurt award ceremony, Diamond, one of the presenters, said Rajan's work "always is done with a clear view of how the research topics and the results can help make the world a better place." He also called Rajan "incredibly fair" and "the voice of reason in our faculty"—noting that at the University of Chicago, and especially at Booth, "he has hardly an enemy despite taking strong positions on controversial views."

From academia to the IMF

In August 2003, Rajan took over as IMF chief economist from Harvard's well-known Kenneth Rogoff. Rajan admits that "it was an interesting transition." He recalls, with a smile, that "the reaction was—after Ken Rogoff, this gigantic macroeconomist—'Who's this guy?' You know, 'Rajan who?'" He says that "one of the first things that I had to establish was that I knew some macroeconomics," and he worked hard to keep—and attract—a good team. "When people started wanting to come in [to the Research Department], I realized that we had turned the corner."

With the global economy relatively calm—the turmoil finally subsiding from an Argentine default at the end of 2001—Rajan was able to step up financial sector research and explore how to integrate financial sector issues into the IMF's economic country models. This might have seemed doable given that the IMF already had models for handling fiscal and monetary issues. But creating a model for financial issues turned out to be much tougher. As a result, while Rajan is credited with laying the groundwork, the issue is still very much a work in progress, not just for IMF researchers but for hundreds of academics.

The big difference is that a decade ago creating such a model lacked urgency, whereas now it is a high priority. As Rajan wrote in a Project Syndicate column in August 2013: "In the run-up to the 2008 financial crisis, macroeconomists tended to assume away the financial sector in their models of advanced economies. With no significant financial crisis since the Great Depression, it was convenient to take for granted that the financial plumbing worked in the background. Models, thus simplified, suggested policies that seemed to work—that is, until the plumbing backed up. And the plumbing malfunctioned because herd behavior—shaped by policies in ways that we are only now coming to understand—overwhelmed it."

IMF Chief Economist Olivier Blanchard says that "we've made a lot of progress in how we look at the financial system, at isolating some kinds of risks, and getting the data that allow us to do more work in real time. But it's not as if we have a complete understanding of the issues, and the integration of the two is progressing but it's not there yet." The fundamental problem, Blanchard says, is that "we're not sure what financial stability means." He also worries that a macrofinancial model could remain elusive—that "it's going to be a cat-and-mouse game forever"—because "maybe if we identify the risks today, maybe in two years it's a different set of risks in a different part" of the financial system.

What makes Rajan a key figure in these financial debates is what some colleagues say is his ability to see the forest for the trees. Stijn Claessens, an assistant director of the IMF's Research Department, says Rajan is one of "a small set of people who academically as well as professionally have the skills to be able to talk about macroeconomics and know finance in the sense of the institutional details, plus see the links and how they interface and work together." Says Chicago's Anil Kashyap (also a Rajan coauthor): "The arguments about setting interest rates are usually pretty simple. In contrast, the evolving debate over how to deliver financial stability is much more nuanced, in part because we do not have a standard workhorse model to rely upon. Raghu has the great advantage of having a clear vision of the financial system and what does well and where it poses challenges. I think this is why he has been at the forefront of many of the financial stability debates."

Showdown at Jackson Hole

Not that Rajan's vision is always well received. In August 2005, he came in for heavy criticism following what turned out to be a prescient speech about the dangers lurking in the financial system. He was invited to speak on how the financial system had evolved under Alan Greenspan (the soon-to-retire chairman of the Federal Reserve Board) at the annual symposium of central bankers and other high-powered economists in Jackson Hole, Wyoming. He says he had expected to find that the dramatic expansion in financial markets had reduced the risks for banks, but instead, the figures that his staff assembled showed the opposite.

With Greenspan in the audience, Rajan delivered a talk based on his paper "Has Financial Development Made the World Riskier?" He warned that recent financial innovations (such as credit default swaps, which act as insurance against bond defaults) could create "a greater (albeit still small) probability of a catastrophic meltdown." This message did not go down well in some quarters. Former U.S. Treasury Secretary Lawrence Summers called Rajan's premise "slightly Luddite" and "largely misguided." Federal Reserve Board Vice Chairman Donald Kohn suggested that Rajan was nostalgic for the old days of bank-dominated systems—which Rajan strongly denied.

Rajan has written that he left Wyoming with some unease—not because of the criticism, but because "the critics seemed to be ignoring what was going on before their eyes" (see box). Several years later, his warning came true: the U.S. market for subprime mortgage securities began to implode in 2007, leading to the global financial crisis.

Of course, Rajan's time at the IMF was about far more than Jackson Hole. He says it was a tremendous on-the-job learning experience during which he sharpened his macroeconomic skills. He also immersed himself in the art of global economic policymaking—for example, leading a team to try to help some major economies reduce their huge (and unprecedented) balance of payments imbalances. It was also his first stint as a manager—a hundred people worked for him in the Research Department. But that number must now seem incredibly small, as he oversees 17,000 staffers at the RBI.

Former IMF colleagues say that what is so remarkable about Rajan is his humility, integrity, and intellectual curi-

Not ready for the red flags

Was there anything Raghuram Rajan could have done to ensure that his message was heard at Jackson Hole? He thinks not, for two reasons.

First, economic times were good, so it was difficult to persuade people to take steps that might slow growth to address a low-probability risk. After all, the Federal Reserve had just dealt with the dot-com crisis by pumping liquidity into the market, and there was a widely held view that "if another crisis erupted, it could be dealt with in the same way—even though the problem this time was bank credit, not a loss of market value," he tells *F&D*.

Second, the remarks were delivered at a fete honoring Federal Reserve Chairman Alan Greenspan, who held a widely shared belief "that the key players in the financial system had no incentive to go off track"—and trying to convince the audience otherwise was a tall order. "These are smart guys. They're from Goldman Sachs. They're from JPMorgan. They're paid a ton of money. They're the smartest kids in the room. Why would they blow up their business? And who are we, you know, low-paid regulators, thinking that we know more about their business than they do? And the answer is no, we don't know more about their business than they do, but we have different incentives. They're locked into this competitive frenzy. And we're the guys who can stop them."

osity and rigor. Jonathan Ostry, a deputy director of the Research Department, says that Rajan "will let people go forward with their ideas, giving them virtually all of the credit, even when he had significant input." He was also "willing to take controversial positions both internally and, within the limits of his position, externally, to an extent that, frankly, I'd never seen before."

In December 2006, with his IMF contract done, Rajan returned to Chicago, where he had the time and academic freedom to delve further into the repercussions of financial innovation. The result was *Fault Lines*, which won the Financial Times and Goldman Sachs prize for best business book in 2010. Rajan cautions against making the financial sector ("bankers gone mad") the scapegoat for the crisis, because the blame rests with complex and wide-ranging fault lines that include

• domestic political pressures (arising from income inequality) that create easy credit;

• export-led growth strategies (as in China, Germany, and Japan) that rely on indebted U.S. consumers; and

• greater financial risk-taking fed by a belief that governments will save the day.

Back to India

Rajan may have made his career in the United States, but he never forgot India, making it a frequent topic of speeches and research. He says that he was drawn to economics because it offered a way to help India enter the "pantheon of nations." In 2008 he got the chance to help shape India's financial sector when he chaired a high-level government committee on financial sector reforms. The committee report, "A Hundred Small Steps," suggested that the RBI should target a single objective—low and stable inflation—rather than juggling multiple mandates (such as inflation, the exchange rate, and capital flows).

It also proposed that India promote the availability of financial services—including credit, saving, and insurance products—to a wider number of people (especially in rural areas, where most people lack access to formal sources of credit and insurance); reduce the heavy government presence in the banking system; and step up foreign participation in its financial markets.

In September 2013, he took the helm at the RBI, after five years of advising Prime Minister Manmohan Singh from Chicago and a year as chief economic advisor in the Finance Ministry in Mumbai. At that point, India's markets were in turmoil because of rising inflation, large fiscal and current account deficits, and a slowdown in growth. But he moved quickly to stabilize the rupee, reduce inflation sharply, and build up foreign exchange reserves—earning him the sobriquet "rock star" in the local media. He also wasted no time in laying the groundwork for adopting an inflation target and is pursuing many other reforms suggested in "A Hundred Small Steps."

Rajan's hope is that the RBI can help India create jobs by ensuring macroeconomic stability. In the process, World Bank Chief Economist Kaushik Basu hopes that Rajan can encourage the RBI to be "a bit more experimental." Basu, who preceded Rajan as India's chief economic advisor, says emerging market economies need not rely so heavily on the monetary practices that worked well in the major industrial countries, although the risks of central banking efforts to guide an economy are such that "most central banks play it tame by going by those rules." Basu says central banks might say, "This policy worked very well in a rich country but may not work well in my country, and I'm going to try a slightly different intervention in the interest rates," playing around "with new policies to see if they work. Raghu is in a position to do that given his background."

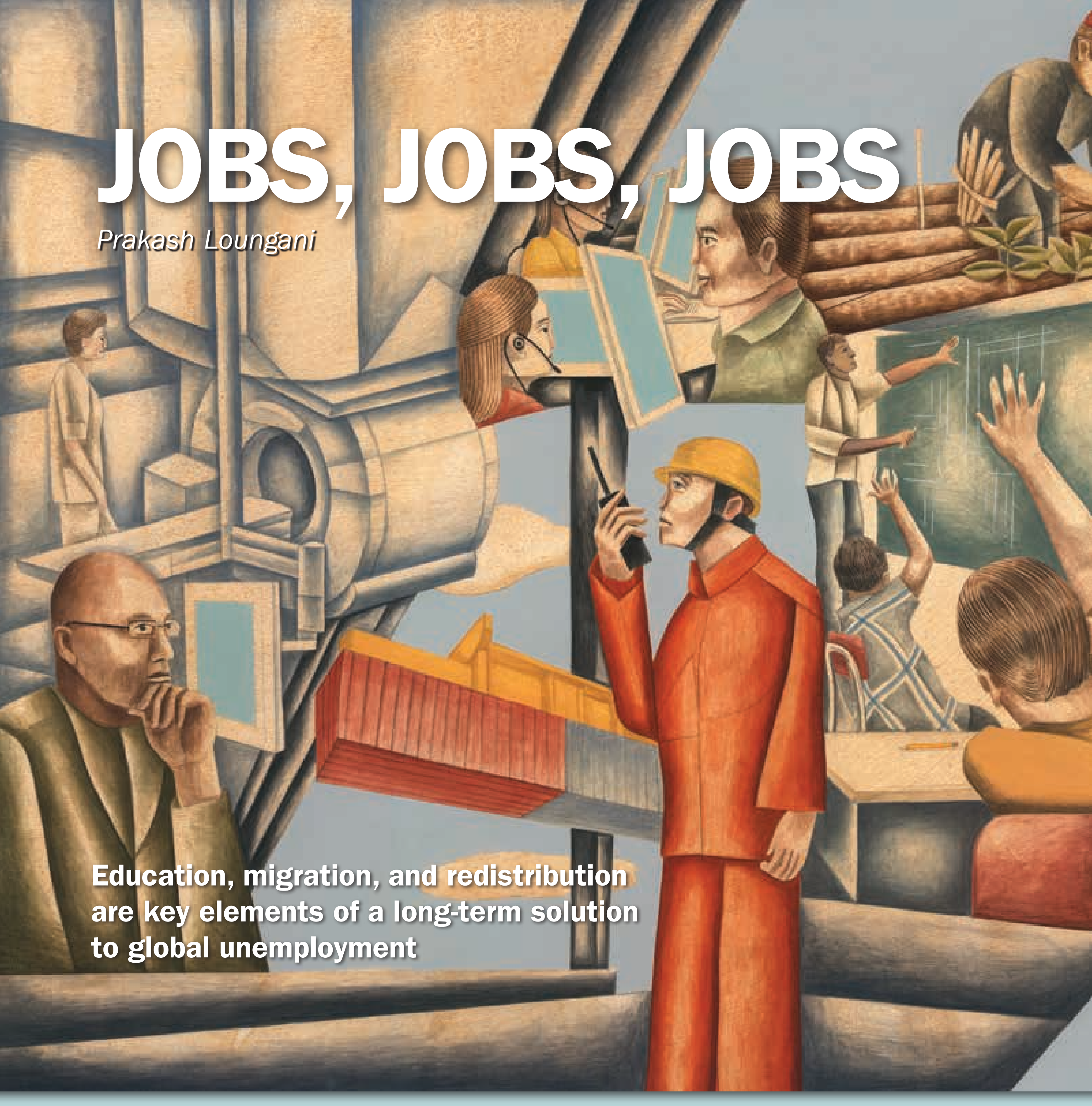
Rajan may have made his career in the United States, but he never forgot India.

In global financial circles, Rajan made headlines early in 2014, when he told Bloomberg TV India that "international monetary cooperation has broken down"—a reference to the Federal Reserve's indication that it was contemplating withdrawing some of the stimulus it had employed to reinvigorate the U.S. economy. Later, he publicly scolded the major central banks for focusing solely on what was good for their own economies without taking into account the financial turmoil their low-interest-rate policies were unleashing in emerging market economies. These economies had to cope with massive inflows of funds seeking higher yields. And he is calling for central banks in countries that are the source of those funds "to reinterpret their mandates to consider the medium-term effects of recipient countries' policy responses, such as sustained exchange rate intervention."

As Rajan put it in a June 2013 lecture at the Bank for International Settlements: "In a world integrated by massive capital flows, monetary policy in large countries serves as a common accelerator pedal for the globe. One's car might languish in a deep ditch even when the accelerator pedal is fully pressed down, but the rest of the world might be pushed way beyond the speed limit. If there is little way for countries across the globe to avoid the spillover effects of unconventional policies emanating from the large central banks, should the large central banks internalize these spillovers? How? And will it be politically possible?"

Rajan now has an opportunity afforded few academics—to put in practice what he has long preached. The RBI (as well as central banks in other emerging market economies) may not be the most powerful car on the block, but for Rajan, this chance to be an exemplary driver is the opportunity of a lifetime! ■

Laura Wallace is a communications consultant and former editor-in-chief of F&D.



JOBS, JOBS, JOBS

Prakash Loungani

Education, migration, and redistribution are key elements of a long-term solution to global unemployment

OVER 200 million people across the globe are unemployed today.

Tackling this high unemployment, particularly among the young, is a pressing challenge, as discussed by me in “Seven Lean Years” and by Angana Banerji in “Jobless in Europe” both in this issue of *F&D*. But the challenge extends beyond the near term. Over the coming decade, an estimated 600 million jobs will be needed in advanced and emerging market economies for those currently unemployed and those expected to enter the global labor force.

The fear that there will not be enough jobs to go around is perennial. Take for example this prediction from the U.S. magazine *The Atlantic* on the threat to the United States from cheap foreign labor:

> *. . . the time is not distant when everything that machinery and cheap labor can produce will crowd every market. The millions of China, with the millions of India, will offer the cup of cheap machine labor, filled to the brim, to our lips, and force us to drink it to the dregs, if we do not learn wisdom.*

in this issue, tackles this worry head on. He concludes that "despite fears of widespread technological unemployment," the evidence shows that "workers are being displaced to jobs requiring new skills rather than being replaced entirely." The new skills in demand are people skills and those that complement the new technology, which as of now cannot be easily programmed into robots.

The benefits of increased globalization of labor markets and technological change have not accrued equally within advanced economies over the past two decades. There is a striking hollowing out of medium-skill and middle-income jobs, many of which were lost from the manufacturing sector. These trends, and the resulting increase in inequality, are documented in the article by Ekkehard Ernst in this issue ("The Shrinking Middle"). Ernst also looks at how these trends will play out over the coming decades in both advanced economies and emerging markets, concluding that there will be "better working conditions and higher salaries, but probably only for those who possess the right skills."

Three solutions are commonly advocated for the challenge of finding jobs for all: education, migration, and redistribution. None is easy or offers a full solution, and the last two usually lack political support.

Education would allow the gains from technology to accrue to a broader base of the population. "Toil and Technology" provides concrete examples of the actions that firms, trade associations, and government can take to foster the new skills needed to "participate in the brave new world" of the digital economy. But education and skills cannot be acquired overnight, and people displaced by trade and technology will need some help to get by in the interim.

In principle, migration could function as an important solution to the challenge of global job creation. High-skilled workers from China and India could alleviate shortages in the United States. Nurses from other Asian countries could help take care of Japan's aging population. As discussed by Çağlar Özden in his article in this issue ("A Long Commute"), migration is still low compared with what is desirable from an economic standpoint. But despite the considerable benefits that immigrants bring to destination countries—documented in extensive detail in Özden's article—opposition to migration is strong and mounting.

Helping those who could lose out—or not gain as much—from migration, as well as those displaced by trade and technology, calls for a policy response that includes increased redistribution from those who do gain. And for displaced workers near the end of their working lives, redistribution may be a more practical solution than acquisition of new skills. But despite concern about increased inequality, redistribution does not appear to be gaining much political traction.

In short, the global labor market is far from truly global. The world may be flat as far as the movement of capital is concerned but it is full of barriers to the mobility of labor. ■

Prakash Loungani is an Advisor in the IMF's Research Department and heads the IMF's Jobs and Growth project.

The article appeared in 1879, which shows that even though the terms offshoring and outsourcing may be new, the anxiety that underlies them—the fear of trade—is old. Despite the threat from cheap labor in the 1870s—and in every decade since—the average income in the United States has grown steadily and is now about $50,000 a year, a huge multiple of what the average Chinese or Indian makes.

Along with fear of cheap foreign labor, the concern that technology is a job killer is not new. Today's headlines proclaim that within a decade "one in three jobs will be replaced by software or robots." "Toil and Technology," by Jim Bessen

Seven Lean Years

The global economy is in slow recovery from peak unemployment thanks to governments' vigorous policy responses

Prakash Loungani

THE onset of the Great Recession in 2007 led to job losses around the world not seen since the Great Depression of the 1930s. By 2010, 30 million more people had joined the ranks of the unemployed. About three-quarters of this increase took place in high-income economies.

Emerging markets and low-income countries, which in the past have borne the brunt of global recessions, were more resilient this time. In emerging markets the unemployment rate barely budged—an increase of only 0.25 percentage point by 2010—and in low-income economies it actually declined.

Since 2010, the global economy has mounted a slow and uneven recovery. The global unemployment rate has now returned to its 2007 pre–Great Recession level of about 5½ percent. In the high-income group—member countries of the Organisation for Economic Co-operation and Development (OECD)—it shot up to 8½ percent in 2010 and has slowly inched back to 7½ percent (see Chart 1, left panel). Although employment grew at a fast pace in the United States over the past year, it remained relatively flat in the euro area, the region largely responsible for the anemic recovery in global employment (see Chart 1, right panel).

"Strucs vs. cycs"

Over the course of 2009–11, there were "two gangs of economists warring over the causes of high unemployment," as an article in *Slate* noted at the time.

One camp, the "cycs," argued that cyclical factors were the predominant, if not the only, cause. Their ringleader, U.S. Nobel Prize winner Paul Krugman, wrote: "Why is unemployment remaining high? Because growth is weak—period, full stop, end of story." To this camp, the reason for weak growth was insufficient demand, which the government should try to stimulate through easy monetary policy and fiscal stimulus.

The "strucs," on the other hand, argued that unemployment was high not just because growth was weak but because of a host of structural problems in the labor market, reflected in more unfilled jobs even as unemployment was increasing. This mismatch was noted in a speech by Narayana Kocherlakota, president of the Federal Reserve Bank of Minneapolis:

"Firms have jobs, but can't find appropriate workers. The workers want to work, but can't find appropriate jobs. There are many possible sources of mismatch—geography, skills, demography . . .. It is hard to see how the Fed can do much to solve this problem . . . the Fed does not have the means to transform construction workers into manufacturing workers."

Who won the fight?

Four years later, which camp turned out to be right? The preponderance of the evidence points to a cyclical explanation, as even Kocherlakota now acknowledges.

Various measures of mismatch have returned to normal levels. For example, in the United States, the mismatch between job openings and unemployment increased in the early years of the Great Recession, reflecting higher vacancies in some segments of the economy and increased unemployment in others, but has since declined.

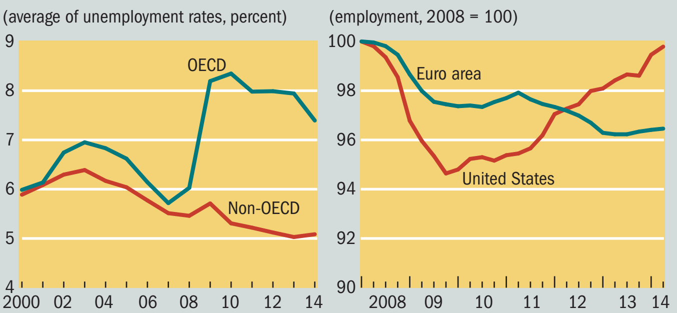
Another measure of mismatch is the unemployment rate dispersion across U.S. states. This also increased in 2009–10, suggesting that unemployment in some states was far worse than in others. However, this dispersion has since subsided to precrisis levels (see Chart 2). Whether labor force participation will recover remains to be seen.

For other countries, the evidence of mismatch is less clear cut, but the consensus is that cyclical factors are the predominant cause of high unemployment.

Chart 1

Stop and go

There has been a two-speed recovery in global labor markets.



Source: IMF-EIU-OCP Policy Center, International Jobs Report, January 2015.

The evidence also belies the prediction by the structuralist camp that a return to growth alone would not lower unemployment. The link between jobs and growth remained robust over the course of the Great Recession, not just in OECD countries but elsewhere as well (see Chart 3, left panel). The chart shows the strength of the link between employment and growth for four groups of economies, which remained essentially unaltered during the Great Recession.

The experience of individual countries confirms this broad picture. For example, Spain's unemployment dynamics following the Great Recession could have been predicted by the historical relationship between unemployment and growth (see Chart 3, right panel).

Did governments help?

To their credit, most countries mounted a strong policy response in 2008–09 to try to minimize the impact of the crisis on unemployment. Initially, governments moved quickly to use monetary policy to stimulate the demand for products and services—and therefore workers—by lowering official ("policy") interest rates and, in many cases, bailed out financial institutions. Governments also provided fiscal stimulus, some of it coordinated through the Group of 20 advanced and emerging market economies (G20).

Some countries, such as Germany, also tried to spread the pain of lower demand through work sharing rather than layoffs. The United States and some other countries extended the duration of unemployment benefits. This lowered the social costs of unemployment, apparently without discouraging the unemployed from looking for work.

As unemployment rose, those in the cyclical camp believe, these steps forestalled the kinds of economic consequence the global economy suffered during the Great Depression of the 1930s. It is easy to write off such fears as overblown given what we know today, but that was not so at the time. Governments deserve credit for this prompt and vigorous initial policy response.

A turning point

Around mid-2010, some governments became concerned about the buildup in public debt—attributable in large part to the decline in tax revenues because of the recession and financial sector bailouts—and started to reverse course on their fiscal policy (see box).

While countries tightened fiscal policy, they further eased monetary policy. In the United States, Charles Evans, president of the Federal Reserve Bank of Chicago, made a strong case in September 2011 for further easing:

"Imagine that inflation was running at 5 percent against our inflation objective of 2 percent. . . . any central banker worth their salt . . . would be acting as if their hair was on fire. We should be similarly energized about improving conditions in the labor market. . . . if 5 percent inflation would have our hair on fire, so should 9 percent unemployment."

His push led to the so-called Evans Rule, an explicit commitment in 2012 by the Federal Reserve to keep its policy interest rates essentially at zero "as long as the unemployment rate remains above 6½ percent" and inflation targets are met. That same year, Mario Draghi, president of the European Central Bank (ECB), pledged to do "whatever it takes" to save the euro.

What's next?

