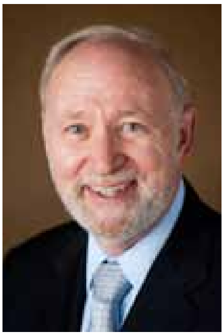
CONTENTS

page 56

FROM THE CEO



In these letters, I usually update you on a single aspect of the Milken Institute's work. But with so much taking place on so many fronts, this time around I'd like to share highlights of a number of our recent endeavors.

• Public health constitutes a relatively new and exciting focus for the Institute. And this spring, our efforts in this arena received a major boost in the form of a $25 million donation from the Resnick Foundation. With the additional resources, the newly renamed Lynda and Stewart Resnick Center for Public Health will help bring to population-level health the same focus that has allowed bioscience and medical research to extend and advance the lives of individuals so remarkably in the past century. Recognizing the crucial role of prevention in reducing health costs, the Center brings together all relevant stakeholders to focus on health issues such as smoking and obesity. Thanks to the Resnicks' generosity, we will be able to intensify these important efforts.

• Our most recent Global Conference was a huge success, with more than 3,500 participants, 200 panels and more than 700 speakers. With the overall theme of the future of humankind, our panels gave actionable insights and fact-based reasons for optimism for our planet's future, even as we delved into the most intractable challenges of our planetary present.

• During the Global Conference, we announced with our partners George Washington University and the International Financial Corporation (the World Bank's organization dedicated to ending poverty) the launch of a first-of-its-kind graduate-level program for capital market practitioners in developing economies. Held over eight months starting in August, the program combines university coursework with a work placement opportunity, equipping mid-career professionals with the tools and training to support capital market development in their countries. The program is initially focused on nations in sub-Saharan Africa.

• One goal that I'm especially proud to say that we achieved this year is the launch of a gorgeous and engaging website for the *Milken Institute Review* (www.MilkenReview.org). Our capable editor, Peter Passell, design director Joannah Ralston and developer Scott Horton and his team have done an incredible job in translating the sprightly content of the *Review* to a very digital incarnation that is hard to put down – especially if you're reading on a smartphone or tablet. As Peter has indicated, there's much more to come, so please keep reading, whether the print or online versions of the *Review*.

For other highlights, take a look at the *Review*'s Institute News feature on page 95.

We're heading into a busy fall, but based on the record of the past few months I can't imagine it can be much busier than the beginning of 2016.

Please enjoy a great summer.

Michael Klowden
CEO

Stop the presses! Well, not literally … you have in your hands the 71st quarterly print edition of the *Milken Institute Review*, and number 72 is already in the works. But we have just unveiled a web edition of the *Review* that will allow us to add articles, commentary and features on the fly – and to present them in a format that offers the multimedia bells and whistles of the internet. We'll also be adding a searchable archive of articles from past issues, all the better to second-guess our authors' prognostications and policy prescriptions.

THURSTON HOPKINS/PICTURE POST/GETTY IMAGES

Check us out at MilkenReview.org to see the work in progress, and remember to stop by frequently to see what we're up to. This is gonna be good.

Meanwhile, dive right into an issue that's chock full of insights, and maybe some surprises, for aficionados of the dismal science.

Larry Fisher, a business journalist who is a frequent contributor to *The New York Times*, brings us up to date on the economics and politics of carbon capture and storage as a means of slowing climate change. "Nobody seems to love carbon capture," he writes. "On the left, climate change advocates lobby pretty exclusively for renewables and energy conservation – the eat-your-spinach approach. On the right, at least in the United States, climate change is still claimed to be a hoax perpetuated by liberals who don't want Americans to drive SUVs." But in light of the narrowing options, Fisher predicts "an awakening among environmentalists that achieving carbon reduction goals will require an 'all of the above' strategy."

Barry Eichengreen, an economist at Berkeley, reconsiders the uses (and many abuses) of controls on international capital movements. "If the circumstances under which capital controls are useful are clear," he writes, "why are economists still so skeptical?" While a number of countries have used controls with care and some success, "worries persist that capital controls create a breeding ground for both corruption and distortions in resource allocation."

Richard Reeves and **Isabel Sawhill** of the Brookings Institution take a close look at the widespread conviction that social mobility – the chance to move up the socioeconomic ladder through hard work – is alive and well in America. "American children do not have exceptional opportunities to get ahead," they write. Moreover, "the consequences of gaps in children's initial circumstances might embed themselves in the social fabric over time, leading to even less social mobility in the future. But there is some cause for optimism…"

Frank Rose, a senior fellow at Columbia University School of the Arts, casts a gimlet eye on what Harvard Business School professor Clayton Christensen famously dubbed "disruption theory" – an explanation for why rich, seemingly well-run corporations have a way of getting knocked off by upstarts.