Unemployment is still high in many countries in Europe—alarmingly so in Greece and Spain—and forecasts for 2015 do not project much improvement (see Chart 4, left panel). Long-term unemployment is still high—even in the United Kingdom and the United States, where the overall unemployment rate has fallen—and youth unemployment is high in Greece, Italy, Portugal, and Spain (see Chart 4, right panel).

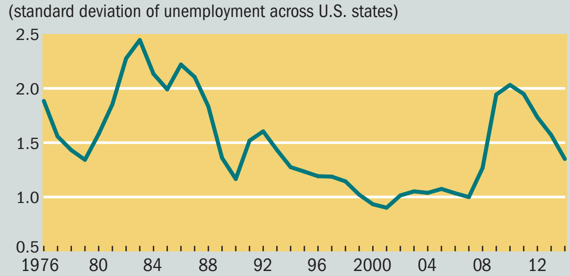
Evidence from an IMF study suggests that 50 to 70 percent of the increase in youth unemployment stems from feeble growth. The study, therefore, recommends that "the policy priority should be to boost aggregate demand in the euro area, especially through a strong accommodative monetary policy stance that complements the implementation of

Chart 2

Leveling out

The variation of unemployment rates among U.S. states has subsided to precrisis levels.

(standard deviation of unemployment across U.S. states)



Source: Bureau of Labor Statistics.

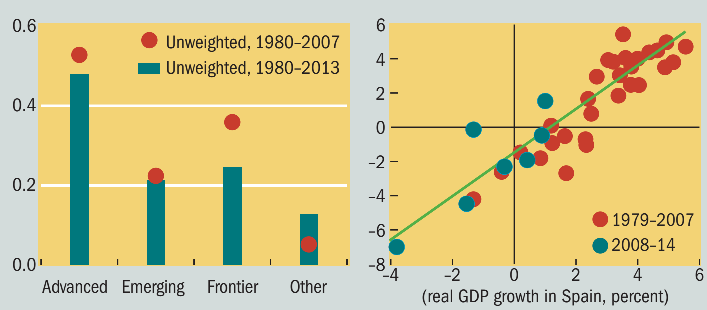
Chart 3

A strong connection

The jobs-growth link survived the Great Recession: when growth rose so did employment.

(increase in employment attributable to a 1 percentage point increase in growth, percentage points)

(employment growth in Spain, percent)



Sources: See Ball and others (2013) for details on country and time coverage; and Furceri and Loungani (2014).
Note: In the left panel, the circles show the strength of the jobs-growth link over 1980 to 2007 and the bars show that the link remained strong through the Great Recession.

needed structural reforms." (See "Jobless in Europe" in this issue of *F&D.*)

Encouragingly, the ECB is doing much to support demand: in January 2015, it announced significant further easing of monetary policy. Regarding fiscal policy, steps have been taken to boost growth through public infrastructure projects—cross-border investment in transportation, communications, and energy networks.

Increasingly, these measures to boost demand are accompanied by structural reforms to address economies' weaknesses that predate the Great Recession. In addition to steps toward a banking union to foster the flow of credit, reforms at the country level include opening up product and services markets such as for energy, streamlining regulatory burdens, and deepening capital markets.

Countries are also trying to tackle the problem of dual labor markets, in which some workers have permanent contracts with strong employment protection while others, often young people, are hired on temporary contracts and receive little protection or training. Italy for instance, has passed a law that authorizes a new kind of labor contract with employment protection that increases gradually with tenure, which should motivate employers to take a chance on younger workers.

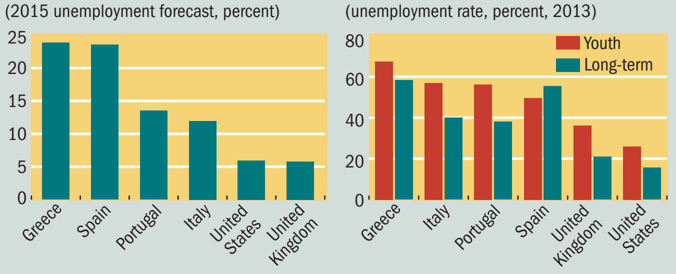
Evidence from OECD economies suggests that the response of long-term unemployment to growth is much more muted than that of unemployment overall. Therefore, more targeted policies may be needed to help the long-term unemployed. Katz and others (2014) recommend that governments focus on providing unemployment benefits and training to the long-term unemployed in the depths of a downturn but move toward more aggressive use of active labor market policies such as job search assistance as the labor market tightens in a recovery. People unemployed for a long time may also have trouble keeping a job when they do find one, and there is some evidence that financial incentives can help them do so.

The costs of unemployment are high. Many people who are laid off experience persistent loss in income—even after they eventually find a job—and health problems, their families suffer, and social cohesion breaks down. During the Great Recession, unemployment—and the associated costs—would have been much worse without quick government deployment of monetary and fiscal policies to contain the rise. Bringing down high unemployment in the euro area calls for continued support from monetary policy and fiscal policy that is as growth friendly as possible. ■

Chart 4

Bad news all round

Forecast, youth, and long-term unemployment all remain alarmingly high.



Source: IMF, *World Economic Outlook Update*, January 2015.
Note: Long-term unemployment is defined as lasting one year or longer.

The IMF and fiscal consolidation

The 2010 reversal of fiscal policy, with policymakers hitting the brakes on crisis-related spending, received the IMF's blessing—but not because it believed in "expansionary austerity," which considers fiscal consolidation good for growth under some circumstances. To the contrary, the IMF's own research showed that

- fiscal consolidation would be contractionary—that is, it would lower output and raise unemployment; the IMF, in addition, investigated whether its staff was using the right "fiscal multipliers" (that is, whether this contractionary impact of fiscal consolidation was being measured correctly);
- in the past, fiscal consolidation worsened inequality in both advanced and emerging market economies (see "Painful Medicine," in the September 2011 *F&D*); and
- during previous global recoveries, fiscal and monetary policies had pushed in the same direction to support recovery.

In light of these findings, the IMF cautioned against cutting back on fiscal stimulus too soon, which risked derailing the budding recovery, and recommended only moderate and measured withdrawal barring acute financing constraints. The design of IMF programs took into account how consolidation would affect the poor and Managing Director Christine Lagarde defended the decision to move to measured consolidation as "the right call to make," given the growth forecasts available in 2010.

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A Matter of **SIZE**

Sub-Saharan African businesses must produce more jobs to fulfill the region's promise

Bruce Edwards

GIVEN the speed at which many economies in sub-Saharan Africa have been growing in recent years, one could easily conjure up images of "Help Wanted" signs at nearly every firm. But even at more than 5 percent a year, the region's growth has fallen short of providing enough paying jobs, especially outside agriculture.

The labor force in sub-Saharan Africa is around 450 million, with fewer than 40 million on formal payrolls. But it's not that the rest of the people don't work; in fact, unemployment in the region is relatively low. The problem is transforming the job market from one that has kept people working in small informal jobs and on farms—often for little or no pay—to one that offers more opportunities in the manufacturing and service sectors, where there is more income security. The International Labour Organization (ILO) says that 76.6 percent of workers in sub-Saharan Africa are in vulnerable forms of employment.

And with the highest fertility rate in the world, sub-Saharan Africa needs businesses to provide many more jobs if the region is to absorb the rapidly expanding workforce. The United Nations says the working-age population in sub-Saharan Africa will more than double by 2050.

Potential boon

Although the growing population puts pressure on the job market, it also could be a boon to the region. In sub-Saharan Africa, the 32 percent share of the population ages 10 to 24 is the world's highest—which the ILO says offers a "demographic dividend" because the productive capacity of the working-age population will surge with the additional labor supply.

An IMF study, "Africa's Got Work to Do: Employment Prospects in the New Century," says that if sub-Saharan African economies can attract more investment in labor-intensive production from east Asia, the region could indeed experience a large jump in manufacturing output for exports. But today fewer than 10 percent of the region's workers have industry jobs.

A recent study by the Center for Global Development (CGD) found that firms from 41 sub-Saharan African countries are 24 percent smaller than those elsewhere in the world. The study was based on data from 41,000 formal firms in 119 countries and compared their productivity over time.

The study, "Stunted Growth: Why Don't African Firms Create More Jobs?" suggests several possibilities why the region's businesses are smaller, including reluctance by family-owned businesses to hire non–family employees and limited market share potential in some sectors. But overall, the study says, the region's poor business environment is what keeps firms from growing.

And while such factors as limited access to finance and reliable electricity supply are obvious obstacles, regional governance issues also play a part in keeping the number of employees down. Vijaya Ramachandran, a senior CGD fellow and a coauthor of the report, said big companies tend to be easy targets for governments desperate for tax revenues or for corrupt officials looking for bribes. As a result, "In some countries, businesses want to stay small in order to stay below the radar of government regulators." According to the study, the burden of dealing with government bureaucrats increases significantly for firms with more than 100 employees.

Sometimes small is good

Sub-Saharan Africa's formal sector is an important source of tax revenue, and bigger firms would help finance social programs such as pension plans and health care. But with 90 percent of jobs in either small informal household enterprises or subsistence agriculture, workers have little chance of landing a formal job with benefits. IMF senior economist Alun Thomas said, "Although wage employment (paid work outside the agriculture sector) is often mentioned as the ultimate objective in employment policy, household enterprise employment is most likely to provide the bulk of new jobs going forward."

And although small household businesses generally don't pay taxes and are often difficult to sustain, the hope is that these businesses will expand—starting, say, by hiring a neighbor—and consider registering their business to gain access to finance. Governments can encourage entrepreneurs to join the formal economy by providing a more welcoming business environment.

In the end, formal and informal businesses in sub-Saharan Africa face the same problems. And given the scope of the employment issues in the region, policymakers should be working toward improving the regulatory environment and fixing crucial infrastructure shortfalls, such as electricity supply, that both sectors depend on to grow.

Bigger firms and more local entrepreneurs will be key to improving the lives of the millions who need steady work now, and in the future. ■

Bruce Edwards is on the staff of Finance & Development.

A LONG COMMUTE

Immigrants do more good than harm when they enter a country's job market

Çağlar Özden

JOHN, a Wall Street hedge fund manager, and Juan, a Nicaraguan construction worker, have an important trait in common: they are both global arbitrageurs.

John looks for small differences in interest rates across the globe, moves billions of dollars with a keystroke, and presumably contributes to more efficient allocation of capital.

Juan moved from Masaya to California to take advantage of a different but significantly larger price gap—average construction wages 11 times higher than in Nicaragua. He used his family's life savings to pay the smugglers' fees and lives in constant fear of getting caught and deported. Yet he is the envy of the 30 percent of Nicaraguans surveyed by a 2012 Gallup poll who said they would migrate if they had the chance.

John has benefited from the recent swift integration of financial and product markets. And Juan is a success story in his own right. He is one of the few to overcome the geographic, cultural, linguistic, and policy-induced barriers facing most migrants who aspire to move to higher-paying jobs in other countries.

The halting integration of labor markets is the single most important exception to the globalization process, leading to persistent wage differentials. It is the reason why the share of immigrants has been quite stable at about 3 percent of the world population since 1960. There are large wage gaps not only in low-skill sectors like construction and agriculture but also in many higher-skill occupations (ILO, 2012/3). Nurses make seven times more in Australia than in the Philippines; accountants six times more in the United Kingdom than in Sri Lanka; and doctors five times more in the United States than in Egypt—in purchasing power parity terms.

Public perception

The low levels of global migration and large wage gaps between migrant-sending and -receiving countries suggest relative insulation of domestic labor markets and a minimal impact of migration on wages.

But that's not the public perception. Many people in high-income Organisation for Economic Co-operation and Development (OECD) countries consider immigration the most important challenge their countries currently face and blame migrants like Juan for declining wages and high unemployment.

How justified are these sentiments? A key theme of the migration debate is misperception and ignorance. Opinion polls by IPSOS Mori (Duffy and Frere-Smith, 2014) indicate that British people think immigrants make up 24 percent of the population, but the actual number is 13 percent. The gap is even wider in the United States (32 percent versus 13 percent), France (28 percent versus 10 percent), and Spain (24 percent versus 12 percent). Such perception bias affects sentiments about migration.

Patterns of migration

We should look at actual migration patterns before discussing their impact on jobs. Between 1960 and 2010, the number of global migrants increased from 90 million to 215 million—stable at about 3 percent of the world population. Two-thirds of the growth came from migration to western Europe and the United States. The rest represents increased mobility between the countries of the former Soviet Union, the emergence of the oil-rich Persian Gulf countries as key destinations, greater intra-Africa migration, and migration to Australia, Canada, and New Zealand. Several fast-growing middle-income countries, such as Malaysia, South Africa, and Turkey, became regional magnets for both refugees and job seekers.

Higher south-north migration is the defining feature of the past five decades. Newly released data by the OECD and the World Bank reveal interesting patterns of migration to OECD countries, the focus of most debate over links between migration and job markets. The 113 million migrants in OECD countries as of 2010 represent a 38 percent increase from the previous decade. Migrants make up 11 percent of the OECD population, significantly above the global average, which may explain public anxiety in these countries. Intra-OECD migration is about 40 percent of the total, while the rest of the migrants come from Latin America (26 percent), Asia (24 percent), and Africa (10 percent).

The most critical determinant of the labor market impact of immigration is the skill composition of migrants. In OECD countries, migrants are almost equally divided between tertiary- (30 percent), secondary- (36 percent), and primary-educated (34 percent) people. Relative to natives, migrants are overrepresented among the tertiary educated (23 percent among natives), but underrepresented among the secondary-educated workers (41 percent among natives).

These numbers vary tremendously across OECD countries, making it difficult and dangerous to generalize. In Australia, Canada, New Zealand, and Switzerland migrants exceed 25 percent of the total population, while Japan has a barely noticeable 1 percent. Migrants to Australia, Canada, New Zealand, the United Kingdom, and the United States are more educated and account for 70 percent of all tertiary-educated migrants in OECD countries (see chart).

Migration does not take place in a vacuum. It is a response to different push and pull forces. As long as large wage gaps exist, millions of people like Juan will risk their lives to climb heavily guarded walls, swim rivers, and sail oceans to enter high-income countries. Migration and local labor market conditions influence each other, so economic analysis must account for these feedback mechanisms. (See Borjas, 2014, for an excellent review of the academic literature.)

Impact on jobs

Does migration create or destroy jobs? This is generally asked about jobs *for* native workers, not the overall level of employment in a country. Over 60 percent of voters in the United Kingdom and the United States, 50 percent in Spain and Italy, and 40 percent in France and Germany think immigrants take jobs away from natives. No wonder politicians became more anti-immigration over the past decade as the financial crisis slammed labor markets in OECD countries.

Politics and perceptions aside, there is fierce academic debate on the issue. But the numbers show relatively small wage and employment effects. For example, the widely cited Ottaviano and Peri (2008) study found that immigration caused an average 0.6 percent wage *increase* for U.S. natives during 1990–2006. Borjas and Katz (2007), however, found the effect to be around zero. Either way, the wage impact of immigration is clearly minimal and holds for EU countries as well. For example, Docquier, Peri, and Özden (2014) found that the average wage effect of new migrants (who arrived between 1990 and 2000) was an increase of about 0.3 percent in Germany and France, 0.8 percent in the United Kingdom, and somewhere in between for most other EU countries. Even Oxford economist Paul Collier, one of the most vocal critics of immigration, admits positive yet small effects on the labor markets in western countries, basing his opposition solely on cultural diversity and cohesion arguments.

The wage impact of immigration is clearly minimal.

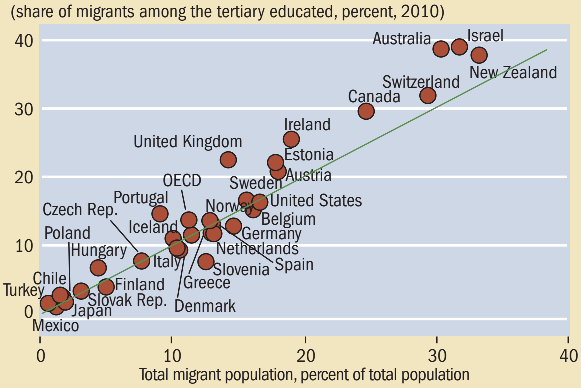
There is wisdom in such analysis, but there are also shortcomings. First, these are *average* results, and so may obscure heterogeneous effects across society. Some groups, such as older and relatively less educated male workers who cannot compete and have little hope of gaining new skills, suffer significant losses.

Second, many of these workers may simply *exit* the labor force rather than take a wage cut. For them, early retirement, disability, or unemployment benefits may be more attractive options. Such effects will not show up in the numbers if analysis does not account for this type of semivoluntary unemployment and focuses only on the wages of the employed. Third,

Moving out and moving up

The share of immigrants among the total population and among the tertiary-educated population in OECD countries varies widely.

(share of migrants among the tertiary educated, percent, 2010)



Source: World Bank–Organisation for Economic Co-operation and Development (OECD) Database on Immigrants in OECD countries.

these are mostly big picture analyses that ignore sectoral differences. Many occupations are simply taken over by migrants willing to accept lower wages than native workers. So there may be little impact on high school graduates overall, but a huge impact on, say, the subcategory of high-school-educated machine operators.

Most labor economists would agree that migration is not the major culprit for the recent labor market challenges faced by older and less educated workers. Technological innovations, offshoring, financial volatility, rigid labor markets, and demographic change shape labor market outcomes more than migration. Migrants happen to be more visible and easier scapegoats for politicians and the public.

Dynamic effects

While most widely cited studies find minimal *average* impact of migration on labor markets, recent research is casting a wider net. The focus is now on dynamic effects that lead to structural and behavioral changes in labor markets. What matters is how migrants fit into destination labor markets—whether they complement or substitute native workers' skills, the kinds of jobs they take away, and, most important, native workers' responses in terms of job selection, education decisions, and other labor market choices. These have longer-term implications and warrant careful analysis.

The United States provides a useful laboratory for exploring such dynamic effects. Migrants make up 16 percent of the U.S. labor force but they are concentrated in several occupations. For example, they constitute 60 percent of many construction-related occupations and the majority of farm workers and butchers. At the other end of the education spectrum, over one-third of medical, physical, and mathematical scientists; doctors; and economists are also foreign born. These ratios increased gradually over the past decade, indicating that migrants had already specialized in these two ends of the skill spectrum. These are also the occupations in which native worker seem to be in short supply. The United States simply needs more doctors, scientists, and engineers as well as construction and farm workers and housekeepers than natives are willing or able to supply *at current wages*.

One possible response by natives—especially in low-skill occupations—is to exit the labor force and enjoy the generous unemployment benefits of the welfare state. Or, as Giovanni Peri from University of California at Davis argues in many of his articles, immigrants may push natives toward more complex tasks by taking away their manual-routine jobs (see "Toil and Technology," in this issue of *F&D*). This job upgrading is critical for productivity and income growth and is more prevalent in countries with more flexible labor laws, such as the United Kingdom and the United States. Such reallocation across occupations may also take place among tertiary-educated workers. When immigrants with advanced degrees migrate, they tend to choose occupations that require more quantitative and analytical skills. When the share of foreign-born workers rises, native workers with similar graduate degrees choose new occupations with less analytical but more communication and managerial requirements.

These complementarities between migrant and native workers also appear elsewhere. In a rare study from a middle-income migrant-receiving country, Mathis Wagner, from Boston College, and I found that arrival of low-skilled Indonesian and Filipino workers shook up the Malaysian labor market. During 1990–2010, Malaysia's remarkable national education program boosted the share of young people with at least secondary education from 50 percent to 80 percent. The resulting shortage of low-skilled workers was met by migrant workers who were employed in large numbers in construction, on plantations, and in export-oriented low-tech manufacturing. Young high-school-educated Malaysians became their supervisors. We found that the arrival of 10 migrant workers led to almost 7 medium-skill jobs for natives in Malaysia. Absent this migration, these recent high school graduates would not have gotten jobs commensurate with their education. Most important, the large supply of unskilled migrants encouraged young Malaysians to invest in their education to distinguish themselves in the labor market and take better advantage of the skill complementarities.

Such complementarity extends to women's decisions to participate in the labor force. Women shoulder most household responsibilities in many countries, so their decision to enter the labor force involves more complex trade-offs than men's. Many women, especially the highly educated, choose not to work full time or at all. The arrival of low-skilled migrant women willing to provide household services at lower prices can radically alter the labor force decisions of women in destination countries. Patricia Cortes, of Boston University, and her colleagues show that foreign domestic workers increased the employment levels of native young mothers and highly educated women in Hong Kong SAR and in the United States. Given that over half of current university students in many countries are women, including in 32 OECD countries, this job-creation effect can be critically important for long-term economic prosperity.

Another example of complementarity comes from the world of soccer, probably the most integrated global labor market (see "On the Ball," in the March 2014 *F&D*). When the best 736 players of the world converged in Brazil last summer for the FIFA World Cup, they represented 32 national teams. But almost half of these stars were playing in the English Premier League, Italian Serie A, German Bundesliga, and Spanish La Liga. Only 6 of the 92 African players were playing in their home country.

In research labs, universities, and high-tech companies, skilled workers complement each other. Agglomeration of skills improves productivity and further expands economic activity. Real Madrid, Google, the New York Philharmonic, and Hollywood all benefit from this phenomenon and become global brands with superior products. Such spillovers are one reason we see less opposition to migration among the high-skilled, who clearly see their individual productivity increasing when they work with people like themselves.

Winners and losers

So far we have focused on how immigration creates jobs, especially through complementarities in the labor force between native and migrant workers. The overall effect of immigration tends to be positive, and definitely not as harmful as most public opinion assumes. Immigrants take jobs natives are unable or unwilling to perform. They are the engineering professors and fruit pickers, hedge fund managers and construction workers.

But as with any economic activity, there are losers. There is a Spanish player who was kicked out of Real Madrid when Portuguese superstar Cristiano Ronaldo arrived. Some primary school–educated Malaysian construction workers could not compete with Filipino workers and were too old to acquire new skills. Many U.S. nannies lost their jobs to Mexican migrants willing to accept lower wages.

Immigrants take jobs natives are unable or unwilling to perform.

The public perception of the job-killing effects of migration is strong because job losses are visible to all, especially to those directly affected. Job-creating effects are less transparent. The Malaysian supervisor of the Indonesian laborer and the U.S. businesswoman who can stay late at the office because she has a great foreign-born nanny rarely consider that they owe their jobs and paychecks to an immigrant.

Labor markets are complex. Immigration, in most cases, is a response to supply and demand. But migrants affect the labor market in ways that further increase complexity. Since the gains seem to be larger than losses, an economist would simply recommend policies that *compensate* the losers by taxing the gains of the winners.

Immigrants create pockets of important skill complementarities that should be nurtured. This is especially true for the highly skilled—whether academics, engineers, movie stars, athletes, or even business executives. No country should ever limit high-skilled migration through quotas. On the contrary, every PhD should come with a permanent residence card. Instead of a quota, the government can charge "administrative fees," which employers would be more than happy to pay in return for easier processing.

Almost all analyses ignore the largest benefit of migration—lower prices for consumers. Our houses are cleaned more cheaply, we have more doctors, and we pay less for the lettuce picked by migrant workers. We do not observe the impact of migration on our daily purchases, and economists cannot calculate them easily. But these gains are real and larger than any other effect. It is neither legally nor practically possible to impose a special tax on lettuce or a doctor's visit simply because its delivery involved a migrant. But we can tax the employment of migrants. That is in essence what is behind the sophisticated migration-management policies of countries like Singapore and Saudi Arabia. An employment visa includes a fee collected from the employer that is based on skill level and occupation of the migrant, firm size and sector, and current labor market conditions. The fee is adjusted as conditions change and there is continuous feedback from employers, labor unions, and researchers. This fee system is identical to a tariff paid at the border by the importer of a good. Coupled with severe penalties for tax evasion, this system can reduce informal employment of undocumented migrants and generate revenues.

Substitution between natives and migrants is more visible and harmful. Flexible labor markets like those in Canada, the United Kingdom, and the United States seem better able to handle the negative effects, but people who lose their jobs need help. Here's where the taxes we collected above enter the picture. Compensatory policies come in many forms—unemployment insurance or training subsidies. But the most important policy is to encourage people—especially young workers—to acquire newer, superior, and complementary skills, through education.

Migration policies lag in sophistication and efficiency. Treasuries and central banks are ruled by economists, but "no economists are allowed" in most countries when it comes to migration policy. National security and legal concerns dominate the debate and bureaucracies: migration administration tends to fall under the Ministry of the Interior or National Security. Residency, employment authorization, and citizenship are granted on legal or political principles with no consideration for economic conditions. By introducing minimal economic criteria to their decision processes, the migration regimes of Australia, Canada, and Singapore immediately became very effective. Europe and the United States have much to learn from them.

The best policy will not build taller and longer walls to block immigrants like Juan. The best policy will let Juan (and John) in and find a way to tax part of the economic gain he generates to train the workers he replaces. Easier said than done, but worth the gain! ■

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TOIL AND TECHNOLOGY

James Bessen

Innovative technology is displacing workers to new jobs rather than replacing them entirely

AT the Quiet Logistics distribution center north of Boston in the United States, a robot lifts a shelf and transports it through the warehouse to a workstation. There, an employee picks an item from the shelf and places it in a shipping box. Each robot in the distribution center does the work of one and a half humans.

Robots and other technologies are transforming supply chains, tracking items from source to consumer, minimizing shipping time and cost, automating clerical tasks, and more. But are they eliminating the need for human workers, leading to persistent technological unemployment?

Surprisingly, the managers of warehouses and other supply chain facilities report that they have difficulty hiring *enough* workers, at least enough with the skills needed to use the new technologies. Moreover, they see these skill shortages persisting for the next decade.

New "smart machines" are radically changing the nature of work, but the question is *how*. Powered by artificial intelligence, new technologies are taking over tasks not only from warehouse workers, but also from white-collar workers and professionals. Automated teller machines have taken over the tasks of bank tellers; accounting software has automated the work of bookkeepers. Now computers can diagnose breast cancer from X-rays and predict survival rates at least as well as the average radiologist.

What, exactly, does this mean for jobs and wages? Sometimes new technologies eliminate jobs overall, but sometimes they create demand for new capabilities and new jobs. In one case, the new machines *replace* workers overall; in the other, they just *displace* workers to different jobs that require new skills. In the past, it has sometimes taken decades to build the training institutions and labor markets needed to develop major new technical skills on a large scale.

Policymakers need to know which way technology is headed. If it *replaces* workers, they will need to cope with ever-growing unemployment and widening economic inequality. But if the primary problem is *displacement*, they will mainly have to develop a workforce with new specialized skills. The two problems call for very different solutions.

Despite fears of widespread technological unemployment, I argue that the data show technology today largely displacing workers to new jobs, not replacing them entirely. Of the major occupational groups, only manufacturing jobs are being eliminated persistently in developed economies—and these losses are offset by growth in other occupations.

Yet all is not well with the workforce. The average worker has seen stagnant wages, and employers report difficulty hiring workers with needed technical skills. As technology creates new opportunities, it creates new demands as well, and training institutions are slow to adapt. Although some economists deny that there are too few workers with needed skills, a careful look at the evidence below suggests we face a significant challenge building a workforce with the knowledge needed to use new technologies. Until training institutions and labor markets do catch up, the benefits of information technology will be limited and not widely shared.

Automation ≠ unemployment

I focus on information technology because this technology has brought dramatic change to a large portion of the workforce. Some people see computers automating work and conclude that technological unemployment is inevitable. A recent study (Frey and Osborne, 2013) looks at how computers can perform different job tasks. It concludes that 47 percent of U.S. employment is in occupations that are at high risk of being automated during the next decade or so. Does that mean nearly half of all jobs are about to be eliminated?

Not likely. Just because computers can perform some job tasks does not mean that jobs will be eliminated. Consider bank tellers. Automated teller machines (ATMs) were first installed in the United States and other developed economies in the 1970s. These machines handle some of the most common tasks bank tellers performed, such as dispensing cash and taking deposits. Starting in the mid-1990s, banks rapidly increased their use of ATMs; over 400,000 are installed in the United States alone today.

One might expect such automation to decimate the ranks of bank tellers, but in fact the number of bank teller jobs did not decrease as the ATMs were rolled out (see Chart 1). Instead, two factors combined to preserve teller jobs.

First, ATMs increased the demand for tellers because they reduced the cost of operating a bank branch. Thanks to the ATM, the number of tellers required to operate a branch office in the average urban market fell from 20 to 13 between 1988 and 2004. But banks responded by opening more branches to compete for greater market share. Bank branches in urban areas increased 43 percent. Fewer tellers were required for each branch, but more branches meant that teller jobs did not disappear.

Second, while ATMs automated some tasks, the *remaining* tasks that were not automated became more valuable. As banks pushed to increase their market shares, tellers became an important part of the "relationship banking team." Many bank customers' needs cannot be handled by machines—particularly small business customers'. Tellers who form a personal relationship with these customers can help sell them on high-margin financial services and products. The skills of the teller changed: cash handling became less important and human interaction more important.

In short, the economic response to automation of bank tellers' work was much more dynamic than many people would expect. This is nothing new. Automation during the Industrial Revolution did not create massive technological unemployment. During the 19th century, for example, power looms automated 98 percent of the labor needed to weave a yard of cloth. Yet the number of factory weaving jobs increased over this period. Less labor cost per yard meant a lower price in competitive markets; a lower price meant sharply increased demand for cloth; and greater demand for cloth increased the demand for weavers despite the drop in labor needed per yard. Furthermore, while technology automated more and more weaving tasks, weavers' remaining skills, such as those needed to coordinate work across multiple looms, became increasingly valuable. Weavers' wages rose sharply compared with those of other workers during the late 19th century.

New technology can also increase the demand for workers with new skills.

The economy responds dynamically in other ways as well. In some cases, new jobs are created in related occupations. Desktop publishing meant fewer typographers but more graphic designers; automated company phone systems meant fewer switchboard operators but more receptionists who took over the human interaction tasks switchboard operators previously performed. In each case, the new jobs required new and different skills. Sometimes new jobs appear in entirely unrelated sectors. For example, as agricultural jobs disappeared, new jobs arose in the manufacturing and service sectors.

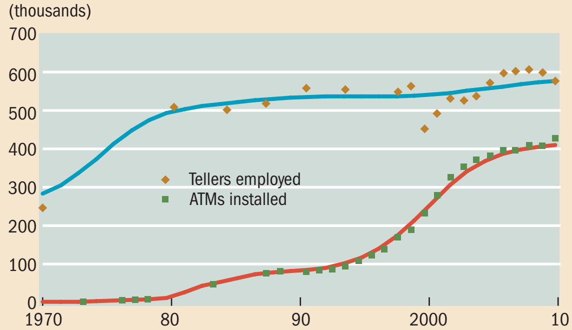
Thus computer automation does not necessarily imply imminent and massive technological unemployment; new technology can also increase the demand for workers with new skills. To measure the actual effect of computer technology on jobs overall, we must look at major occupational groups to

Chart 1

Dispensing jobs

As more ATMs were installed in the United States, the number of tellers employed did not drop.

(thousands)



Sources: Ruggles and others, Integrated Public Use Microdata Series: Version 5.0; Bureau of Labor Statistics, Occupational Employment Survey; and Bank for International Settlements, Committee on Payment and Settlement Systems, various publications.

capture the net effect when jobs switch to related occupations.

Chart 2 shows the annual growth rate of jobs in five major occupational groups, listed in order of declining computer use; over half the workers in each of the first three groups used computers at work as of 2001. In all three computer-intensive groups, jobs grew faster than the overall labor force. In other words, computers have caused job losses in some specific occupations, but the net effect on these broad occupational groups has not been technological unemployment. Only manufacturing has experienced a net loss in jobs—5 million jobs over three decades. Yet employment growth in the rest of the economy offset these losses.

In short, during the three decades since the advent of the personal computer, technology has not been replacing workers on the whole. But that might be about to change. Some people, such as science fiction writer Vernor Vinge—also a retired professor of mathematics and a computer scientist—argue that we are approaching the "technological singularity": within a decade or so computers will become "smarter" than humans. When this happens, they say, technology really will replace human workers on a massive scale. Perhaps they are right, but many computer scientists remain skeptical.

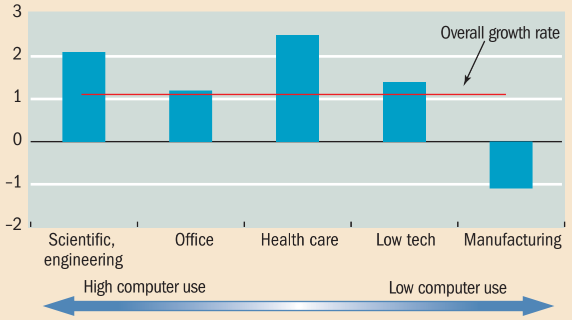
New technology will surely take over more tasks that humans perform, but many human qualities will remain important in global commerce. Although computers can pick stock portfolios, financial advisors provide reassurance when markets are down. Although computers can recommend which products to buy, salespeople understand consumer needs and inspire confidence that unforeseen contingencies will be handled fairly. Although computers can make accurate medical prognoses, they don't yet have the bedside manner to guide patients through difficult medical choices. And computer scientists don't foresee computers acquiring such capabilities anytime soon.

Chart 2

Computers don't kill jobs

Jobs have grown faster in occupational groups that use computers than in the overall labor force.

(annual job growth rate of major job groups, 1982–2012, percent)



Source: Bessen (forthcoming).

So while technological unemployment might become a significant problem in the future, it is not a major problem today nor is it likely to become one in the immediate future. Policymakers should not focus on responding to an ill-defined and uncertain threat of future technological unemployment when information technology is causing some very real problems for both employees and employers right now.

New skills for new technology

Supply chain managers are not the only executives reporting difficulty finding workers who have the skills to use new technology. The U.S.-based company ManpowerGroup conducts an annual survey of 38,000 managers worldwide. Last year, 35 percent of managers reported difficulty hiring workers with needed skills. Other surveys have reported similar figures.

But some economists are deeply skeptical about employer complaints of a talent shortage. Some, such as economist Peter Cappelli, argue that the number of educated workers exceeds the number required for today's jobs. However, the missing skills are too often technology related and learned through job experience, not in school, so employers can face skill shortages despite high levels of schooling.

Other economists argue that there must not be a skill shortage because average wages aren't rising. The Brookings Institution's Gary Burtless writes, "Unless managers have forgotten everything they learned in Econ 101, they should recognize that one way to fill a vacancy is to offer qualified job seekers a compelling reason to take the job" by offering better pay or benefits. Since the median wage is not increasing, Burtless concludes that there is no shortage of skilled workers.

Burtless is right that wages will be bid up for workers who have needed skills, but he apparently assumes that median workers *already* possess the skills employers want. That seems unlikely if they have difficulty learning the skills to handle the very latest technology. In that case, some workers will learn and enjoy rising wages, but others, including the median worker, will see their skills become obsolete and earn stagnant or even falling wages.

Developing skills to implement new technology is not a new problem. In the past, training institutions and labor markets sometimes took a long time to adapt to major new technologies. For example, during the Industrial Revolution, factory wages were stagnant for decades until technical skills and training were standardized; when that happened, factory wages rose sharply.

Something similar seems to be happening today. Consider, for instance, graphic designers. Until recently, graphic designers worked mainly in print media. With the Internet, demand grew for Web designers; with smartphones, demand for mobile designers increased. Designers had to keep up with new technologies and new standards that continually change.

In this environment, schools can't keep up. Most graphic arts schools are still oriented toward print design, and much of what they teach quickly becomes obsolete. Instead, designers have to learn on the job, but employers don't always provide strong incentives to do so. Employers are reluctant to invest in learning when employees leave and technology changes. Moreover, because new technology is often not standardized, skills learned at one job are not valuable to other employers, so they don't bid up wages. And employees are reluctant to invest on their own without a robust labor market for their skills and a long-term career path.

Yet the most talented designers teach themselves the new skills and establish reputations that help inform potential employers. The top 10 percent of designers command six-figure salaries in U.S. dollars or earn high hourly rates as freelancers. Meanwhile, the wages of the median designer have changed little; the median designer, after all, is still mainly a print designer. Employers will pay high salaries to designers with the right skills and reputation, but until training and labor market institutions catch up, the supply of those designers will be limited. And for 30 years the median designer's wage has remained stagnant precisely because these institutions have not kept up with continually changing technology.

Technology has heightened economic inequality.

As a result there is growing economic inequality *within* the occupation: the difference between the wages of the top 10 percent of designers and those of the median designer has grown sharply. This pattern is seen in other occupations affected by computers.

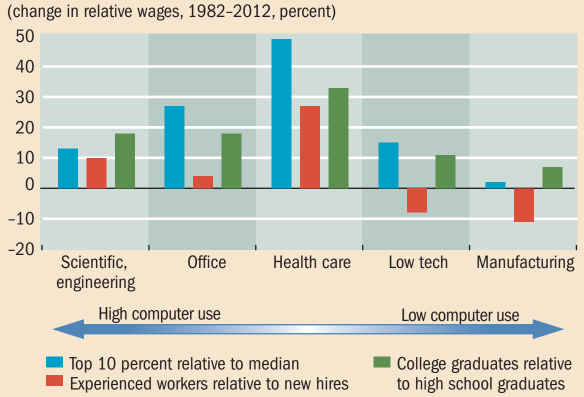
Chart 3 shows evidence of rising demand for select workers within computer-intensive occupations. The blue bars show the growth in wages for the 90th percentile compared with the median worker within each occupational group. For office and health care occupations, wages have grown much more rapidly for the top 10 percent of workers, implying that these workers have valuable skills while the average worker in these groups does not. To the extent that these valuable skills are acquired through experience and education, wages have also risen more rapidly for experienced workers compared with new hires (red bars) and for workers with college degrees compared with high school graduates (green bars) in computer-intensive occupations.

Chart 3

Tech paycheck

While some select computer users in each occupational group have acquired useful computer skills that are reflected in higher wages, the average worker has not.

(change in relative wages, 1982–2012, percent)



Source: Bessen (forthcoming).
Note: Low tech includes occupations with lower computer use, including food service, education, transportation, and construction.

These data show that employers do pay higher wages, but only to workers who have learned particular skills in computer-related occupations. Many of these workers teach themselves and learn through job experience. But the average worker finds it too difficult to acquire the necessary knowledge of new technologies.

Policy implications

New information technologies do pose a problem for the economy. To date, however, that problem is not massive technological unemployment. It is a problem of stagnant wages for ordinary workers and skill shortages for employers. Workers are being displaced to jobs requiring new skills rather than being replaced entirely. This problem, nevertheless, is quite real: technology has heightened economic inequality. But the skills problem can be mitigated somewhat by the right policy actions by firms, trade associations, and government.

For example, the U.S. materials handling association known as MHI runs a program to encourage specialized training programs at four-year colleges, community colleges, and even high schools. Industry associations jointly prepared a technology "roadmap" that calls for efforts to retrain workers from other occupations and attract demographically diverse workers to the field.

The roadmap recognizes that some key skills are not taught in schools but are learned through experience. To foster career paths for workers who learn on the job, the institute proposes a national center to certify such skills. The roadmap also proposes greater collaboration and information sharing between firms so that technology and skills can be standardized.

The information technology revolution may well be accelerating. Artificial intelligence software will give computers dramatic new capabilities over the coming years, potentially taking over job tasks in hundreds of occupations. But that progress is not cause for despair about the "end of work." Instead, it is all the more reason to focus on policies that will help large numbers of workers acquire the knowledge and skills necessary to work with this new technology. ■

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THE Shrinking MIDDLE

Ekkehard Ernst

Labor market trends portend a paradise for some workers, but continued purgatory for most

WAGE earners across the globe seem to be trapped in the doldrums. Global unemployment remains high, especially in some advanced economies, and every year many more workers enter the job market. More than 600 million jobs must be created over the coming decade to provide work opportunities for the more than 201 million people currently unemployed and those who will begin looking for work (ILO, 2015).

Even though some countries, such as the United States, have recently shown significant improvement in their unemployment rates, many more struggle to find new sources of jobs and incomes. And the large number of job seekers has held down wages even as productivity (output per worker) has grown, worsening inequality in many countries.

But things are changing. Longer-term shifts—such as declining middle-class jobs, a continued fallout from the global financial crisis, but also a shrinking global workforce—are shaping labor markets worldwide. Whereas the problem today seems to be a glut of workers, in coming years the global labor force will shrink. These shifts could constrain growth, but they should also help correct some of the current labor market imbalances that have prevented workers from sharing in productivity gains. The beneficiaries, however, will mainly be high-skilled workers. The prospects for lower-

skilled workers are less hopeful, which is bad news not only for them, but for efforts to reduce inequality.

Inequality may worsen

Continued worsening in income inequality over the past three decades has attracted substantial attention and has been a focus of global policy debate since the publication in 2014 of *Capital in the Twenty-First Century* (Piketty). To be fair, the rising share of wealth and income going to the top 1 percent of the population and the fall in the labor income share had not previously gone unnoticed. But these developments were often attributed to a decline in unionization and the increased competition fostered by globalization—both of which were perceived as conducive to further and faster

In several middle-income regions, middle-class jobs are no longer expanding significantly.

global growth and were expected to lift the boat for all (for example, Jaumotte and Tytell, 2007).

This view has been called into question, however, since the global financial crisis that began in 2008, because large deviations in income distribution from historical averages came at a time of highly volatile economic growth. That led some observers to argue that reducing income inequality would boost macroeconomic stability—adding an economic rationale to a purely moral imperative for a more equal distribution of riches. The current policy debate focuses on changes in taxation to address inequality but with little regard for the potential harm of increases in income or property taxes on job creation, innovation, and growth (see “Back to Basics: Taxes in Practice” in this issue of *F&D*). More important, this policy debate does not adequately take into account the longer-term forces shaping trends toward inequality.

A careful analysis of labor market trends reveals an ongoing shift in employment from traditional middle-class jobs in manufacturing and services toward both high- and low-skill occupations. This shift underlies much of the observed dynamics in inequality. Indeed, computers and robots seem to have finally taken center stage in the production process, eliminating many jobs that focus on routine tasks. This shift is no longer limited to manufacturing, where robots took over the conveyor belt some time ago. Even in many service sector occupations—such as accounting and health care—computers are taking over ever larger shares of the work—for example, by helping with tax preparation or providing diagnostic tools for medical doctors. For those who possess skills complementary to these “routine” tasks, computerization is creating new opportunities for productivity and wage gains (Autor, 2014).

But many more people, especially those who used to perform these tasks, are forced to compete for an ever smaller share of similar jobs or resign themselves to low-skill occupations, often accompanied by a significant loss in disposable income. On average, these trends do not preclude future rises in productivity and living standards, but so far the distribution of these gains seems to have “hollowed out” the middle class, leaving relatively more jobs at both the high- and low-skill end of the jobs scale.

Changes largely in advanced economies

The shift in occupational employment triggered by these technological changes seems to affect mostly advanced economies (see Chart 1). In many developing economies, the more traditional shift from low- to medium- and high-skill occupations still dominates as people move from rural areas to urban centers to work in manufacturing or small-scale services. This has led to a substantial reduction in both poverty rates and vulnerable employment over the past two decades and to the emergence of a middle class in most of the developing world. The more prosperous developing economies have the potential to contribute to global growth through substantially enhanced spending power (ILO, 2013). But even in these economies, the early effects of technological changes that shift workers out of middle-class jobs are visible.

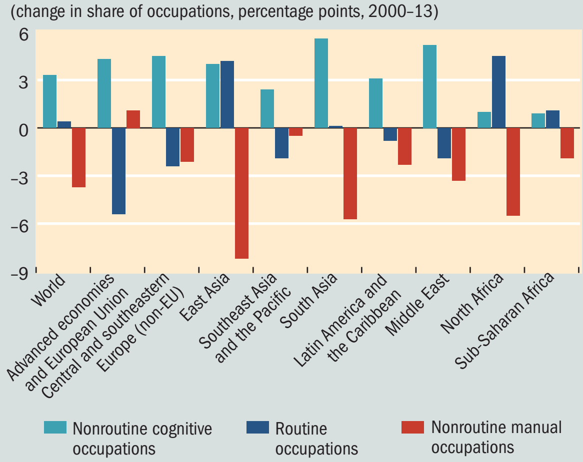
As Chart 1 demonstrates, in several middle-income regions, middle-class jobs are no longer expanding significantly, even though these jobs occupy a far smaller share of total employment than they do in advanced economies. This has led some observers to worry about premature deindustrialization: global

Chart 1

Brain power

Nonroutine manual jobs, mainly agricultural, have been drying up in nearly all parts of the globe (except in advanced economies, where they dried up long ago), while demand for high-skill cognitive jobs is increasing.

(change in share of occupations, percentage points, 2000–13)



Source: ILO (2015).

Note: As economies develop, agricultural workers tend to move to urban areas, where they fill routine jobs such as elementary occupations or fabric work. So far, the automation in developing economies has not progressed as far as in advanced economies, which explains why there is an increase in the relative weight of routine jobs globally and in many developing regions. But automation is at work in these regions too, which explains why in some catching-up countries, the peak share of manufacturing employment has already been reached.

technological dynamics in these economies, which have been viewed as catching up to advanced economies, could put middle-skill jobs under pressure much earlier in middle-income than in advanced economies and potentially reduce the growth prospects of these emerging markets significantly (Rodrik, 2013).

But as counterintuitive as it may seem in today's high-unemployment environment, a significant threat to future global growth comes from another long-term trend: the gradual decline in the growth rate of the labor force. The number of new labor market entrants has already begun to shrink, mainly in advanced economies, but also in several emerging market economies, particularly in Asia. Currently, the youth labor force is contracting by about 4 million people a year globally. And in many countries with sustained increases in living standards, prime-age workers (those between 25 and 54) are also participating (that is working or looking for work) less actively than in the past. This partly reflects income gains—labor force participation is often high when households struggle with extreme poverty and volatile incomes, forcing all family members to seek employment, and tends to decline when conditions improve.

In addition, because the middle class has expanded in economies with higher living standards, people tend to stay in school longer, which raises the average skill level. In principle, that should help offset some of the adverse effects of a shrinking labor force on growth. The overall global labor force, however, is projected to grow much more slowly—at less than 1 percent a year in the 2020s, compared with 1.7 percent annually during the 1990s. The reduced labor force growth will shave roughly 0.4 percentage point off global growth. And the growth slowdown will be particularly acute in advanced economies, which have, on average, a more skilled workforce.

Effects of the global crisis

Global growth is suffering from more than inequality and a slowing increase in the labor supply. The long-term consequences of the global financial crisis continue to weigh on growth too. Investment rates remain significantly below precrisis levels, especially in some advanced economies. In addition, uncertainty among businesses remains high about the concrete policies that governments will put in place to address the consequences of the crisis, creating insecurity among businesses regarding future sources of demand for their goods and services. This depresses investment and job creation (see Chart 2). International Labour Organization estimates show that for some countries, up to 30 percent of the differential between current and precrisis unemployment stems from this high level of uncertainty in the business sector. The lack of dynamism that followed the failure of the Wall Street investment firm Lehman Brothers in September 2008 has lifted overall trend unemployment rates significantly, in some countries by up to 4 to 5 percentage points (ILO, 2014).

Moreover, weak job prospects have led to slower labor market turnover—that is, the number of employees who leave companies to take up employment opportunities elsewhere. This impedes businesses' productivity gains because much of those gains comes in the form of new equipment and reorganization of workers both within and across companies. Interestingly, labor market turnover (also called churning) played a bigger role in productivity growth than other factors immediately after the crisis. But as the overall rate of labor market churning then declined, so did productivity growth (ILO, 2015).

A combination of high unemployment, slow growth in output, and unequal distribution of productivity gains has further eroded the income share of workers in the global economy. Only during the crisis year—largely because real wages were resistant to decline in advanced economies—did wage earners benefit from income gains that exceeded then-shrinking labor productivity. In subsequent years, however, wages once again trailed productivity growth, continuing the trend in the decades before the crisis. Although in the current environment it may be hard to see what could change that trend, in fact the declining global labor supply described above will help push wages above productivity growth—in some countries very soon.

The long-term consequences of the global financial crisis continue to weigh on growth.

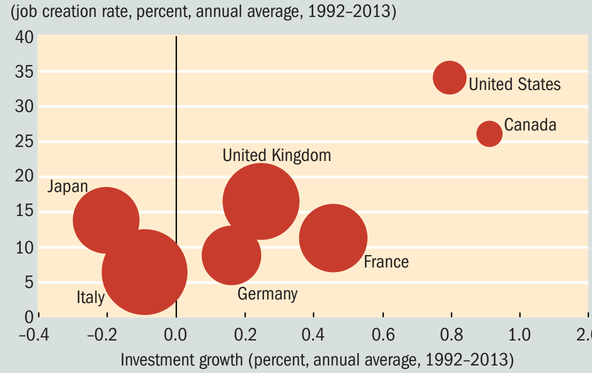
Slowing labor force growth will help current jobseekers find new employment more easily. Especially in countries where unemployment is very high, joblessness is expected to

Chart 2

Certainty trumps

When uncertainty is lower, generally investment is higher and jobs are created at a faster pace in advanced economies.

(job creation rate, percent, annual average, 1992–2013)



Sources: International Labour Organization, Key Indicators of the Labour Market database; Organisation for Economic Co-operation and Development, Economic Outlook database; and Ernst and Viegelahn (forthcoming).

Note: The chart shows the long-term relationship between fixed investment growth and job creation rates in the Group of Seven advanced economies. The size of the bubbles represents the average hiring uncertainty over the long term. Uncertainty is calculated as the difference between hiring intentions and actual hiring.

fall significantly over the coming years. This phenomenon is reflected only imperfectly in the global unemployment rate because countries that are shifting to a more industrialized economy will experience rising unemployment. But those rising unemployment rates will often be accompanied by an increase in job quality and working conditions as people move from poorly paid, rural, and informal jobs to urban, better-paid, and formal occupations. Together, these trends should remove some of the pressure that now keeps wage growth low.

Faster wage growth

The rise in trend unemployment rates following the overall sluggish expansion of growth and investment has lifted the unemployment rate at which wages tend to accelerate during a labor market recovery. The protracted nature of the recovery will lead to faster wage growth, even if unemployment rates remain much higher than they were prior to the crisis. In countries with adequate data, this effect is evident in the fact that people out of a job for 12 months or longer do not exercise strong downward pressure on wages.

People unemployed for a long time have a hard time finding a job, and even those who are willing to accept much lower wages are not necessarily able to return to work quickly. Companies are reluctant to hire long-unemployed job seekers, who they fear lack skills and motivation. As a consequence, the long-term jobless play a relatively limited role in influencing wage dynamics. But it is exactly this group and the average duration of unemployment that increased during the crisis, so that wages react only to fluctuations in the much smaller group of those unemployed short term (Gordon, 2013).

The shift in labor demand to high-skill occupations is also poised to affect wages. As the global war for talent continues, people with the right skills not only will have plenty of job opportunities, they will also be able to garner a larger share of the productivity gains they generate. Some observers estimate that in advanced economies such as Germany and the United States demand for talent could outstrip supply as early as 2015. This demand could generate ever more pressure to attract the most talented employees with improved working conditions, profit-sharing arrangements, and higher base salaries (Conference Board, 2014). This will mean faster overall wage growth, but perhaps only for the lucky few and not for the average wage earner.

Few benefit

The dynamics of the labor income share and of income inequality will diverge. Wages are set to grow faster than productivity, at least over the medium term, given the changes in the global labor supply (see table), but the bulk of that increase will accrue only to a small group of skilled workers, no more than 20 percent of the global workforce. Hence, in contrast to the trends recorded over the past three decades, income inequality between workers and the labor income share—that is, the distribution of income between workers and capital owners—will evolve in different directions, further complicating the work of policymakers.

Fruits of growth

Although productivity grew faster than wages before and after the global financial crisis, that is projected to change soon.

	2000–07	2008–09	2010–13	2014–16	2017–19
Wage growth	2.3	1.7	2.0	2.2	3.0
Productivity growth	2.5	–0.6	2.6	2.4	2.9

Source: ILO (2015).
Note: Data are based on a sample of 107 countries. Data for 2014 and beyond are projections.

Not only will the distribution of productivity gains benefit only those with the right skills, the overall growth rate of the world economy will remain under pressure, in particular since labor supply is set to decelerate globally. In fact, the likely acceleration of wage growth will put a dent in profits available for future investment, further depressing companies' appetite and willingness to expand their capacity. This means that the current slow rate of potential growth will likely continue over the medium term, which will hurt emerging market economies and keep them from catching up with advanced economies and further reducing poverty. All this suggests a possible worker paradise on the horizon, with lower unemployment, better working conditions, and higher salaries. But the only ones likely to be admitted into that paradise are those with the right skills—and at the cost of slower improvement in living standards and poverty reduction across the globe. ■

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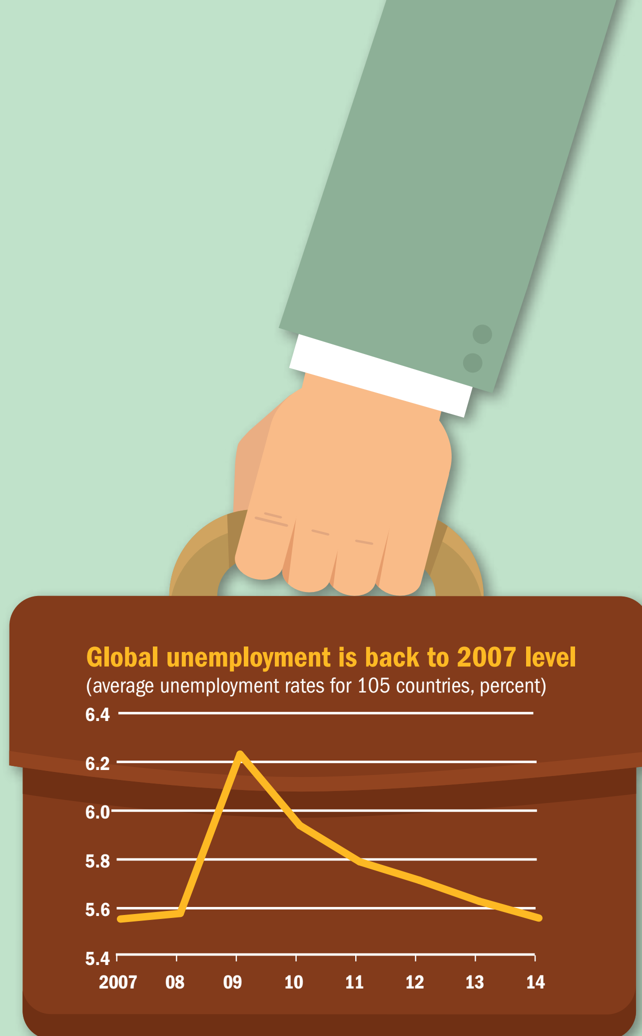
Back to Work

Global unemployment has fallen, but job growth remains sluggish

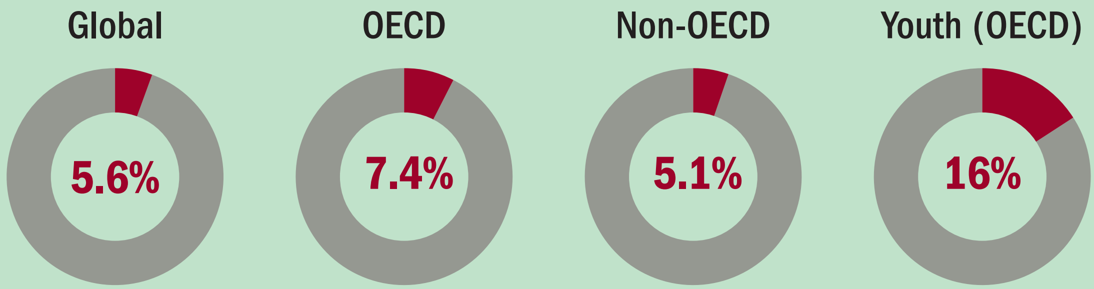
More than five years after the end of the Great Recession, global unemployment has returned to its precrisis level. The global jobless rate fell to 5.6 percent in 2014, essentially the same as in 2007, the year before the recession began. Over the past five years, unemployment has fallen sharply in a number of large countries, including the United States and Germany.

Still, all is not well in labor markets. Unemployment rates remain high in advanced economies and in some emerging markets—for example, at 24 percent and higher in Greece, Spain, and South Africa. And a new barometer of employment, the Global Jobs Index, shows that job creation is sluggish—at an annual rate of 1.5 percent compared with a rate of more than 2 percent before the crisis.

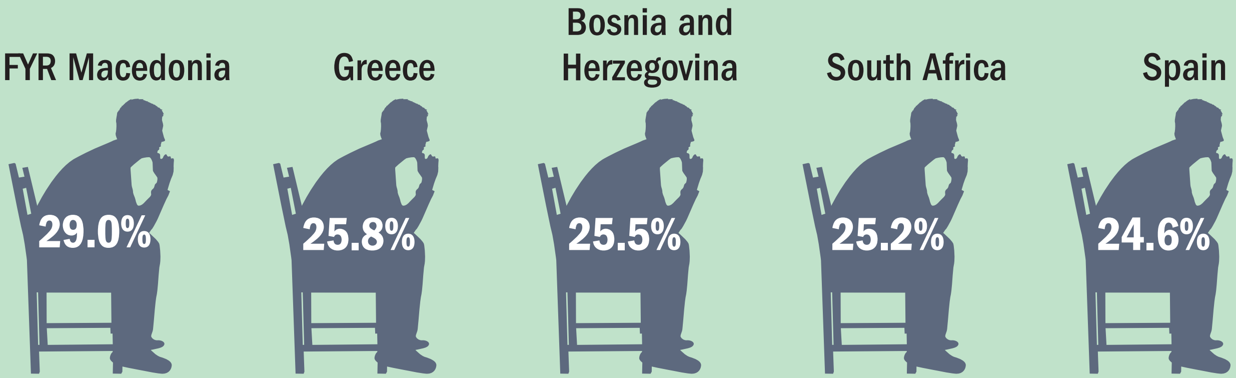
Job creation and economic growth go hand in hand; hence, raising growth through supportive macroeconomic policies and structural reforms are needed to raise employment growth so that the unemployed and new entrants to the labor force have jobs.

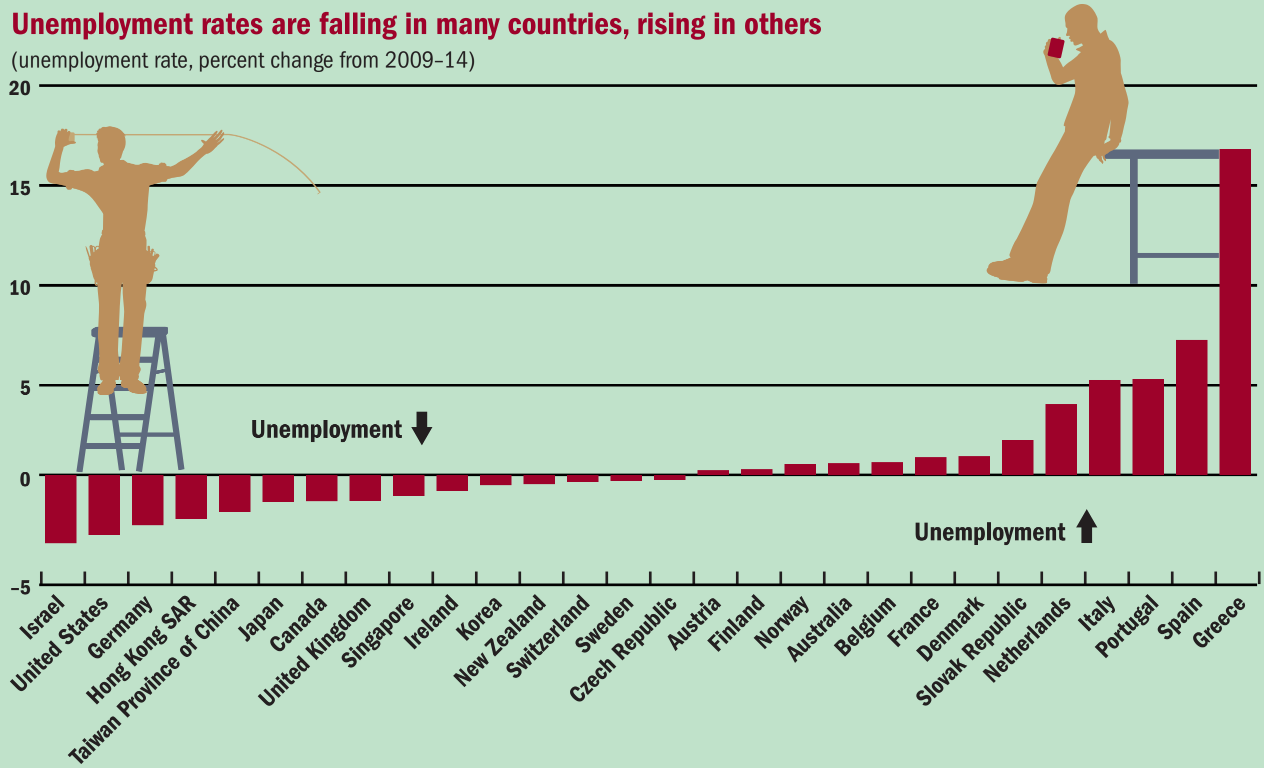


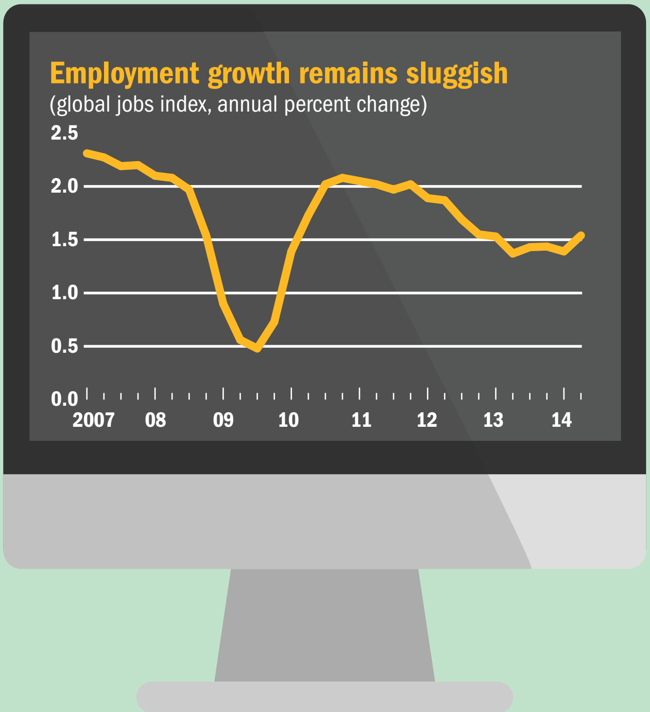
Unemployment rates in 2014



Highest unemployment rates in 2014







Prepared by Leo Abruzzese, Economist Intelligence Unit (EIU). Text and charts are based on the International Jobs Report, *published by the IMF, the EIU, and the OCP Policy Center in January 2015. The report is available at http://graphics.eiu.com/upload/eb/IJR-January-2015.pdf*

Jobless in EUROPE

A solution to unemployment in the euro area demands both growth and a more flexible labor market

No country, however rich, can afford the waste of its human resources. Demoralization caused by vast unemployment is our greatest extravagance. Morally, it is the greatest menace to our social order.

—Franklin Delano Roosevelt, September 30, 1934

Angana Banerji

EIGHTEEN million workers were unemployed in the euro area at the end of June 2014, more than the entire population of the Netherlands. Three million of those unemployed were between the ages of 15 and 24. But the absolute numbers don't provide a full picture of youth unemployment (see Chart 1).

Scaling the number of unemployed workers by the labor force reveals a dire situation. The unemployment rate among young workers is at an all-time high in some countries in the euro area. The youth unemployment rate has always been higher than the adult rate because of the region's rapidly aging population, which means that the 15- to 24-year-old workforce is smaller than the adult (older than 25) workforce. But the youth unemployment rate has increased faster than that for adults since the global financial crisis began in 2008, though there is wide divergence across countries. At the end of June 2014, more than 2 in 10 young workers were unemployed compared with 1 in 10 adult workers.

The young, the old, and the restless

U.S. President Harry S. Truman famously said, "It's a recession when your neighbor loses his job; it's a depression when you lose your own." Some commentators have pointed to the differences in magnitude between adult and youth unemployment and wondered whether there is a need to focus specifically on unemployment among younger workers.

All workers contribute to an economy's capacity to grow by providing vital labor resources. Therefore, all unemployment is cause for concern.

The longer workers stay unemployed, the less they are able to produce because their skills become less relevant over time. This limits the economy's ability to grow its way out of a recession; recessions end up lasting longer because of a less productive workforce. So it is of great concern that more and more workers in the euro area have now been unemployed for a year or longer, joining the ranks of the so-called long-term unemployed. The share of long-term unemployment was 53 percent for all unemployed workers and 40 percent for young unemployed workers in June 2014.

While unemployment places a heavy burden on all workers, high youth unemployment deserves special attention.

The experience of early job loss can "scar" workers (see "Scarred Generation," in the March 2012 *F&D*), lowering their chances of finding gainful employment at a decent wage in the future. Many researchers have found substantial evidence of such scarring. These effects can persist for longer than a decade, affecting generations of workers.

Moreover, one has only to glance at newspaper headlines to see how high youth unemployment can affect social cohesion, making progress with sorely needed difficult reforms even harder. Several studies have empirically documented this relationship. Studies also show that the experience of unemployment during one's formative years can reduce confidence in socioeconomic and political institutions and lead to elevated crime rates.

Perhaps most noteworthy for adult workers who are employed, high unemployment among the younger age groups can make social safety nets less sustainable. Given the aging population, the dependency ratio—the number of workers needed to support each retiree—has been rising gradually over the years. The burden of supporting a growing number of retired workers is being spread across fewer and fewer younger workers. High and persistent youth unemployment adds to these concerns.

To be sure, the rising dependency ratio could be mitigated by inward migration of workers to replenish the workforce. But there are practical limits to how much immigration can solve the problem (see "A Long Commute," in this issue of *F&D*). And the reality has been quite different, as the crisis has led to a net outflow of migrants from the vulnerable countries in the euro area. Furthermore, there is some evidence that high-skilled young workers are the ones heading for the exit, choosing to study and work abroad.

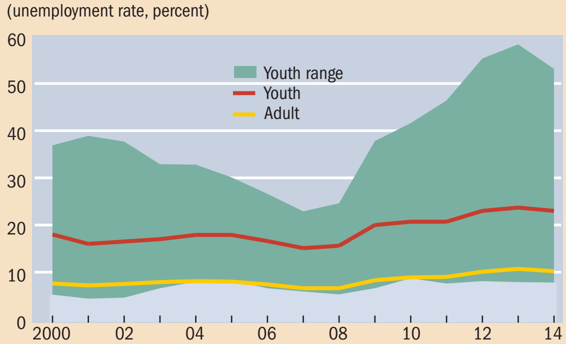
So it is in the interest of society as a whole to solve the youth unemployment problem in the euro area.

Chart 1

A bleak picture

Youth unemployment in Europe runs about double that for adults; in some countries half the youth are jobless.

(unemployment rate, percent)



Sources: Eurostat; and IMF staff calculations.
Note: Shading shows the range of youth unemployment rates in euro area countries.

Common solutions

The good news is that addressing youth unemployment should not come at the expense of neglecting adult unemployment. The IMF recently published research (Banerji and others, 2014) that examines what is driving unemployment in a group of 22 advanced economies in Europe. The study finds that youth and adult unemployment have much in common: they are to a large extent driven by the same factors and can be addressed to different degrees by the same policies.

The youth unemployment rate responds more strongly than the adult unemployment rate to output growth.

But some factors are "more equal than others," as George Orwell might have said. Our study finds one of the most important drivers of unemployment in Europe is output growth. Changes in economic activity explain on average about 50 percent of the increase in youth unemployment since the crisis and about 60 percent of the increase in adult unemployment. The importance of growth varies across countries; one extreme example is Spain, where fluctuations in economic activity seem to account for 90 percent of the increase in the youth unemployment rate during the crisis.

These numbers are likely conservative estimates. Labor markets tend to have many quirks that are relevant for individual countries but are difficult to generalize or measure in a consistent manner for all countries. Many facets of the economy also influence how, and how soon, changes in policies and economic output affect labor market outcomes. For instance, during the crisis German firms chose to hold on to their workers given their prior experience with labor shortages. As a result, German workers worked fewer hours on average instead of being laid off.

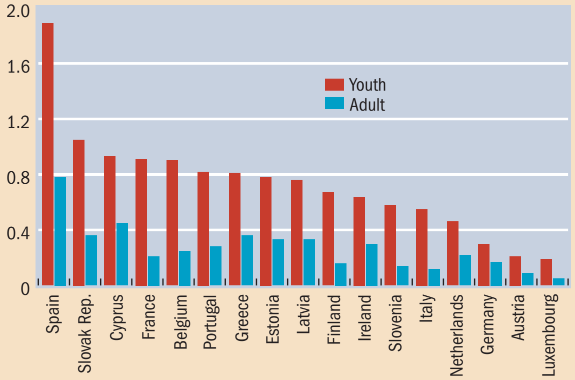
Clearly, policies that raise economic growth benefit all workers in all countries. But there are significant differences across countries in the degree to which changes in economic outcomes will lower unemployment (see Chart 2). The largest responses would occur in the most vulnerable euro area countries—for example, Cyprus, Greece, Ireland, Portugal, and Spain. In countries such as Germany with low unemployment rates the responses would be much smaller. Regardless of these variations, in all countries, the youth unemployment rate responds more strongly than the adult unemployment rate to output growth—about three times more strongly on average.

Chart 2

Growing jobs

The impact on youth unemployment of a drop in growth is, on average, triple that for adult workers.

(estimated increase in unemployment rate attributable to a 1 percentage point drop in growth, percentage points, 1983–2012)



Sources: Eurostat; and IMF staff calculations.

The large effect of growth on youth unemployment can be explained by the fact that employment conditions for young workers tend to be more fragile than for adult workers. Young workers are three times more likely to be hired on temporary contracts than adults in the euro area. They also work in sectors of the economy that are vulnerable to recessions. For example, one in four young workers in Cyprus, Greece, Ireland, Portugal, and Spain was employed in the construction sector before the housing market bust. These employment conditions mean young workers are the last in but first out of jobs in a downturn.

More flexible markets

The IMF study also finds that inflexible labor markets can foster higher youth and adult unemployment and that some of these characteristics—such as employment protection under work contracts—are particularly relevant for young workers. Thus labor market reforms can help lower unemployment.

A prominent example of such beneficial reforms is taxes on labor. A smaller labor tax wedge—the difference between workers' cost to employers and their net earnings—makes hiring less costly, increases the demand for workers, and benefits all unemployed workers regardless of age.

Young workers face an additional constraint. They are more likely than adults to earn the minimum wage since they are often low skilled. Because wages gradually adjusted downward in many euro area economies during the crisis, it is important to ensure that the minimum wage is not too high relative to average wages in an economy, which risks making young workers too expensive to hire relative to adult workers.

Lowering the opportunity cost of working—for example, by reducing overly generous unemployment benefits—can also reduce both adult and youth unemployment. This is because smaller financial incentives for staying unemployed can induce workers to seek and accept job offers they may not otherwise pursue.

Another reform that can help get people back to work is to ease employment protection requirements on work contracts. This can significantly reduce both youth and adult unemployment. But it has a bigger impact on youth rates because of the disproportionately high incidence of temporary contracts in the 15 to 24 age group. Large differences between protection afforded by temporary and permanent contracts (or "labor market duality") risk locking young workers into a permanent underclass, with employers unwilling to make the necessary investments in their human capital.

One way to address this problem is by marrying temporary employment contracts with industry-led skill building. Improving vocational training systems would be particularly helpful for young workers. In vulnerable euro area countries, only one in four young workers on temporary job contracts is in a vocational training or apprenticeship program, unlike in countries such as Austria and Germany, where such training is almost the norm. Several countries in Europe have used such vocational training systems to great effect to limit scarring and ready workers for the workplace.

Gearing active labor market policies toward young workers can be helpful. These programs intervene in markets to reduce unemployment, but currently most such programs do not target young workers. Programs should be tailored to the institutional, economic, and social context of individual countries given evidence that there is no one-size-fits-all program that would work well in all countries. And the success of such programs is by no means assured unless they are well designed and implemented. The IMF study recommends increased focus on education and on-the-job training targeted at developing occupational skills.

Long road to full employment

High unemployment in the euro area today is a consequence of both the economic fallout from the global financial crisis and labor market rigidities that predate the crisis in many countries. It would be helpful for all workers if policies focused on fixing the weak economy and the malfunctioning labor market.

The top priority of policymakers should be to revive growth through a combination of supportive monetary policy, more public investment by countries with sufficient leeway in their budgets to do so, and measures to help banks resume lending. Without strong growth, it will be difficult to make a sizable dent in unemployment. It is also important to push forward on critical reforms that make it easier for firms to hire, ensure a level playing field for all workers, and allow workers to preserve and enhance their skills while they are between jobs. ■

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This article is based on the recently published IMF Staff Discussion Note 14/11, "Youth Unemployment in Advanced Economies in Europe: Searching for Solutions," by Angana Banerji, Sergejs Saksonovs, Huidan Lin, and Rodolphe Blavy.

POWER from the PEOPLE

Florence Jaumotte and Carolina Osorio Buitron

The decline in unionization in recent decades has fed the rise in incomes at the top

INEQUALITY has risen in many advanced economies since the 1980s, largely because of the concentration of incomes at the top of the distribution. Measures of inequality have increased substantially, but the most striking development is the large and continuous increase in the share of total income garnered by the 10 percent of the population that earns the most—which is only partially captured by the more traditional measure of inequality, the Gini coefficient (see Chart 1).

The Gini is a *summary* statistic that gauges the average difference in income between any two individuals from the income distribution. It takes the value zero if all income is equally shared within a country and 100 (or 1) if one person has all the income.

While some inequality can increase efficiency by strengthening incentives to work and invest, recent research suggests that higher inequality is associated with lower and less sustainable growth in the medium run (Berg and Ostry, 2011; Berg, Ostry, and Zettelmeyer, 2012), even in advanced economies (OECD, 2014). Moreover, a rising concentration of income at the top of the distribution can reduce a population's welfare if it allows top earners to manipulate the economic and political system in their favor (Stiglitz, 2012).

Traditional explanations for the rise of inequality in advanced economies are skill-biased technological change and globalization, which have increased the relative demand for skilled workers, benefiting top earners relative to average earners. But technology and globalization foster economic growth, and there is little policymakers can or are willing to do to reverse these trends. Moreover, while high-income countries have been similarly affected by technological change and globalization, inequality in these economies has risen at different speeds and magnitudes.

Voting at annual Trades Union Congress meeting, Bournemouth, United Kingdom.

As a consequence, economic research has recently focused on the effects of institutional changes, with financial deregulation and the decline in top marginal personal income tax rates often cited as important contributors to the rise of inequality. By contrast, the role played by labor market institutions—such as the decline in the share of workers affiliated with trade unions and the fall in the minimum wage relative to the median income—has featured less prominently in recent debates. In a forthcoming paper, we look at this side of the equation.

We examine the causes of the rise in inequality and focus on the relationship between labor market institutions and the distribution of incomes, by analyzing the experience of advanced economies since the early 1980s. The widely held view is that changes in unionization or the minimum wage affect low- and middle-wage workers but are unlikely to have a direct impact on top income earners.

Weakening of unions reduces the bargaining power of workers relative to capital owners and top earners.

While our findings are consistent with prior views about the effects of the minimum wage, we find strong evidence that lower unionization is associated with an increase in top income shares in advanced economies during the period 1980–2010 (for example, see Chart 2), thus challenging preconceptions about the channels through which union density affects income distribution. This is the most novel aspect of our analysis, which sets the stage for further research on the link between the erosion of unions and the rise of inequality at the top.

Changes at the top

Economic research has highlighted various channels through which unions and the minimum wage can affect the distribution of incomes at the bottom and middle, such as the dispersion of wages, unemployment, and redistribution. In our study, however, we also consider the possibility that weaker unions can lead to higher top income shares, and formulate hypotheses for why this may be the case.

So the main channels through which labor market institutions affect income inequality are the following:

Wage dispersion: Unionization and minimum wages are usually thought to reduce inequality by helping equalize the *distribution of wages*, and economic research confirms this.

Unemployment: Some economists argue that while stronger unions and a higher minimum wage reduce wage inequality, they may also increase unemployment by maintaining wages above "market-clearing" levels, leading to higher *gross income inequality*. But the empirical support for this hypothesis is not very strong, at least within the range of institutional arrangements observed in advanced economies (see Betcherman, 2012; Baker and others, 2004; Freeman, 2000; Howell and others, 2007; OECD, 2006). For instance, in an Organisation for Economic Co-operation and Development review of 17 studies, only 3 found a robust association between union density (or bargaining coverage) and higher overall unemployment.

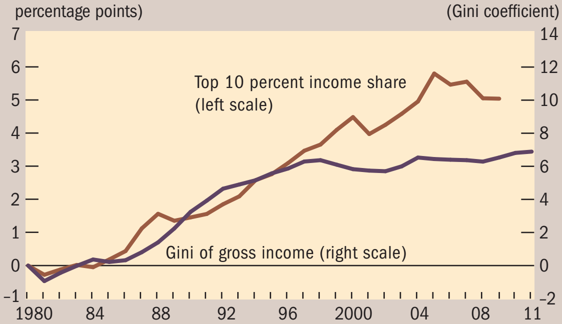
Redistribution: Strong unions can induce policymakers to engage in more redistribution by mobilizing workers to vote for parties that promise to redistribute income or by leading

Chart 1

More for the top

Over time, those at the top of the income distribution in advanced economies have enjoyed an increasingly larger share of total income, exacerbating inequality.

(cumulative change since 1980, percentage points) (Gini coefficient)



Sources: World Top Incomes Database; and Standardized World Income Inequality Database Version 4.0.

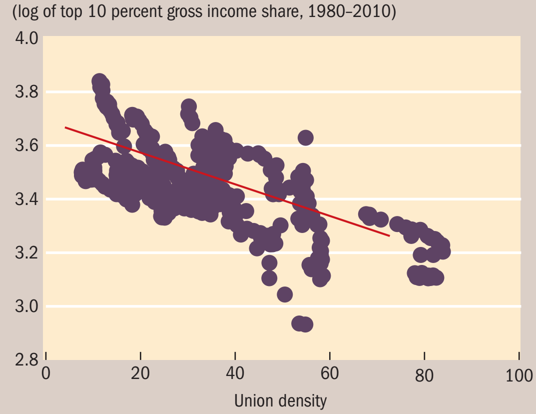
Note: Gini coefficient equals 0 if all income is equally shared within a country and 100 if one person has all the income. Advanced economies = Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States: simple average. For top 10 percent income share, Austria, Belgium, Canada, Denmark, Finland, Germany, Netherlands, New Zealand, Portugal, and United Kingdom are excluded due to missing data.

Chart 2

In fairness

Lower unionization in advanced economies is correlated with an increase in top 10 percent income share.

(log of top 10 percent gross income share, 1980–2010)



Sources: Organisation for Economic Co-operation and Development; and Standardized World Income Inequality Database Version 4.0.

Note: Advanced economies = Australia, Canada, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United States. Union density is the share of workers affiliated with trade unions.

all political parties to do so. Historically, unions have played an important role in the introduction of fundamental social and labor rights. Conversely, the weakening of unions can lead to less redistribution and higher *net income inequality* (that is, inequality of income after taxes and transfers).

Bargaining power of workers and top income shares: Lower union density can increase *top income shares* by reducing the bargaining power of workers. Naturally, top income *shares* are mechanically influenced by what happens in the lower part of the income distribution. If deunionization weakens earnings for middle- and low-income workers, this necessarily increases the income share of corporate managers' pay and shareholder returns. Intuitively, the weakening of unions reduces the bargaining power of workers *relative to capital owners,* increasing the share of capital income—which is more concentrated at the top than wages and salaries. Moreover, weaker unions can reduce workers' influence on corporate decisions that benefit *top earners,* such as the size and structure of top executive compensation.

The decline in unionization is strongly associated with the rise of income shares at the top.

To study the role of unionization and the minimum wage in the rise of inequality, we use econometric techniques over a sample including all advanced economies for which data are available and the years 1980 to 2010. We examine the relationship between various inequality measures (top 10 percent income share, Gini of gross income, Gini of net income) and labor market institutions, as well as a number of control variables. These controls include other important determinants of inequality identified by economists, such as technology, globalization (competition from low-cost foreign workers), financial liberalization, and top marginal personal income tax rates, as well as controls for common global trends in these variables. Our results confirm that the decline in unionization is strongly associated with the rise of income shares at the top.

While causality is difficult to establish, the decline in unionization appears to be a key contributor to the rise of top income shares. This finding holds even after accounting for shifts in political power, changes in social norms regarding inequality, sectoral employment shifts (such as deindustrialization and the growing role of the financial sector), and increases in education levels. The relationship between union density and the Gini of gross income is also negative but somewhat weaker. This could be because the Gini underestimates increases in inequality at the top of the income distribution.

We also find that deunionization is associated with less redistribution of income and that reductions in minimum wages increase overall inequality considerably.

On average, the decline in unionization explains about half of the 5 percentage point rise in the top 10 percent income share. Similarly, about half of the increase in the Gini of net income is driven by deunionization.

Future research

Our study focuses on unionization as a measure of the bargaining power of workers. Beyond this simple measure, more research is needed to investigate which aspects of unionization (for example, collective bargaining, arbitration) are most successful and whether some aspects may be more disruptive to productivity and economic growth.

Whether the rise of inequality brought about by the weakening of unions is good or bad for society remains unclear. While the rise in top earners' income share could reflect a relative increase in their productivity (good inequality), top earners' compensation may be larger than what is justified by their contribution to the economy's output, reflecting what economists call rent extraction (bad inequality). Inequality could also hurt society by allowing top earners to manipulate the economic and political system.

In such cases, there would be grounds for governments to take policy action. Such action could include corporate governance reforms that give all stakeholders—workers, managers, and shareholders—a say in executive pay decisions; improved design of performance-related pay contracts, especially in the risk-happy financial sector; and reaffirmation of labor standards that allow willing workers to bargain collectively. ■

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The Foremost Priority

It's time for a recovery led by wages and public investment

Sharan Burrow

Sharan Burrow is General Secretary of the International Trade Union Confederation.

THE global employment deficit remains a glaring indictment of the failures of economic policies applied in the postcrisis period, more than six years after the start of the worst global financial crisis and recession since the Great Depression of the 1930s.

According to the International Labour Organization's (ILO's) *World Employment and Social Outlook*, the global unemployment rate in 2014 was 5.9 percent, representing more than 200 million people out of work, and considerably higher than the 2007 precrisis rate of 5.5 percent.

These figures do not take into account the hundreds of millions of workers who are underemployed, work in informal economy jobs, or do not earn enough to raise themselves and their dependents above the poverty line. The ILO notes that some 760 million workers, who represent 28 percent of the employed population in developing countries, are in the category of "working poor"—earning less than $2 a day.

Nor does the ILO's jobless figure include those no longer engaged in fruitless job searches (so-called discouraged workers). This explains why labor force participation in 2014 was even lower than at the height of the recession in 2009. Because of the lower participation rate, the ILO projected a global employment-to-population ratio of 59.7 percent in 2014, the same as in 2009 and well below the 2007 precrisis figure of 60.7 percent.

Policy shortcomings

For the first two years after the start of the crisis, the international community, via the Group of 20 advanced and emerging market economies (G20) and international organizations, led a concerted effort to save the financial sector from collapse, stop the downward spiral of global economic activity, and help get the global labor force back to work. But once the first two objectives were achieved, with the financial sector stronger than ever and profits back to precrisis levels, the third objective was abandoned.

Bailouts of the financial sector and stimulus policies to end the recession gave way in 2010 to premature and frequently self-defeating efforts to reduce fiscal deficits, most often through cuts in social programs and other public expenditures and increases in regressive taxation.

These policies not only worsened the conditions of those most dependent on state support, but they cut short the fragile recovery in many countries, most particularly in the euro area, which by 2012 had fallen into a double-dip recession. The purported objective of the austerity policies to reduce public indebtedness was also an abject failure, as in country after country new recessions resulted in increased ratios of debt to GDP.

Lagging wages

A significant feature of the postcrisis period is the compression of aggregate demand resulting from persistently high unemployment as well as from the failure of wages to keep up with productivity. A report jointly prepared in September 2014 by the ILO, the Organisation for Economic Co-operation and Development, and the World Bank (ILO, OECD, World Bank; 2014) notes this phenomenon and how it prevented a robust recovery and exacerbated inequality:

"Wage growth has significantly lagged behind labor productivity growth in most G20 countries. The decline in labor's share of income observed in most G20 countries over recent decades has continued in some while in others the labor share has stagnated. Wage and income inequality has continued to widen within many G20 countries . . . Re-igniting economic growth . . . depends on recovery of demand, and this in turn requires stronger job creation and wage growth."

According to an International Trade Union Confederation (ITUC) global poll of the general public in 14 countries, only half of respondents believe that the next generation will find a decent job. Eighty-two percent say their incomes have fallen behind the cost of living or are stagnant, and half of working families say they cannot keep up with the rising cost of living. Seventy-eight percent believe that the economic system favors the wealthy and is not fair for most people.

Global recovery strategy

The global trade union movement has sought to respond to the long-term economic stagnation and high unemployment and underemployment resulting from deficient demand. It has put forward a global recovery strategy that hinges on the restoration of wages and investment in public social and physical infrastructure.

An ITUC modeling exercise found that a policy mix of coordinated wage increases and public investment stimulus could lead to 5.8 percent higher growth in the G20 countries in the next five years (ITUC, 2014). A wage- and investment-led recovery strategy would also help attain the objectives of social, environmental, and fiscal sustainability and reduced inequality.

While the increased attention to the issue of inequality by the IMF and other international organizations is certainly welcome, most institutions have yet to develop consistent and coherent approaches that encompass and respond to all the causes of growing inequality, and most particularly to developments in labor market institutions and policies.

Along with policies such as austerity that depress aggregate demand, policies that decrease employment security and weaken minimum standards can reduce labor income and skew overall income distribution.

The ILO notes in its *Global Wage Report 2014/15* that "inequality starts in the labor market." In economies where inequality increased the most, the phenomenon can often be traced to loss of income as result of higher unemployment combined with increased wage inequality. The report found, however, that in emerging market countries where—contrary to global trends—inequality declined, "a more equitable distribution of wages and paid employment was a predominant factor."

This highlights the importance of policies such as minimum living wages, protections against unjust dismissal, and robust collective bargaining institutions. Some international institutions have advocated weaker labor market regulations and institutions on an unfounded assumption that there is a strong and systematic negative relationship between the level of regulation and employment.

The World Bank, which devoted its flagship *World Development Report 2013* to the theme of jobs, undertook an extensive review of recent economic literature on the impact of employment-protection legislation and minimum wages. The report found that "most estimates of the impacts [of labor regulations] on employment levels tend to be insignificant or modest." It also found that "it is clear that unions and collective bargaining have an equalizing impact on earnings differentials."

Policies that seek to deregulate labor markets and weaken collective bargaining have been an important feature of some of the adjustment programs supported by the IMF, most particularly in the recent post–global crisis period in southern and eastern Europe. Some countries have seen significant declines in real wages and a dramatic drop in collective bargaining coverage.

Another six years of global employment stagnation is unacceptable.

The immediate impact has been a sharp decline in domestic demand, intensifying the recessionary impact of austerity policies and contributing to unemployment levels of 25 percent or more in some countries. There are signs that inequality has increased in those countries and will get worse in the future. Organized labor has been the strongest constituency in favor of comprehensive social protection and progressive taxation—weakening its role will have consequences not only for wage levels but also for potentially far-reaching redistributive policies.

It is time to get the global agenda back on track, making job creation the foremost priority. Another six years of global employment stagnation, accompanied by outright depression in some countries, is unacceptable.

According to the ITUC global poll, people around the world want their governments to be more activist. They want governments to tame corporate power (62 percent) and to tackle climate change (73 percent).

The global labor movement has a clear view of the work that must be done: raise wages and social protection, tame corporate power and eliminate wage slavery, and secure climate justice and good economic governance. And back it all up with jobs, jobs, jobs. ■

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YOUTH ECHOES

In early 2012, *F&D* interviewed six young people from around the globe who were entering the workforce in an unfavorable economic environment.

We have revisited four of them—from Bosnia, Egypt, Japan, and the United States. We were unable to speak to Adilmer Garcia of Peru, who had moved from the mountains of northern Peru to a shantytown on the outskirts of Lima to pursue his work and gain an education. He lost his job at a glass cutters shop and in 2012 was seeking employment that would leave the morning or afternoon free for classes. Nor could we locate Chioma Nwasonye from southern Nigeria, who had been job hunting since her university graduation and had decided to attend graduate school in the meantime.

Here are the latest developments in the lives of the four young people we interviewed.

Finding a Dream Job in Bosnia

IRMA BORACIC-SUMAN graduated from the Sarajevo University Law School in 2009. It took four years and 385 job applications before she found her dream job in March 2013.

While Boracic-Suman, 28, is happy at her new job at the Sarajevo municipal court, she said she knows that many other young people remain jobless. At 45 percent, Bosnia and Herzegovina has the highest unemployment rate in Europe. According to the Bosnian Agency for Labor and Employment, the rate drops to 27.5 percent when workers in the informal economy are counted.

"When my colleague called and told me that I was nominated as a professional associate at the Sarajevo municipal court, I thought it was a joke," she said. A year before she got the job, Boracic-Suman passed her judicial exam with no jobs in sight.

"It was a period of filing new job applications, the period when one who has done everything needed to start a career after law school—passed the judiciary exam, gained the necessary experience—really becomes desperate and starts sinking into depression," she said.

Boracic-Suman found most job ads on the Internet or on the websites of individual companies, submitting 90 percent of her applications by email. In most cases she never got a reply.

She said she believes that it took her so long to find a job because her family was not influential or politically connected. She said she is proud that she was chosen on her qualifications and skills. "My confidence in the legal system returned during the interview for this job, when interviewers asked me questions based on my knowledge, both theoretical and practical, about my views of certain legal solutions," she said. "I am so glad that they recognized my ambition and efforts to gain the necessary knowledge."

She works at the court division that deals with the execution of court orders on collection of outstanding bills by Sarajevo municipal companies. Because of budget constraints, she is the only professional associate in the office. "I work very hard but don't complain. I am so happy to be able to do what I like and feel completely fulfilled."

She thinks that the years of waiting for a job have helped her build patience and understanding, which helps her when she has to deal with people who cannot pay their bills. "I can get properly into a case because I understand what the social

"I talk to people in various professions, such as nurses or IT specialists, and it is defeating that they can't find work in their fields."

injustice and poverty mean in our society today, and perhaps present the case in a better way," she said.

Next year, Boracic-Suman can apply to be a judge. She said she hopes her qualities and hard work will be recognized by a selection committee, but said she would not be disappointed if she is not selected on her first try.

Boracic-Suman was married in December 2014, and the couple lives in an apartment she recently bought. The 20-year mortgage consumes nearly half of her monthly salary of 1,200 Bosnian marks ($754). But she is optimistic. "We have our own apartment, secure jobs, and state salaries," she said. She expects her salary to increase once she becomes a judge.

Although Boracic-Suman is happy in Bosnia and Herzegovina, she said she understands why some young people want to leave. "I talk to people in various professions, such as nurses or IT specialists, and it is defeating that they can't find work in their fields. Even though they are vital to the country's functioning and development, the state does not care to provide them with job opportunities," she said.

Boracic-Suman said that labor laws are the main reason for the massive youth exodus. If pension funds were strengthened, older workers could retire and create openings for young people.

"Persistence is the only way to accomplish something, at least in this country. The people here are condemned to get what they want by themselves, to fight with their own qualities and in their own ways. In my case, it was recognized, and I can only recommend to everyone to be determined to push for their rights." ■

Reporting: Daria Sito-Sucic; Photography: Dado Ruvic

An Oscar Nomination in Egypt

AHMED HASSAN never imagined that the video clips he worked so hard to film during the 18 days of the January 25, 2011, revolution in Egypt would change the course of his life the way they did. Hassan met an Egyptian-American filmmaker, Jehane Noujaim, and each carried video cameras to record the events of the revolution moment by moment.

They turned the clips into a full-length documentary, "The Square," with Noujaim as director and Hassan as both the director of photography and a main character. The documentary tells the story of the revolution—from the downfall of autocrat Hosni Mubarak to the replacement of elected President Mohamed Morsi in 2013. "The Square" was nominated for an Oscar in 2014.

"The Square" did not win an Academy Award, but its international prominence (Netflix began to offer what had been an online film in January 2014) catapulted the middle-class young man to sudden stardom, even as the authorities tried to suppress the documentary in Egypt.

"The censorship authorities did not approve the showing of the film in cinemas, but it was leaked on YouTube, and counterfeit CDs were being sold in the streets," said Hassan. "It's true that we did not receive any money from the film, but it reached every home, and popular cafés were holding special sessions to show the film—and I would receive invitations to attend these sessions. I can't describe how happy I was."

In August 2014, Hassan won an Emmy award from the International Academy of Television Arts and Sciences in the United States for his work on "The Square," the first Egyptian to do so.

But Hassan is a reluctant star and leader. "After the revolution, young people were trying to encourage me to speak on their behalf in the media, but I refused because I'm convinced that I am not qualified to play the role of a leader. Aside from my previous role in the private and government media in Egypt, I preferred to remain in the shadows. Everyone who appeared in the media became an expendable face, and I preferred to focus on my work. I bought photography and editing equipment and started developing my skills in the profession."

Hassan said he does not have a long-term vision of his future. "I like to live one day at a time," he said. He is currently an independent director and photographer and is working on filming and editing another documentary on the events of the revolution. He is also about to finish a film on political detainees. The female lead of this film is the activist Sanaa Abdel Fattah, one of his close friends, who was convicted for protesting and sentenced to three years in jail in late 2014.

Hassan said he has not lost hope that democratic change will come to Egypt, but he said that he is bothered by its slow pace and by the country's repetition of the same political mistakes.

And he wants to stay in Egypt, although he hopes to live abroad for a brief period. "I never think about emigrating. Right now I'm looking for a teaching position for a year or two in England or the United States, and I hope my luck holds out. I think this will make a big difference in my professional career."

Hassan said that new technology and social media have played a major role in his professional life. "Speed has been very helpful to me. I would cover events and clashes and then upload them to YouTube, which would get tens of thousands of views, and this was a big reason for my success and fame."

His artistic success has also been financially rewarding: "My monthly income has increased manyfold, and I am now living in my own house in a central part of the city [Cairo]." He gave his old house to his mother and sisters and supports them.

Even so, he is not ready for marriage. "It's true that my financial situation has improved . . . but I can't afford to get married at the present time; maybe I will wait another couple of years." ■

Reporting and photography: Hisham Allam

In Japan, One Step Forward, Two Steps Back

IT has been a roller-coaster couple of years for Takumi Sato, who in that time has found a job, tried to cope with mental health issues, lost a job, and now considers himself a victim of the government's economic policies.

And while Sato's concerned parents have persuaded him to spend more time at their home, east of Tokyo, he is still fiercely independent and will not give up his one-room apartment in Kawagoe, a suburb north of Tokyo.

Sato, 26, said he is determined to get by on the roughly $1,000 he receives every month in government assistance. "I have to be quite careful, but I'm used to that now, and every month I try to make sure I have a little left over that I can save up," he said.

Things had once been looking up for Sato. He had a six-month contract with a company that makes animated television shows and video programs, and even though it was not renewed, he quickly found another six-month stint with a firm that prepares bento box lunches for supermarkets and convenience stores. But then Sato—who had been diagnosed with Asperger's syndrome (considered an autism spectrum disorder) and attention deficit hyperactivity disorder—was advised by a doctor to quit his job because his mental health had deteriorated.

After recuperating, Sato joined "Hello Work," the Japanese government's employment service center, and said he was delighted to find a new job almost immediately with a firm that creates smartphone and online games. "It was like a dream come true because it was exactly the sort of job that I wanted," said the technical college graduate who studied computer game design and production.

Yet Sato was again on a six-month renewable contract, the same situation as millions of workers who had once enjoyed the job-for-life model with one of Japan's companies. After the economic downturn that began in the early 1990s, that system withered.

"They said I would be able to get full employee status after I completed my first six months," Sato said. "That meant that

I didn't get any of the benefits of the regular staff I was working alongside, and six months felt like a really long time."

Stress began to take its toll; he was unable to sleep and often arrived for work late. The company warned him repeatedly that he needed to arrive on time, but that just made things worse, Sato said. Sato's doctor diagnosed a sleep disorder, and although the company paid him until the end of the contract, it was not renewed.

He is now unemployed and undergoing treatment for his mental health problems. "I really want to work," he said. "I want to find a place where I am accepted for who I am, where people understand my condition. That's why I'm getting help from people who are showing me how I can be a productive member of the workforce." Everything else, from making friends to having a family of his own, is on hold. "I can't work, so how can I find a partner and provide a family with security?"

Sato seems resigned to his plight. Only when Japan's political situation comes up does he become animated, even angry. "Abenomics has done absolutely nothing for me or millions of people like me," he said, referring to Prime Minister Shinzo

Abe's efforts to strengthen the Japanese economy through fiscal stimulus, monetary easing, and structural reforms.

Sato said Abe's policies have widened the gap between those in Japanese society who are wealthy and the have-nots. "He's helping people who already have it all," he said. "It's the rich; it's big companies and elderly people. People like me—the young, the part-time employees, the out-of-work, the sick—we have no voice and no rights anymore," he said.

In November 2014 Abe called a snap parliamentary election for the following month.

Sato said he voted for the Japanese Communist party in the December election. Abe's party won handily. ■

Reporting: Julian Ryall; Photography: Alfie Goodrich

A Round Peg in a Square Hole in the United States

ALEXA CLAY was feeling a little lost and confused. Part of that was culture shock: the social activist had recently returned for a brief visit to Washington, D.C., from Berlin—which she presently calls home. She said she was struck anew by the frantic pace and work-obsessed nature of life in the U.S. capital.

The other reason for her confusion was more existential. Clay spends much of her day pondering some of the great issues of our age: Whither capitalism? What is the fate of the last remaining superpower? How can meaningful change be instigated within huge, monolithic corporations?

When *F&D* spoke to Clay two years ago, she was working for a nongovernmental organization and was deeply involved with the Occupy movement, a series of protests that grew out of the financial crisis of 2008–09. The movement was fueled by disgust at what it considered the avariciousness of Wall Street and appeared poised to persist. Instead, Occupy lost steam and essentially has disappeared from public consciousness.

Two years later, Clay admitted to being less hopeful about the possibility of social change. "Things are just much more complicated and complex [than I used to think]. I would say I'm working just as hard on the same things, but yes, change is not coming as quickly as I would have liked."

Post-Occupy, Clay remodeled herself into a self-described "cultural hacker" and revels in her outsider status. Her website describes her as "chief misfit" with the aim of "rewiring the spirit of capitalism one misfit at a time."

Misfit may be clear, but "cultural hacker"? "Both my parents are anthropologists, so culture has always been really important to me. Culture isn't static and we can actively shape culture." She said she works with people to empower them to take action to change culture. And hacking "is about knowing systems so you can transform them. Hackers really know how to break apart systems. They know every element of the system. There is an urgency to it. There is this sense that your allegiance is for some greater good."

As part of her cultural hacking agenda, Clay helped found the "League of Intrapreneurs," which provides peer support to employees of large organizations (or as she calls them, "cubicle warriors") who want to transform their businesses from within.

She gave as an example a third-generation auto industry employee she identified as Dave. His aim is to get the company he works for to rethink urban transportation beyond its primary objective of manufacturing cars.

"With someone like Dave, the first thing we would do is an hour-long interview where we really feel out his identity as a social intrapreneur: he's a member of Amnesty International; he's a Catholic. He brings all these other elements into his job. A lot of other people may not have the same courage to be that authentic within the workplace."

"After we spoke to him, we did a first convening, where we brought together 20 people that we felt met this description. We had them all meet each other. Then we ran a global competition to source even more people into the network."

Clay's work involves much talk, but conversation, networking, discussion, and the exchange of ideas are, for her, an end in themselves. The cultural hacker writes on her website, "I use conversation as a tool for understanding the state of the world. I use conversation to find connection. I use conversation for play."

But a woman cannot live on conversation alone, and Clay's nomadic existence over the past two years has been financed by such activities as public speaking, consulting, and writing.

In line with her celebration of society's oddballs, Clay has coauthored a book, due out later this year, *The Misfit Economy*, which looks at innovators in the underground and informal economy—the "misfits" of the title.

Clay's examples of misfits include the unsavory—Somali pirates and drug dealers—and Lady Gaga, whom she calls an example of a round peg in a square hole who capitalizes on "misfit sentiment." That may be as apt a description of Clay as it is of Lady Gaga. ■

Reporting: Hyun-Sung Khang; Photography: Michael Spilotro

NORWAY

Design, Democracy, and Daring

There are many reasons to create a new banknote or introduce new coins. It may be to fight forgery or respond to the effects of inflation—but there is no doubt that it is also an opportunity for a nation to present a new face to its own people and to the world. While a country's flag and anthem remain constant, its banknotes can be a window into an evolution that is inevitably occurring. In this new series, F&D *takes a look at the stories behind money around the world.*

Christopher Coakley

NORWAY'S new banknotes won't enter circulation until 2017 but they have already been described as the world's coolest currency. What do the bold designs—and even the selection process—tell us about this Nordic nation?

Norway is on top of the world in more ways than one. Geographically speaking, its lands reach deep into the Arctic Circle, and the nation of 5 million is also at the pinnacle of the UN's economic and societal rankings.

Monarchy and democracy

In December 2012, the Bank of Norway began the long process of launching new banknotes, citing the need to update anticounterfeiting features. In 2014, it launched a competition to find a design that would meet both security and aesthetic requirements.

Working with jury members from various walks of life, the bank took the unusual step of choosing a combination of two proposals to take forward for production.

The front of the notes will be developed from design firm The Metric System's "Norwegian Living Space" proposal and the reverse from Snøhetta Design's "Beauty of Boundaries" submission. The blending of proposals addressing space and boundaries appears harmonious. And the fair, open competition process with more than one winner seems to reflect Norway's reputation for democracy and inclusiveness.

Besides being a poster child for democracy, Norway is a constitutional monarchy, and the evolution of its banknotes traces a certain shift in its society's focus. The first bills, in the late 19th century, all depicted the king. In recent decades, they have honored citizens prominent in the arts

Reverse of new Norwegian currency notes.

and sciences, such as the painter Edvard Munch. The Bank of Norway's choice of theme for the new banknotes is the sea.

The sea

Norway's unique coastline of fjords has always been more of a gateway than a border, and the sea has been the lifeblood of its economy and culture. Exploration was the business of the Vikings, who raided and traded across Europe (and beyond) from the late 8th to the late 11th centuries. Nowadays "exploration" is more often associated with the offshore oil industry. Petroleum accounts for about a quarter of the country's gross domestic product. These benefits are shared. Oil revenue feeds into a huge sovereign wealth fund, used to serve the country as a whole.

These elements all come into play in the banknote design, with the chosen motifs looking both to Norway's history and its future. One side will feature clearly recognizable designs, such as a Viking longboat on the 100 kroner note or fish on the 200 kroner note. The reverse will have striking pixelated images, "the language of our times," according to the designers. These become increasingly stretched and abstract in higher denominations, an effect intended to evoke the wind. The blurring of borders is also explored with each banknote borrowing some color from the next in the sequence.

"We have chosen a theme we consider to be original and particularly relevant for Norway, which is a small country but a major coastal nation. Norway has a total coastline of 83,000 km, the longest in Europe. The use of marine resources, combined with the use of the sea as a transport artery, has been crucial to the development of Norway's economy and society."

— Trond Eklund, Director of Norges Bank's Cashier's Department

Design and innovation

Norway's future banknotes have won plaudits across the world for their bold aesthetics.

But design and the drive to innovate in the Nordic region have always been firmly rooted in function. If necessity is the mother of invention then it is no surprise that the Old Norse people devised brilliant solutions to manage cold, dark winters and venture beyond their lands. The Vikings carved out an advantage in trade and warfare with ships and seafaring that were advanced for their time.

Norway's future banknotes have won plaudits across the world for their bold aesthetics.

A thousand years ago Vikings were buried in boats and with coins in the belief that they would take them to the afterlife. But they also left a great wealth behind, a disposition toward resourcefulness, innovation, and adventure that stands Norway in good stead today. This spirit is well captured in its bold and forward-looking banknotes. ■

Christopher Coakley is a Communications Officer in the IMF's Communications Department.

Front of new Norwegian currency notes.

Prognosis: ROSY

Giang Ho and Paolo Mauro

When it comes to long-term growth forecasts, economists tend to be overly optimistic

IT is human nature to be optimistic. We tend to expect things to turn out better than they often do. "People hugely underestimate their chances of getting divorced, losing their job or being diagnosed with cancer; expect their children to be extraordinarily gifted; envision themselves achieving more than their peers; and overestimate their likely life span . . . ." wrote neuroscientist Tali Sharot in *The Optimism Bias* (2012).

Economists are not immune to optimism bias—the belief that the future will always be as good as or even better than the past and present. It can affect the way they predict economic growth, especially over longer-term horizons.

Many emerging markets and developing economies have enjoyed an extended period of remarkable economic growth. For example, between 2003 and 2013, China's per capita real (after adjustment for inflation) GDP increased at an average rate of 9.6 percent. Nigeria, the largest developing economy in Africa, also fared well at 5.8 percent. This has been great news for the world economy and lifted millions out of poverty. But how long will this exceptional performance last? Forecasters often predict rapid growth to continue into the medium and long term, particularly for star performers such as China and Nigeria. But historically, the association between a country's growth rate in a given decade and the next is weak (Easterly and others, 1993); in other words, past growth is not a very good predictor of future growth over longer periods.

Ebb and flow

Economic growth, like many things in life, is subject to a natural ebb and flow. In the late 1880s, English statistician Francis Galton showed that children of tall fathers tend to be shorter than their fathers. To describe

this phenomenon, he coined the term "reversion to the mean." Similarly, exceptional growth performance also tends to dissipate. Nevertheless, as economists Lant Pritchett and Lawrence Summers recently pointed out, professional forecasters may fail to take into account "reversion to the mean" (Pritchett and Summers, 2014). A closer look at professional growth forecasts over horizons of up to 20 years for a large group of countries confirms the existence of widespread optimism bias (Ho and Mauro, 2014).

Unexpected growth slowdowns can explain a significant part of the increase in public debt ratios.

Forecasts of economic growth into the medium term (say five years) and beyond are a crucial, if often overlooked, input into economic policymaking and strategic business choices. It is also notoriously difficult to forecast well, especially as the horizon gets longer. Yet decisions based on erroneous forecasts can have major adverse consequences for various aspects of macroeconomic policymaking, as well as for the bottom line of multinational companies and international investors.

For example, take fiscal policymakers, who deal with spending and taxation. An overestimate of future economic growth implies an underestimate of the government-debt-to-GDP ratio at the end of the projection period. As a result, the country will either end up with a higher-than-expected debt ratio, which could lead to a financial crisis, or future policymakers will have to tighten fiscal policy abruptly—with disruptive consequences. In fact, unexpected growth slowdowns can explain a significant part of the increase in public debt ratios during such episodes as the debt crises in Latin American and other emerging market economies in the 1980s, the highly indebted poor country crises of the 1990s, and, most recently, the 2008–09 financial crisis in advanced economies.

For central bankers, incorrect assumptions about medium- or long-term growth could lead to mistakes in assessing the magnitude of the output gap—the difference between what an economy is capable of producing on a sustained noninflationary basis and what it is producing (a measure of the degree of slack in the economy)—and thus in determining the appropriate monetary stance. For example, a sustained decline in medium- or long-term growth that is misperceived as a temporary slowdown in output could lead central bankers to adopt an overly loose monetary policy compared with what would be considered desirable in hindsight, with possible adverse consequences for inflation or financial stability.

The past as prologue

In principle, extrapolating past trends—that is, assuming that the future will be identical to the past—is not as naive as it might seem. After all, the most likely fundamental determinants of economic growth (such as institutional quality, educational attainment, and prudence of macroeconomic policies, among others) tend to change slowly (Easterly and others, 1993). In practice, however, the record shows that extrapolation does lead to poorer predictions. Drawing on data for 188 countries over 1950–2010 and looking at individual countries' per capita real GDP growth rates from one decade to the next show a low correlation between growth rates in adjacent decades, with correlation coefficients ranging between zero and 0.5 depending on income level and time period. (The closer to 1 the correlation coefficient, the more the two variables move in the same direction.)

Even if a country's fundamentals are persistent, economic growth is not very persistent from one period to the next, whether the period is defined as 1 year, 10 years, or 20 years. On average, there is a 30 percent chance a country will keep growing at its past growth rate, and a 70 percent chance that its future growth rate will revert to the world average. Thus, there is a high tendency for growth to "revert to the mean." Several Asian economies, including Japan and South Korea, are examples of economies whose growth rates have slowed significantly over the course of the last half century.

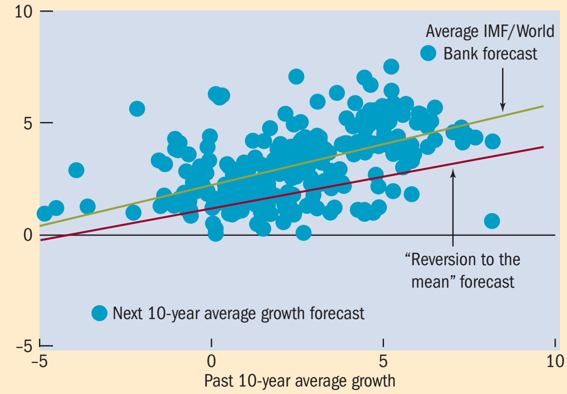
Do economists' growth forecasts reflect the large degree of "mean reversion" observed in historical growth data? Evidence from a sample of long-term forecasts for 70 developing economies prepared jointly by IMF and World Bank teams suggests that the answer is "not enough" (see Chart 1). In particular, the average IMF and World Bank forecast over

Chart 1

Overly optimistic

Growth forecasts 10 years out tend to be more optimistic than forecasts that take into account "reversion to the mean."

(per capita real GDP growth, annual percent)



Sources: IMF, World Economic Outlook database and *Debt Sustainability Analyses* 2006–13; United Nations; and IMF staff calculations.

Note: The sample includes growth forecasts for about 70 developing economies made between 2006 and 2013 by IMF/World Bank, excluding top and bottom 1 percentiles to remove outliers. Growth forecasts are converted to per capita terms using UN population projections. The green line represents the line of best fit through this sample of forecasts—that is, the trend line that best shows the general direction of the scattered observations. The red line represents the reversion-to-the-mean forecasts, which are constructed from the empirical relationship of each country's growth between a given decade and the next. The coefficients used to estimate the empirical relationships are derived from a larger sample of 142 countries over 1950–2010. The red line, then, represents forecasts consistent with the statistical patterns observed in historical growth data.

a 10-year horizon is biased upward and exhibits more persistence with past growth compared with a forecast that takes into account the estimated large tendency to revert to the mean in historical growth patterns. As an example, for a country whose per capita income grew over the past decade at an average rate equal to the sample mean (2.4 percent), the

Forecasters tend to produce results that assign an excessive weight to recent growth performance.

typical IMF and World Bank forecast predicts annual growth of 3.1 percent over the next decade, compared with 2.0 percent predicted by the "mean reversion" framework. In other words, there is an optimism bias of 1.1 percentage points. The optimism bias is statistically significant and becomes more pronounced for countries that have recently experienced rapid growth. The bias is also higher for forecasts at longer horizons—say 20 years out.

The tendency for growth forecasts to be overly rosy is not specific to forecasters at the IMF and World Bank—or for developing economies (though it is more pronounced for developing and emerging market economies than for advanced economies). Bias of similar magnitude is also present in projections by both the Organisation for Economic Co-operation and Development (OECD) and *Consensus Forecasts* for the major emerging market economies, in particular China and India—whose recent growth performance has been exceptional. All the various forecasters tend to produce results that assign an excessive weight to recent growth performance even though they use a wide range of forecasting methodologies. For example, IMF and World Bank forecasts are produced by teams working full-time on each individual country, *Consensus Forecasts* are an average of forecasts made by selected professional forecasters who follow individual countries, and OECD projections are based on a single sophisticated, well-documented model common to all countries (and thus are less likely to be influenced by subjective decisions by forecasters).

Potential damage

The implications of optimism bias in growth forecasting can be sizable, even for a moderate bias of, say, 1 percentage point a year. For example, consider a country that under current policies—and assuming a given growth rate—would maintain a stable government-debt-to-GDP ratio of, say, 50 percent over the next 10 to 20 years. If economic growth turns out to be 1 percentage point a year lower than expected—and assuming that a 1 percentage point decline in GDP results in a higher deficit by 0.3 percentage point of GDP (not an unusual assumption for an emerging market economy)—then the debt-to-GDP ratio would rise to more than 70 percent after 10 years and, as deficits become even larger, to more than 120 percent after 20 years. In other words, economic growth forecast errors of this magnitude are large enough to turn a country with a stable debt path into one that runs the risk of a fiscal crisis (assuming for simplicity that fiscal policy is not tightened in response to the decline in GDP growth).

It is possible to assess directly the quality of past forecasts when enough time has elapsed to observe actual growth outcomes. An examination of five-year forecasts made between 1990 and 2007 for 188 countries from the IMF's World Economic Outlook database shows that economists have had a pretty consistent record of optimistic forecasts. In particular, forecast errors—the difference between forecast and actual growth—tend to be positive at all horizons (except for median current year forecasts), with the positive bias increasing as the horizon becomes longer (see Chart 2).

Why do economists systematically make optimistic forecasts, giving more weight to recent growth performance than is justifiable by historical experience? In some respects, one could argue that optimism is a common trait associated with human nature, perhaps ingrained in us by natural selection. After all, as Sharot told us, people display optimism bias on a daily basis in various aspects of their personal life.

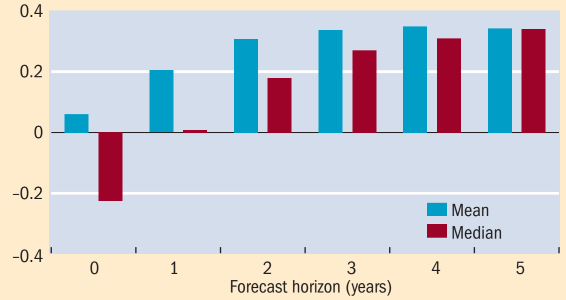
Beyond these intrinsic features of human beings, however, some factors are more specific to the context in which professional economists prepare and defend their forecasts. For countries such as China or Nigeria, whose economic growth has been strong over the past decade, forecasters would be hard-pressed to justify why they expect substantially lower growth in the period ahead if little has changed in the underlying key growth factors, such as the quality of institutions and human capital. Conversely, for countries whose growth has been sluggish for a while—perhaps due to an economic or political crisis, or even a civil war—the forecaster is unlikely to be able, or willing, to assume that similar adverse shocks, or tail events, will recur. Growth forecasts can also be based

Chart 2

Far as the eye can see

Growth forecasts are optimistic, and more so the longer the horizon.

(forecast error, percentage points of annual real GDP growth)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Forecast errors are calculated as forecast minus actual outcome. Actual data are as of December 2013. Forecasts were made between 1990 and 2007, covering 188 countries.

on overly optimistic policy assumptions—for example, that governments will keep their reform promises or that the IMF- and World Bank-supported programs will be successful—whereas reality can turn out differently.

Dealing with the bias

Is there a point to forecasting long-term growth if there are more “misses” than “hits”? French mathematician Henri Poincaré once said: “It is far better to foresee even without certainty than not to foresee at all.”

Those producing and interpreting the forecasts—such as policymakers and international investors—may simply consider correcting their optimism bias or at least give greater weight to alternative, less optimistic, scenarios in their deliberations. One way of encouraging more thorough discussion of the baseline forecasts could be to focus on the question “Why will this country continue to defy ‘reversion to the mean’ and keep growing faster than average?” rather than the more common “Why should this country slow down given that nothing else has changed?” Moreover, adverse-shock or low-growth scenarios, which are already routinely included in the analysis undertaken by some institutions (including the IMF and the World Bank), should receive greater prominence in policy deliberations. More generally, as is already commonplace in some multinational companies, it would seem wise to shift the focus to checking how well policy and business strategies perform in different scenarios, rather than emphasizing baseline forecasts. ■

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System Malfunction

The global economy is rife with imbalances that cannot be fixed under the present international monetary (non)system

William R. White

THE global economy today is characterized by various kinds of international imbalances, any of which could cause a future crisis. It seems worth asking whether these various imbalances have a single root—the absence of an international monetary system. It is a simple fact that we no longer have internationally agreed rules of behavior to constrain the shorter-term actions of individual sovereign states with a view to longer-term benefits for all.

There were such rules under the gold standard that preceded World War I and under the Bretton Woods system that followed World War II but imploded four decades ago. There are such rules today in the euro area. But at the global level there are none. Major countries can, and generally do, pursue their own short-term interests, not least through lower interest rates and other unconventional monetary policies to stimulate the domestic economy regardless of the implications for other countries. This runs the longer-term risk of unexpected consequences at home, not least the possibility of future inflation and other domestic imbalances. Moreover, by creating international imbalances of various kinds, such policies may also act against the longer-term best interests of other countries.

Who is concerned with the good health of the global economy as a whole? Since the demise of the Bretton Woods system, the IMF—which oversaw the system—has been concerned primarily with monitoring the behavior of its member countries and providing conditional assistance to countries in need. Nevertheless, the IMF has continued to express concern through various channels about national policies it does not deem in the best interests of the global community. However, for many large countries, these policy recommendations count for little more than advice. The United States, although the world's largest international debtor, has freedom of action thanks to the continued use of the dollar as the principal reserve currency. As for large creditor countries, the IMF's influence over their policies has always been very limited.

Global imbalances

When economists talk of global imbalances, they may be referring to a number of different concerns. The most long-standing source of concern is *current account* imbalances—the difference between what a country spends abroad and what it receives from foreign sources. The current account measures net imports and exports of goods and services, income (such as salaries and dividends), and transfers (such as remittances and pensions). By definition current account surpluses and deficits are equal to *net capital flows*. The risk is that countries with large current account deficits can lose the confidence of those who are the source of such flows, which can culminate in a foreign exchange rate crisis. Such crises commonly hurt both output and employment. Ironically, despite repeated warnings about this possibility for the United States, which has run regular current account deficits since the 1960s, no crisis has materialized. In contrast, major increases in current account imbalances among countries in the euro area did eventually lead to crisis, shattering the belief that such crises were impossible inside a single-currency zone.

A second kind of global imbalance, related to *gross cross-border capital flows*, has received increasing attention in recent years. For all its presumed merits, *hot money*, funds that flow from one country to another from investors seeking the highest returns, can wreak havoc on smaller countries—both on the way in and on the way out. Indeed, as became clear in the southeast Asian crisis of the late 1990s, problems with currency mismatches—in which assets are denominated in domestic currency and liabilities, such as loans, are in a foreign currency—can destroy whole banking systems. Borrowers earn income in the domestic currency, and when it depreciates, loans denominated in foreign currency are more expensive to repay. Moreover, the source countries of these flows can in turn be severely affected as well. In a nutshell, if the debtors (who borrow in the foreign currency) cannot pay, the creditors do not get paid.

For large creditor countries, the IMF's influence over their policies has always been very limited.

Finally, the term global imbalances could evoke concern about the *observation at a global level of domestic imbalances* previously seen only in a few advanced market economies, like the United States. How might these domestic imbalances have spread out from those few large countries? When large advanced market economies eased their monetary policies to support domestic growth, it put upward pressure on the currencies of smaller advanced economies (such as Switzerland) as well as on those of most emerging market economies. For various reasons, the governments and central banks of these countries responded by also easing monetary policy, thus encouraging lending and debt accumulation. As a result, the level of nonfinancial debt in the Group of 20 advanced and emerging market economies (G20) rose from 210 percent of GDP in 2007 to 235 percent by late 2014. Moreover, most of the expansion occurred in emerging market economies. Whereas in 2008–09 those countries were considered part of the solution to the global financial crisis, they now seem part of the global problem.

A deficient nonsystem

The various deficiencies in the current international (non) system essentially map the definitions of imbalances described above. Crises will replay until we remedy all the deficiencies described below.

First, *there is no automatic international adjustment mechanism.* In principle, countries with large external debt and/or

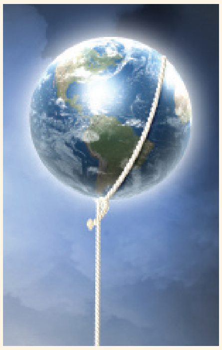
current account deficits should, in a freely floating exchange market, face downward pressure on their currencies. The weaker currency would make their exports cheaper, which should encourage a shift in production to satisfy foreign demand. Policy measures should then be used to reduce domestic demand to allow production to shift to satisfy export demand. The opposite set of forces should occur in large-surplus countries. This sequence of events allows orderly adjustment, preempting the buildup of still larger imbalances in both surplus and deficit countries and averting a crisis.

But in practice, these forces often operate only over very long time periods. It is an illusion to think that reliance on free-floating rates will painlessly resolve current account imbalances:

- Exchange rate movements seem to have little to do with longer-term debtor and creditor relationships. Driven by short-term momentum trading, in which traders buy and sell currencies to cash in on what they anticipate will be a continuation of increases or decreases in their value, exchange rates can deviate for years from levels consistent with underlying fundamentals.
- Exchange rate changes do not always, or at least not quickly, induce the desired shift in production capacity. Consider, for example, the recent depreciations of the Japanese yen and the British pound sterling, which have not led to the desired increase in the volume of exports.
- Domestic policies need not reflect a country's external position in any way. The United States is the world's biggest international net debtor, yet there is nothing to impede it from responding to periods of weaker overall demand with still more policies to stimulate domestic demand. Similarly, Japan, China, and Germany are huge creditors, yet there is nothing to discourage them from responding to weaker overall demand with efforts to expand exports even further. From a longer-term perspective, recent efforts to encourage a lower euro and yen have not been helpful and could even induce similar behavior by China.

Second, *spillovers from the monetary policies of large advanced economies are disruptive.* With low rates in the United States and many international loans denominated in dollars, longer-term rates in other countries are increasingly correlated with U.S. rates. As a result, a direct stimulative effect on spending in other countries affects the prices of currently produced goods and services as well as of assets. Some academic observers suggest that the only way these countries can restore a modicum of autonomy in setting monetary policy is through capital controls—which place restrictions of various sorts and intensity on inflows and outflows of capital.

Moreover, monetary stimulus seems to reduce perceptions of risk by investors. Before the global financial crisis this led banks with global reach to increase their lending faster than their capital (that is, increase leverage) and to boost lending to smaller countries. Since the crisis, the Bank for International Settlements has observed that international capital flows have been increasingly dominated by asset management firms that buy bonds issued by corporations in emerging markets. A large proportion of these bonds (especially in Latin America and southeast Asia) are issued in offshore financial centers and are denominated in dollars. This raises again the specter of currency mismatch problems if the dollar continues to strengthen. Moreover,



It is an illusion to think that reliance on free-floating rates will painlessly resolve current account imbalances.

these capital inflows, together with policies designed to hold down the exchange rate, threaten both inflation and other imbalances related to very rapid credit expansion in emerging market economies.

Those who believe that spillovers from advanced to emerging market economies can be significant propose a number of ways for affected countries to protect themselves. Essentially these suggestions come down to trying to cut each of the links in the transmission mechanism just described:

- Use regulatory means to reduce the use of leverage by banks with global reach, and use regulatory means to control the outflows of capital by large asset management firms.
- Let the exchange rate rise more.
- Employ capital controls to regulate inflows.
- Mitigate the implications of such inflows through the use of macroprudential policies—regulatory policies directed toward reducing the risk of a failure of the financial system as a whole rather than traditional policies, which are aimed at individual institutions.

In recent years, the IMF has actually endorsed many of these suggestions—not least the use of capital controls and more vigorous macroprudential policies. These approaches might help buffer spillovers, though each has downsides as well. For example, regulations, capital controls, and macroprudential measures are all porous; that is, they can be evaded and involve significant distortions in free markets. They also lose their effectiveness over time. Although it may seem sensible to allow the exchange rate to take more of the burden of adjustment, momentum trading can drive freely floating rates far from their underlying parity for long periods, with associated economic distortions. In short, there is no magic bullet.

Third, *the current "nonsystem" is fundamentally unanchored.* Construction of a global Taylor rule (devised by economist John Taylor to determine how much a central bank should change interest rates to respond to inflation pressure) shows that the global policy rate between 2002 and 2012 was in fact systematically lower than the level prescribed by the rule. Other approaches show that beginning in 1997 global measures of the financial real (after inflation) rate fell below similar measures of the longer-term natural rate (the rate that would keep inflation low and economies producing at their potential, as estimated by the IMF). Moreover, the differences between the financial (real) and the natural rate then widened significantly in the years leading up to the global financial crisis. Since the beginning of the crisis, central bank measures have restored a modicum of financial stability but have also increased the size of central bank balance sheets to unprecedented levels. How this will play out over time remains to be seen.

Today, monetary policy continues to be aggressively expansionary almost everywhere. This is particularly important for the United States, which remains the anchor of any vestige of an international monetary system. However, the central bank, the Federal Reserve (Fed), must set its policies solely on the basis of the expected implications for the United States. This is unfortunate not only for countries affected by the spillovers but could hurt the United States as well. Countries outside the United States now account for a much larger share of output than, say, 20 years ago, and problems elsewhere could easily feed back to the United States in unexpected ways.

There is now a burgeoning amount of literature on measuring global liquidity—the amount of credit and funds sloshing around the world. This is certainly a welcome development in that we need to keep track of monetary and credit growth in the world as a whole. But there is no control mechanism to moderate or accelerate the growth of global liquidity that appears either excessive or inadequate. Some have suggested an internationally coordinated monitoring process to assess the effects of national monetary policies on others. However, an assessment is also needed to determine whether a rule-based international monetary system might not be better still.

Fourth, *there are no adequate sources of international liquidity should crises occur.* The IMF's available resources to support countries with balance of payments difficulties would be totally inadequate if a number of small countries got into trouble simultaneously—or even just one big one. Without adequate public sector financing, a withdrawal of private sector financing would cause domestic demand to decline so much that the current account deficit would effectively disappear. But the resulting recession would be extraordinarily painful—as demonstrated in Indonesia in the late 1990s, when the loss of private financing led to collapse in the economy and massive inflation. The more recent deep recessions in some countries in the European periphery, after international banks (mainly in core European countries) pulled back their lending, are a further testament to such problems.

It is true that, in the early days of the 2008 global financial crisis, the Fed opened so-called swap lines, which made dollars available to a number of countries. Many European banks, for example, suffered a loss of dollar liquidity when funding sources in the United States (especially money market mutual funds) essentially dried up. Nevertheless, a limited number of countries benefited, and the criteria for choosing them were opaque and set by the Fed rather than by the international community. In addition, the swap lines were to be temporary, but were made permanent in October 2013.

If countries feel that they cannot rely on the IMF for adequate liquidity support during crises—or wish to avoid the conditions associated with IMF-supported programs—it is not surprising that they seek to self-insure by accumulating reserves. Unfortunately, reserve accumulation helps keep the value of appreciating currencies down, which increases the likelihood of rising inflation, other imbalances, and a subsequent crisis. Such a crisis seems to be threatening in a number of large emerging markets today. To put this another way, reserve accumulation increases a country's capacity to deal with a crisis but also makes such a crisis more likely. Moreover, countries are tempted to resort to regional exercises of mutual support, such as guaranteed lines of credit from other central banks in the region. Although useful in some respects, these regional arrangements can also erode the sense of global solidarity. They can also lead to significantly less conditionality—changes in economic regulatory policies, for example—than the IMF would ordinarily require in exchange for its support. More moral hazard, in a world awash in moral hazard, hardly seems an optimal global outcome.

Rules needed

What passes for an international monetary system today is not really a system because it has no rules. It lacks an automatic international adjustment mechanism for current account imbalances. It allows massive spillovers, including gross capital flows, from larger countries (especially the United States) to smaller ones with potentially damaging implications. It is dangerously unanchored with respect to global credit and monetary expansion, and it lacks an international lender of last resort with adequate resources.

Voluntary agreement by all large countries to an international monetary system that imposes responsibilities on everyone could play a significant role in reducing the dangers associated with global imbalances. Debtors would effectively import the will to do speedily what needed to be done. Creditors too would be forced to play a role, consistent with the recognition that crises also rebound on them. Getting all actors to recognize the shortcomings of the current nonsystem would be a welcome if difficult first step. However, mobilizing the will of sovereign nations to cooperate to devise a global system that would be in their own longer-term interest will be even more challenging. ■

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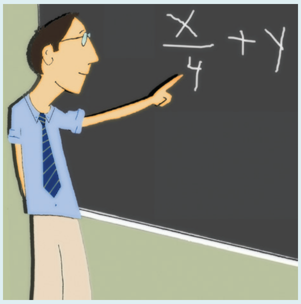

Taxes in Practice

It is hard to design a fair and efficient revenue system

Ruud De Mooij and Michael Keen

TAX policy is often guided by simple rules of thumb. Sometimes, they are strikingly right. But sometimes they can be dangerously misleading.

There is an adage, for example, that "an old tax is a good tax." That may be true for, say, the property tax. But taxes on windows and beards are long gone, import tariffs are in decline, and new levies, such as the value-added tax, have gained ground. Designing a good tax system requires more than a good slogan.

We dealt before with the basic principles of taxation (see "Back to Basics" in the December 2014 *F&D*). Now we apply them to some central and current tax policy debates.

Personal income

The great appeal of the personal income tax is that it taxes people on an indicator of their ability to pay, collecting progressively more from those with higher incomes. But the indicator is imperfect, because the government cannot be sure whether a high income results from intrinsic talent or luck—which will not be affected by taxation—or hard work and creativity—which might be. Taxing income might not only discourage effort (not just hours worked, but also, for example, entrepreneurial activity and striving for promotion), but can also give rise to tax avoidance and evasion.

The design of the personal income tax, therefore, revolves around a fundamental trade-off: progressive taxes support equity objectives, but can reduce efficiency. As long as people have differing views on what is equitable, there will never be universal agreement on the best tax schedule. But careful theory and empirical evidence have illuminated key considerations.

There is, for instance, the need to consider not only the personal income tax but all taxes and all income support measures—such as the Earned Income Tax Credit in the United States, which gives money to low-wage workers in amounts gradually reduced as income increases. Income support is simply negative income taxation and, when withdrawn as income rises, acts just like a tax on that additional income.

There is indeed a strong case for subsidizing earnings of low-wage workers, because their willingness to work is particularly sensitive to tax, and it is cheaper to ensure their well-being when they are working. But while the *average* tax rate at the bottom will therefore typically be negative, the effective *marginal* rate—the additional tax paid (or benefit not received) when income rises by one dollar—should be positive. Otherwise the subsidy will extend to all taxpayers, including those who do not need it. Targeting income support at the poorest limits the revenue cost of earnings subsidies and can be consistent with efficient redistribution, even though it may create high effective marginal rates for the poorest.

The proper tax rate structure for high-income earners has always been contentious. Many have concluded that the best-off could be taxed at marginal rates of 60 percent or more without leading to reduced effort or avoidance or evasion large enough to cause the amount of tax they pay to fall. If raising revenue were the only concern, that would be fine. But well-off taxpayers would suffer, which presumably matters for overall social welfare. Moreover, some analysts believe that the calculations underlying the optimal marginal rate fail to capture adverse effects on entrepreneurship.

In broad qualitative terms, the optimal marginal rate structure should thus have a U shape—starting high to recoup support to the very poorest, falling to preserve incentives for the people in the middle, and finally rising to secure revenue from the better-off. This runs counter to the idea that marginal rates should always increase with income, but is consistent with the more basic notion that the *average* rate should increase with income. All this, however, still leaves plenty of room for debate on the precise shape of that U.

Capital income conundrum

Capital income—interest, dividends, and capital gains—is in most countries received largely by the better-off. High taxes on capital income (or on the underlying wealth) are therefore often viewed as a good way to address inequities. But theory offers further perspectives on this issue.

Capital income enables consumption in the future. Taxing it increases the cost in terms of consumption forgone today. Prudent people who prefer to postpone consumption (or transfer it to their heirs) will be taxed more than those who do not. Some see this as violating horizontal equity (the principle that those who are in all relevant respects identical should be treated the same) on the grounds that time preference is

There is indeed a strong case for subsidizing earnings of low-wage workers.

not a legitimate basis on which to differentiate tax liabilities. Moreover, by discouraging saving, a tax on capital income may create relatively large deadweight losses (those incurred from transferring resources out of the private sector).

What all this implies is intensely debated among public finance economists. At one extreme is the view that because it distorts behavior so much, the optimal tax on capital income is zero, with redistribution better achieved by a progressive tax on labor income alone. At the opposite extreme is the view that labor and capital income should be taxed identically—for many years the most popular view. Neither view is on entirely firm theoretical grounds. What has become clear, however, is that the desirable tax rate on capital income, even if not zero, may well differ from that on labor income—not least because capital is more mobile internationally, making it harder to tax without driving the base abroad. Many countries now employ some form of *dual income tax*, taxing capital income separately from labor income, and at a relatively low rate.

Corporate tax controversies

The notion of *tax incidence*—who ultimately bears the real burden of a tax—is key when it comes to business taxation—and can lead to the surprising conclusion that much of the incidence might fall on workers. Take an economy that is small in world capital markets, and so must take as given the *after*-tax rate of return on investment: investors will move their capital abroad if they earn less than this rate. If a country now taxes the returns that investors earn there, the *before*-tax rate of return will have to rise by enough to leave the after-tax return unchanged. An outflow of capital is then required. But that outflow leads to a lower domestic capital-labor ratio, which reduces labor productivity—and, in turn, wages. So workers, not shareholders, bear the real incidence of the corporate income tax. Because it is more efficient to tax workers directly than indirectly through the corporate tax, the optimal corporate income tax for such an economy is zero.

But there are important qualifications.

First, *normal capital returns (the minimum return required by investors) should be distinguished from above-normal returns—called "rents."* Unlike normal returns, rents that are specific to a particular country can be taxed without affecting investment (think, for instance, of natural resource rents). The traditional corporate income tax, however, is not a rent tax because it taxes all returns to equity, both normal and above normal. It can be turned into a rent tax, though—for instance by allowing companies to reduce their taxable income through a deduction for normal equity returns. Some countries have moved in this direction.

Second, *practical considerations loom large*. The corporate income tax, for example, effectively taxes earnings that companies retain, which are hard to tax at the personal level. Similarly, if there were no corporate tax, small businesses could escape tax by incorporating and labeling their earnings capital income. Moreover, in many developing economies it is relatively easy to collect taxes from a few large companies.

Taxing consumption?

A uniform tax on consumption—applying the same rate to all goods and services—is broadly equivalent to a uniform tax on wage and profit income. It simply operates on the other side of an individual's budget, so its distortions on the labor market should be similar too. Because income taxes fit better with the principle that people should be taxed on their ability to pay, why should governments tax consumption at all?

There are practical reasons to do so: taxing both income and consumption reduces compliance risk by diversifying the government's revenue base. But there are also more fundamental justifications, such as taxing particular types of consumption to address externalities, which are effects, good or bad, on those not involved in the underlying transaction—pollution, for example. Such taxes could also address other problem behaviors, such as drinking and smoking. Another reason is that differential rates might help reduce tax-induced disincentives to work. Empirically, however, it has proved hard to identify elements of rate differentiation that are warranted on such efficiency grounds—perhaps with a few exceptions, such as child care services.

Many feel that necessities such as food should be taxed at especially low rates because the poor spend a large proportion of their income on them. But this is a costly way to pursue equity because while the poor spend a larger *proportion* of their income on necessities, the rich spend a larger *absolute* amount and so benefit most from a low rate. Almost all advanced economies, and many others too, should have devices better suited to pursuing their fairness goals—such as income-related transfers or other forms of cash support to the neediest, or public support for housing, health care, and basic education.

There is a fair degree of professional consensus that a uniform, broad-based consumption tax is a sensible benchmark for good policy—with little convincing rationale (externalities aside) for rate differentiation. This is one simple rule of thumb that gives good, practicable advice—but it rests on quite detailed empirical and theoretical reasoning. Policymakers must be wary of the many that don't. ■

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A Prudent Man's Curse

Without the right public institutions, the temptation of power politics can imperil longer-term development goals

Vitor Gaspar

IN 1596, Philip II of Spain defaulted on debt for the fourth time. An experienced and systematic administrator with an eye for the tiniest detail, he requested and pondered arguments from his trusted advisors, approaching difficult political decisions from every angle. He organized the complete administrative records of his government's workings. He even ordered architect Juan de Herrera to redesign a castle into the first-ever government archive, which strictly adhered to archival rules and served as the repository of documents produced by the Crown until the 19th century. His wise and considered approach to the conduct of political matters, and his many innovations to public administration, earned him the moniker Philip the Prudent.

Despite his administrative brilliance, Philip was forced into default early in his reign, in 1557 and 1560—for two reasons. First, Philip inherited personal debts belonging to his father, Charles V—at a time when the distinction between private and state debts was not well defined—with limited resources to service them. Second, and perhaps more important, the Spanish coffers were exhausted after war with Henry II of France.

When urged to default for a third time, in 1574, Philip postponed the decision for over a year. This time, default would affect debt that he himself had contracted with his Genovese bankers and jeopardize his personal reputation. But in 1575 he finally agreed to sign a decree (*Decreto*) suspending debt payments on *asientos*—the Crown's short-term, high-cost debt instruments typically serviced with silver from the Americas.

The Decreto explained that the king was disappointed so few creditors were willing to advance funds to the Crown, that he was shocked by the high interest rates, and that the use of credit, in general, was a dubious activity on both moral and legal grounds. Hence, no payments would be made until a thorough review of all terms, conditions, and past payments could be scrutinized. These were the grounds for the suspension of debt payments.

For the fourth default, in 1596, there is no record of hesitation, and the 1596 Decreto was expeditiously signed.

Why did Philip the Prudent resort to expensive asientos and then to default? The reasons were political. By doing so, the king remained in sole control of his resources. He did not have to make political concessions to the Assembly, whose approval was required to issue longer-term debt backed

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by regular revenues. He could afford not to compromise because, as had happened with his father, Charles V, financial probity was occasionally rescued by the timely arrival of American silver. Indeed, one can argue that these events delayed political, institutional, and financial development in 16th century Spain.

This story is not unusual. It illustrates the complex interaction between politics, institutional development, and governance that is the very essence of public policy. This interplay is manifest in all policy decisions on taxation, spending, and financing.

The story of Philip II parallels the modern experience of many countries rich in natural resources (such as oil, gas, or minerals) that fall prey to the "natural resource curse"—which often leads to unstable economic growth, weak financial development, and political disruption.

Intuitively, it seems natural resources would be a blessing for a country. Resource wealth should make it easier to finance investment for sustainable growth while allowing the government to provide fundamental social goods like education, health, and collective insurance against individual contingencies. But quite a number of resource-wealthy countries have failed to achieve sustained high growth. Conversely, in recent decades, many high-growth developing economies have not been rich in natural resources.

The main challenge is that abundant natural resource wealth can distort political and economic incentives. If left unchecked, natural resource wealth diverts political efforts from the core functions of government to the appropriation of resource wealth. In other words, the incentives for self-serving behavior may come to dominate political activities. Physical and institutional structures that support sustainable long-term growth are neglected in favor of activities that provide high payoffs to individuals. In the extreme, competition for natural resource wealth can even lead to civil strife. Furthermore, opportunities for personal enrichment and position through political lobbying can lead to the diversion of entrepreneurial talents away from productive activities.

In any case, the management of revenues from natural resources puts governance to the test. Weak institutions misallocate and mismanage natural resources, to the detriment of social peace, efficiency, sustainable economic growth, and the environment. Boom-bust cycles—the ramping up of inefficient public spending in the "good times" of high income from natural resources, followed by an abrupt fall in expenditure during "bad times" when resource revenues collapse—are commonplace. Governments rely excessively on revenues derived from commodities and export earnings, and are subject to the unpredictable ebb and flow of commodity prices.

In the past few years we have witnessed significant drops in commodity prices. For example, metal prices have fallen dramatically since their peak in 2011. Oil prices plunged in the second half of 2014, with the decline persisting into early 2015. As of January 2015, most oil-exporting countries were facing oil prices well below their notional fiscal breakeven levels—the average oil price needed for the country to balance its budget. The unpredictability of commodity prices, so vivid in recent developments, underlines the importance of public financial management in natural resource–rich countries.

Another challenge comes from so-called Dutch disease. Real exchange rate appreciation, associated with the spending of natural resource revenues on nontradable goods and services diverts resources from competitive tradable goods sectors, undermining openness and growth.

For natural resource–rich countries, the increased opportunities for governments come, therefore, with many responsibilities. The task in the near term is to break the boom-bust cycle by decoupling current government spending from volatile resource revenues.

Fiscal institutions have proven a powerful tool in helping to achieve such decoupling.

Chile has pursued a policy of prudent fiscal management of its copper revenues through adoption of a fiscal rule that targets a structural budget balance. The fact that the values for long-term copper prices and potential GDP are set by an independent panel of experts enhances the transparency of the rule.

In Norway, expenditure can be financed only by the income generated by the assets accumulated from past resource extraction. Furthermore, Norway has vested the management of its oil wealth in its independent central bank rather than in its Ministry of Finance for the explicit purpose of increasing the distance between the management of the oil fund and the political process.

Botswana has also earned a reputation for good governance, prudent macroeconomic policies, and sound management of mineral resources. Botswana's mineral wealth has been managed based on a rule to ensure that current spending is financed only with non–resource revenues. Resource revenues are either used to finance investment or saved in the Pula Fund (a sovereign wealth fund) to transfer wealth to future generations.

Even Philip the Prudent was seduced by power politics over financial institutional building.

Australia and Canada provide further examples of good management of natural resource wealth.

Governments also face the responsibility of building public institutions to guard against behavior that favors personal gains over longer-term development. Fiscal transparency and good governance play a central role, a theme that is actively promoted by the IMF.

To ensure more effective checks and balances and greater transparency, management of natural resource revenues should follow these four principles:

• comprehensive legal framework and fiscal regime, with open and transparent procedures for granting natural resource extraction rights and clear rules governing resource revenue generation and collection;

• comprehensive, timely, and reliable reports by governments and resource companies on holdings of natural resource rights, extraction and trading activities, and payments and collections of resource revenue;

• budget documentation with a clear statement of the government's resource management objectives and reporting on the allocation of resource revenues for public spending and saving; and

• disclosure, analysis, and management of the social, environmental, and operational risks associated with natural resource exploitation.

Ideally, greater transparency and accountability would go hand in hand with more inclusive political institutions. Sustainable growth and prosperity are built on the accumulation of human capital and knowledge. Stable and inclusive political institutions are central to guaranteeing an environment that fosters the accumulation of physical and human capital. Being blessed with an abundance of natural resources is clearly not enough. Without the right incentive structure, political gains can override longer-term development goals.

Remember that even Philip the Prudent was seduced by power politics over financial institutional building. Good governance and strong institutions are necessary conditions for sustainable growth. We can reasonably hope that the difficulties associated with the volatility of oil and other commodity prices will lead many countries to adopt robust public financial management practices fostering long-term prosperity and stability. ■

Reducing Informality

Ravi Kanbur and Michael Keen

It may be a great slogan, but it is of little value as a practical objective for tax reform

THE informal economy is almost always at or near the top of lists of tax problems in developing countries.

"Taxing the informal economy" leads the African Development Bank's tax priorities (Mubiru, 2010). Auriol and Warlters (2005) cite "large informal sectors that are difficult to tax" as a major issue for these economies. The same theme replays when it comes to some advanced economies. The IMF (2013) said that "low revenue efficiency in Greece" is partly the result of the "large . . . informal economy."

It is no surprise then that *reducing informality* is often seen as a central objective of tax reform. But precise definitions of informality, as set out for instance by the International Labour Organization (2013), are based on labor and enterprise regulation rather than on tax considerations. So thinking in terms of reducing informality may not be a useful guide to making tax policy.

Paying or not

What informality means is rarely spelled out in tax discussions, but when economists build models informality usually seems to mean nonremittance of the full amount of tax due—that is, failure to pay. Yet there are many reasons why a firm or individual might pay no tax. They could simply be below the threshold (of size or income) at which they are legally obligated to pay taxes—in some cases because they reduced their activity to get under that limit. Or they could be evading—dishonestly failing

to pay. For policymaking, why a firm or individual pays no taxes can matter as much as or more than the fact that they pay nothing. The question is how tax systems should be structured when their design may affect not only how much tax is paid, but the different ways in which it is not paid.

It is important, moreover, to recognize that individuals and firms commonly have several different obligations with which they may or may not comply—not only to different taxes (for example, value-added tax, VAT, and personal income tax), but also across different aspects of their activity. They are likely to face various labor laws, for instance, as well as tax rules. This raises a set of policy challenges that have been almost entirely ignored. How do measures that affect compliance with one obligation affect compliance with others? Does it make sense to harmonize the criteria defining these various obligations, so that either all apply or none do?

Individuals and firms commonly have several different obligations with which they may or may not comply.

To see why all this matters, and illustrate how different types of agents might respond in very different ways to changes in tax design, take one key element of any tax system: the threshold above which tax is legally due. Most taxes—and indeed regulations in general—include such a cutoff because it is too costly, for both government and taxpayer, to apply them to the very smallest.

Imagine, for instance, a simple setting in which the only tax or regulation is the VAT (which is levied on the value added at each stage of the production process and from the perspective of the final purchaser is a sales tax). In almost all countries, there is some threshold level of sales above which a firm pays a fixed rate of tax on all its sales. In addition, it faces some compliance costs in paying taxes that are unrelated to the level of sales. (An important implication follows: no firm will declare an amount just above the threshold, because cutting output to just below the threshold would save it more in fixed costs than it loses in sales. There is evidence that such effects are important in practice—Onji, 2009). Suppose too that firms differ in the maximum amount they can sell, though they can choose to sell less than that. They can also choose to pay less than the amount due on their true sales, but there is some cost to them in lying—such as penalties if they get caught. Within this setting, firms will plausibly fall into five categories, ranging from the smallest to the largest in pretax sales (Kanbur and Keen, 2014):

- **The smallest firms,** such as microenterprises, whose maximum sales are below the tax threshold: they declare truthfully and pay no tax;
- **Adjusters,** which are a bit larger and whose maximum sales would be above the threshold but choose, legally, to operate just below the tax threshold to avoid tax and compliance costs;
- **Ghosts,** or firms whose true sales are above the tax threshold but choose to either falsely declare below the tax threshold or not declare at all;
- **Cheats,** which produce above the threshold and declare some, but not all, of their sales; and
- **Large firms** that declare truthfully and pay the full amount of tax.

This categorization is, of course, an oversimplification—but not without echoes of reality. It closely mirrors the segmentation of taxpayers by size and compliance risk that is increasingly common in tax administrations. What is important to recognize is that this segmentation is shaped by, and will respond to, the design of the tax system.

Tax policy and informality

If informality means nonremittance of taxes (or of some portion of the tax due), all but the large truthful firms are informal. But these informal firms are of very different types, and lumping them into a single category can lead to very misleading policy conclusions.

To see this, think about the effects of slightly increasing the VAT threshold. This would have no effect on the decisions of the large firms because the threshold is so far below their sales that it would certainly not be worth their while to reduce their sales to below the threshold. So the number of large firms would not change. And therefore neither would the total number of firms in the other categories. In other words, the number of informal firms would not change.

What increasing the threshold does change, however, is the composition of informality. It makes it more attractive to reduce output honestly by just enough to escape the tax, because there is less output loss incurred by doing so. As a result, some ghosts will become adjusters. And output will increase because the firms that had been hovering just below the threshold can now produce a little more. But the VAT threshold increase has no effect on the cheats because adjusting is not the relevant alternative for them. And because only cheats and large firms are paying any tax, there will be no effect on tax revenue.

Raising the VAT threshold, then, is a tax reform that has no effect on the number of informal firms or on tax revenue, but is still desirable because it results in an increase in output from firms that are fully tax compliant. That is a far richer conclusion than a simple "reduce informality" mantra would suggest.

This then suggests that it would be good policy to increase the threshold until there are no more ghosts (Kanbur and Keen, 2014). Pursuing this approach further leads to the conclusion that the possibilities of avoidance and evasion mean that the optimal tax threshold is higher than it would otherwise be. The implication again largely runs against the conventional mantra that tax rates should be set as low as possible to broaden the tax base. Setting a lower threshold in an attempt to somehow include more informal firms in the tax system can be exactly the wrong policy.

Almost no attention has been given to the important reality that firms nearly always face several different explicit or implicit tax regimes. For example, in India, registration and worker benefit requirements for the Factories Act kick in for manufacturing firms at specified thresholds of employment, while the central excise tax is payable above specified levels of sales. In these more complicated situations, the simple framework used to analyze the VAT threshold increase must be expanded.

Consider a situation in which a firm has two separate obligations that may have different thresholds—say VAT and income tax. There are then two possibilities. If the thresholds are very close, we would expect any firm that adjusts out of one to adjust out of the other too (because it never makes sense, given the fixed costs involved, to be only slightly above a threshold). If, on the other hand, the thresholds are far apart, there may well be some that adjust only out of the tax with the higher threshold.

No uniform notion

The conventional definition of informality as nonremittance of tax applies easily in the first case, because firms will either comply with both obligations or with neither. But when the thresholds are widely separated, the possibilities are complex: some firms may pay both taxes, some may pay one but adjust out of the other, and some may adjust out of one but be below the threshold for the other. It is virtually impossible to say what would constitute informality under these diverse circumstances. Assessments are even more complicated when there are more than just two tax or other obligations. In other words, there can be no uniform notion of informality. That means informality cannot form the basis of tax policy, which instead must be thought of directly in relation to social objectives and firms' responses to tax instruments.

There is a related policy question that has received almost no attention: whether in designing systems with several obligations, policymakers should aim for a common threshold or sharply different ones. Many would answer, we suspect, that a common threshold for multiple obligations would make life easier for a firm. Perhaps it would, but that is only part of the story. Other considerations nudge policymakers in exactly the opposite direction.

Suppose for example that something akin to the registration requirements of the Factories Act in India were calibrated to start at the same level of sales as the VAT. Then some firms would adjust out of both. If the Factories Act threshold were raised, firms hovering below it could now hire more workers, and make more sales. And there eventually would come a point at which they would choose to increase sales by enough to bring them above the VAT threshold, while remaining below that for the Factories Act. Raising the threshold for one obligation thus induces firms to put themselves into the *other* obligation. As long as the revenue raised from this second obligation is positive, it can be shown that there is an overall welfare gain from differentiating thresholds in this way.

Use of the term informality in relation to tax matters is not going to go away anytime soon. What is important, however, is to recognize the danger of its imprecision when invoked in the context of tax policy. The aim of tax policy (aside from equity issues) should be to increase social welfare, taking into account standard concerns of efficiency and equity. Slogans about reducing informality are of little help, even as some kind of intermediate objective—indeed they have proved less of an aid to clear thinking than a distraction from it. ■

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How to Build a Better Future for Latin America

In the run-up to the 2015 IMF–World Bank Annual Meetings in Peru, the IMF hosted a contest for Latin American university students to write a short essay on "How to Build a Better Future for Latin America"—the issues and challenges that young people see facing future generations in the region and their possible solutions. Eight finalists were invited to the IMF's 2014 Annual Meetings. The winner, Adriana Lorena Rojas Castro, is a 29-year-old Colombian who attends Universidad de Concepción, in Chile. Here is her essay.

Latin America and the Challenges It Faces

Adriana Lorena Rojas Castro

MORE than a geographic designation, Latin America and the Caribbean is a region characterized by multiple idiosyncrasies, which make it an attractive place vis-à-vis other continents. And yet despite our great cultural and environmental wealth we are far from being the envy of the world in terms of living standards.

Problems such as poverty, inequality, violence, environmental degradation, and drug trafficking are some of the factors that distinguish us as a region and that prevent us from growing. Yet these problems need to be addressed jointly and not separately, as we have been doing. It's not that I think we have been doing badly; I simply believe that we have to attack these demons from another angle.

The first challenge with which the region must come to grips is inequality. I believe, for starters, that we have to improve the quality of education, not make it free as many students are demanding. We have to improve the conditions of teaching at all levels, and in higher education we must become proactive and equip students with better tools.

By improving education conditions we will improve competitiveness and productivity: we can become more innovative, and in that way we can achieve greater local development, thereby making it possible to reduce inequality and consequently tackle poverty. This is a virtuous circle—a process of participation by all of society, and one that will help consolidate the region's place in this globalized world.

The next challenge for Latin America is violence, which we will have to attack from two sides. On the one hand, every country faces a problem of violence related to poverty and inequality. I said earlier that improving the quality of education was a first step, but we also need to generate more and better jobs—rather than subsidies, what we need is more working tools.

The last challenge, and one that is no less important, is environmental degradation. The way to go about this is not to ban the exploitation of resources but to generate awareness among big companies and to provide incentives so that production will be pursued in an environmentally more friendly manner.

The foregoing is what concerns me about Latin America, but my worry for my own future is that I will not have an active voice as a citizen to participate in seeking solutions to my country's problems, and that the tools I am acquiring as a professional will not be adequate to cope with the competitive world we live in.

My generation and I will have to prepare ourselves more thoroughly to participate actively, whether in the private or public sector, and we will have to innovate not only through the development of policies but also through the production and provision of services so that, in both sectors, we can bring about the changes that will help the society in which we live. ■

Finalists

Daniela Amórtegui Martinez, 19, Colombian, Universidad del Rosario, Colombia

Luiz Guilherme de Brito Soares, 24, Brazilian, Universidade Católica de Pernambuco, Brazil

Gonzalo Huertas, 26, Argentine, Universidad de Buenos Aires, Argentina

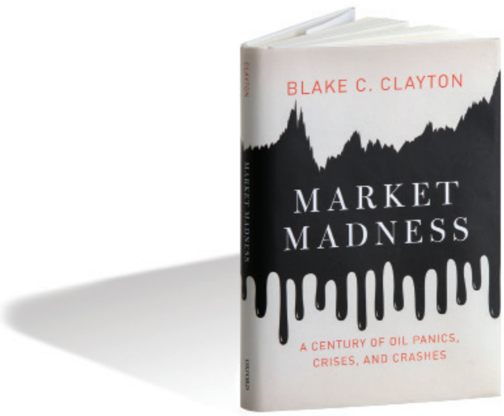
Nabil Lopez Hawa, 24, Dominican, University of Michigan, United States

Mariana Montero Vega, 19, Costa Rican, Universidad de Costa Rica

Mauricio Rada Orellana, 19, Peruvian, Universidad del Pacifico, Peru

Monica Sodré Pires, 29, Brazilian, Universidade de São Paulo, Brazil

Rock and Roil



Blake C. Clayton

Market Madness

A Century of Oil Panics, Crises, and Crashes

Oxford University Press, New York, 2015, 248 pp., $27.95 (cloth).

Ever since Thomas Malthus's *Essay on the Principle of Population* was published in 1798, people have worried that limited availability of natural resources could constrain economic growth and human welfare. For nonrenewable natural resources (for example, fossil fuels such as oil, natural gas, and coal), Malthusian concerns center around depletion.

So far, such fears have not materialized. Growing and substantial evidence suggests a downward trend in real commodity prices, despite exponential growth in the production of nonrenewable commodities. Nevertheless, fears about resource shortages—including of crude oil—tend to surface regularly when prices increase above trend.

We may be witnessing the end of yet another episode of widespread fear of oil depletion. Predictions that global oil production would peak attracted broad attention when oil prices reached new highs in the early 2000s, but have since subsided thanks to the shale revolution in North America and the halving of oil prices in late 2014.

In *Market Madness*, Blake Clayton, now an economist with Citibank and formerly a fellow on energy at the Council on Foreign Relations, analyzes four episodes of growing fear about oil depletion through the lens of "irrational anxiety"—an allusion to *Irrational Exuberance,* Robert Shiller's famous book on equity and housing markets. Clayton's premise is that some of the social, cultural, and psychological factors behind irrational exuberance also apply to irrational anxiety.

Clayton focuses on one of Shiller's arguments—that speculative market expansions in equity and housing often accompany popular perceptions that the future is brighter or less uncertain than it used to be. In oil markets, steadily rising prices have triggered fears of shortages, based on variations of the argument that there is limited oil still in the ground and that prices must rise forever to balance demand and supply.

The specifics vary across the four episodes Clayton examines, spanning the 20th and early 21st centuries, but there are common elements. For example, in the first, 1909–27, oil demand increased rapidly with the dominance of the internal combustion engine in transportation and the development of the petrochemical industry. World War I reinforced the increase in demand. A 1909 study of the total volume of crude oil reserves in the United States by the U.S. Geological Survey concluded that these reserves would be exhausted by 1935. The study acknowledged the possibility of new oil field discoveries but considered them unlikely. This would not be the last time that both the economically variable amount of oil in known fields and the scope for new discoveries and technological advances were grossly underestimated.

During the first episode, predicted structural shifts in the market did not materialize. Peak-oil theorists, for example, argued that about half of all below-ground oil resources had already been used and that decline in production was inevitable. But the likely oil resource base continued to increase. The second episode brought predictions of forever-increasing prices due to actual structural shifts. During the third episode—the era of the Organization of the Petroleum Exporting Countries (OPEC) in the 1970s and 1980s—it was widely assumed that OPEC's market power was such that oil prices would continue to increase. But that market power has varied over time with the entry of other producers and shifts in demand.

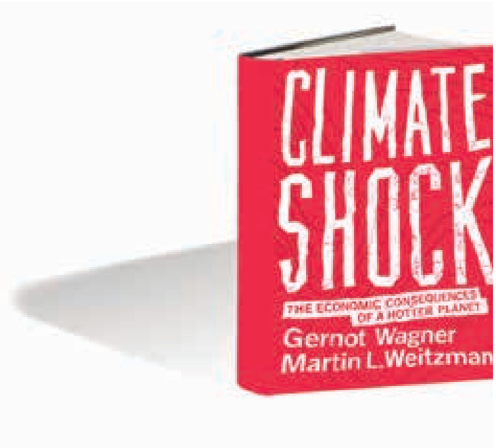
Since oil is storable, it is a real asset.

Remarkably, Clayton does not follow Shiller's journey to the end. He does not consider the possible link between irrational anxiety and price increases or the possibility of oil price bubbles. Neglecting this link for the early episodes might not be a problem, given prevailing price-setting mechanisms and government intervention (for example, during wartime). Instead, Clayton argues that oil anxiety perpetuators sometimes had political motives, seeking to influence government policies affecting the oil market. But in the final episode, between 1998 and 2013, oil price formation took place in spot markets, and the market for oil derivatives expanded rapidly. Since oil is storable, it is a real asset, and the link between irrational anxiety and price formation during these episodes merits more discussion.

The first two episodes are mostly U.S. specific, which is understandable because markets were then less internationally integrated. Still, readers interested in oil issues will find the account of these episodes intriguing—especially the first, which examines the rise of the conservation movement in the United States and elsewhere.

Thomas Helbling
Chief of World Economic Studies Division, IMF Research Department

Six Degrees of Devastation



Gernot Wagner and Martin L. Weitzman

Climate Shock

The Economic Consequences of a Hotter Planet

Princeton University Press, Princeton, New Jersey, 2015, 264 pp., $27.95 (cloth).

This informative, convincing, and easily read book offers general audiences the basic case for global climate mitigation.

Climate Shock points out that the most pressing reason for action on climate mitigation is the possibility of catastrophic outcomes, most importantly a 10 percent risk of a 6 degree Celsius temperature rise unless measures are taken in this century. It argues that carbon pricing should take center stage in mitigation efforts but warns of challenges, not the least of which is free riding (individual countries' temptation to avoid mitigation given that all countries bear the costs of global climate change). Without mitigation efforts, individual countries may resort to inexpensive geo-engineering—for example, releasing sulfur particles into the atmosphere to deflect sunlight—which entails huge risks, including altered global precipitation patterns, while failing to address threats to the marine food chain from ocean acidification.

The case for carbon pricing—charging for the carbon dioxide (CO_2) emissions caused by fuel combustion—is well established: emission prices are reflected in the prices of carbon-intensive fuels, electricity, and other forms of energy, which presents a full range of mitigation opportunities. These include switching from coal to natural gas or renewable fuels and reducing demand for electricity, transportation, and heating fuels. But unless carbon pricing revenues are used productively—for fiscal consolidation, broader tax cuts on worker income, capital accumulation, and so forth—carbon pricing can impose a large cost on an economy.

The authors do not get into the debate over carbon taxes versus emissions trading systems (through which governments limit rights to pollute by issuing a fixed amount of allowances that firms can trade), though in my view the latter are more convoluted (implying, perhaps, greater risk of key design flaws). Emissions price stability—necessary for cost effectiveness from year to year and to promote incentives for clean technology investments—is automatic under a tax, but under an emissions trading system requires additional measures, such as price floors and ceilings. And in emissions trading systems, allowances must be auctioned and revenues remitted to the finance ministry, if carbon pricing is to be part of broader fiscal reform.

The authors suggest that some current estimates of an emissions price that reflects future climate change damages—about $40 a ton of CO_2—are much too low, because of problems in modeling extreme climate risks and long-range discounting. But the concern seems of little practical relevance now, given that only about 12 percent of global emissions are currently priced, typically at about $10 a ton or less.

The free rider issue has caused much agonizing in international climate negotiations over enforcing countries' mitigation pledges and appropriate compensation for mitigation in poorer countries. But the problem may be a bit overblown: carbon pricing can actually be in a country's own interest if the domestic environment benefits—for example, because of fewer deaths from local air pollution arising from fossil fuel combustion—outweigh mitigation costs. IMF estimates suggest that, averaged across large emitting countries, these benefits warrant CO_2 prices of about $57 a ton *before* counting in global warming benefits.

There may be other reasons to be a bit more optimistic than the authors about the prospects for carbon pricing. New revenues are attractive to finance ministries seeking to cut other taxes, meet consolidation needs in the wake of the fiscal crisis, or fund public services in countries whose large informal sectors constrain broader tax bases. And carbon pricing can entail a straightforward extension of what most finance ministries are already doing: it can build a carbon charge into existing motor fuel excises and apply similar charges to the supply of other petroleum products, coal, and natural gas. More quantitative analysis of the environmental, fiscal, health, and other benefits of carbon pricing at the country level is needed to help governments make the case for carbon pricing to legislators and the public.

The book could have elaborated a bit on measures needed to accompany carbon pricing. For example, instruments (varying with country circumstances) need to be designed to mitigate impacts on vulnerable households and firms. Clean technology incentives also have a role, but guidance is needed on which instruments to use and how to set their level and phase them out as new technologies mature. And at an international level the practicalities of monitoring and enforcing agreements (for example, regarding carbon tax floors among large emitters) that can complement the UN process must be fleshed out.

While this book lays the basic intellectual groundwork, there is more to be done in thinking through the practicalities of moving carbon pricing forward.

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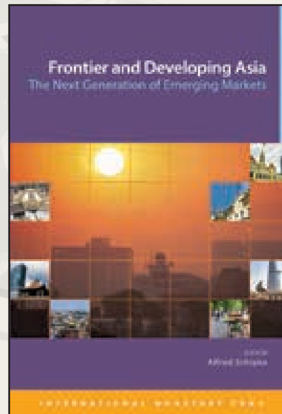

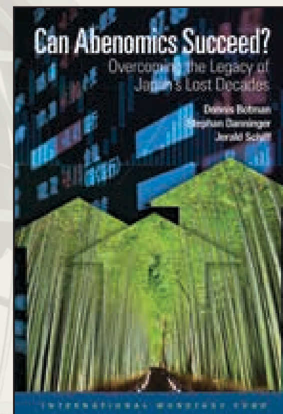

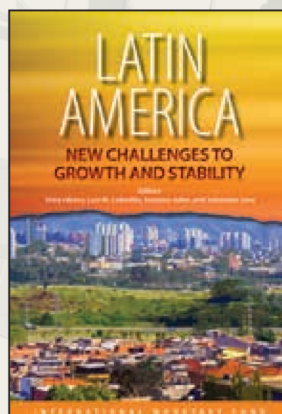

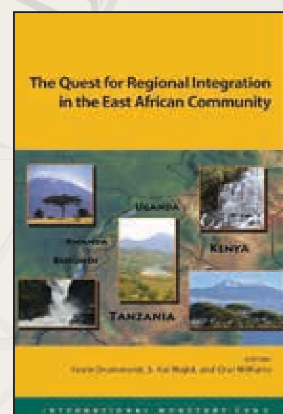

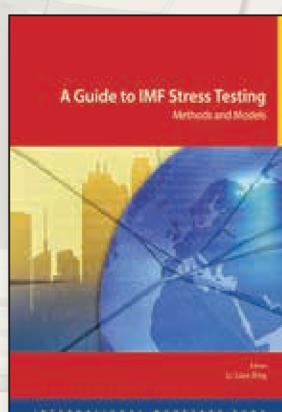

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