"In the business world, it was as if Christensen had bottled lightning," recounts Rose. "But disruption has been hard to get right, even for Christensen. A decade ago, when Apple was racking up win after win, he consulted his theory and saw failure right around the corner."

Steve Radelet, the former chief economist at USAID, takes the measure of slackening growth in emerging markets. "The pause in breakneck growth now being experienced in the developing world is certainly costly," he writes. "But it's only a detour on a path toward global economic convergence that should be celebrated and supported. Our future – as well as theirs – depends on it."

Ross DeVol and **Sindhu Kubendran**, researchers at the Milken Institute, document the economic consequences of the reality that two-thirds of the victims of dementia in America are women. "This unequal societal burden is almost certain to increase rapidly in light of the explosive rise in the numbers of very old (80+) Americans," they write. "Indeed, we estimate that the purely pecuniary costs of caring for women with dementia will run to $5.1 trillion (in 2012 dollars) through 2040. Even if you apply a discount rate to these costs … that still adds up to real money, not to mention an ocean of human misery."

Javier Ekboir, a Buenos Aires-based consultant, revisits the view that Southeast Asia is the template for economic development for late starters. "International organizations still argue that expansion of agriculture in developing countries, especially small farms, is necessary to trigger growth in other sectors," Ekboir writes. "But a growing number of economists (including me) believe that today's socio-economic dynamics are completely different from those prevailing even 40 years ago, and that a new set of factors ranging from globalization to technological and organizational advancement are the new catalysts of growth."

Mikhail Fridman, chairman of LetterOne, a Luxembourg-based investment group, and **Anatole Kaletsky**, chairman of the Institute for New Economic Thinking, explore the difficulties emerging-market countries are having in rekindling growth. Fridman is betting that India has the best prospects for a breakout because, for all its warts, the economy is underpinned by an innovation-friendly culture.

Last but far from least, check out the excerpt from **Mervyn King**'s book on how to fix the global economy, **Bill Frey**'s charticle on the dynamics of gender in the Clinton-Trump contest, and some troubling evidence that the African economic renaissance is ebbing by your devoted editor. —*Peter Passell*

BY LAWRENCE M. FISHER

Environmentalists targeting fossil fuels have a catchy slogan – Keep it in the ground! – which has been trumpeted by organizations ranging from Greenpeace to *The Guardian*. Perhaps something similar is needed to jump-start carbon capture, the trapping and storage or repurposing of carbon dioxide released in burning fossil fuels as well as in a host of industrial processes. So here you are, free of charge: Suck it up!

In truth, carbon capture and storage (CCS) needs more than a slogan to gain traction. The reluctance to add it to the toolbox of fixes for climate change is ironic, for with each passing year the case for CCS grows more compelling. A 2015 study conducted at University College London and published in *Nature* identified fossil fuel reserves that must not be burned to keep the global temperature rise since pre-industrial times below 2 degrees Celsius (3.6 degrees Fahrenheit). It included over 90 percent of U.S. and Australian coal and almost all the fuel that could be extracted from Canadian tar sands. All told, half of global natural gas reserves and a third of oil must remain unused.

These are very ambitious targets. The global leaders who met in Paris earlier this year pledged to do their part. But developing countries (led by China and India) continue to build new coal plants, while oil and gas companies still spend billions of dollars a year to identify new reserves. And the International Energy Agency, a multilateral agency based in Paris, estimates that fossil fuels will

ZÖLLNER/ULLSTEIN BILD VIA GETTY IMAGES

still account for about 40 percent of primary energy use in 2050.

If the IEA is right, atmospheric carbon will way overshoot the level tied to the 2-degree temperature rise. Hence the relevance of CCS, which according to the IEA is the only technology able to deliver significant reductions in emissions from the use of fossil fuels. And, happily, what long looked like a fantasy

LAWRENCE FISHER writes about business for *The New York Times* and other publications.

cooked up by the visionaries who imagined that nuclear energy would soon be too cheap to meter, is entering the realm of economic viability.

Actually, carbon capture has a lot going for it. For starters, it works: 15 projects are already in operation around the world. It can be retrofitted to existing power plants burning fossil fuels. It can also capture CO_2 from a variety of manufacturing processes, including the production of steel, cement and chemicals, that collectively account for about 25 percent of global emissions. And did I mention that it is affordable? At $100 or less

It is human nature to seek silver bullets even if a shotgun approach is more practical.

per ton, capturing and storing carbon from industrial emissions is cheaper than saving an equivalent ton by switching electricity production from fossil fuels to solar.

The catch – and of course there's a catch – is that nobody seems to love carbon capture. On the left, climate change activists lobby almost exclusively for renewables and energy conservation – the eat-your-spinach approach. On the right, at least in the United States, climate change is still claimed to be a hoax perpetuated by liberals who don't want Americans to drive SUVs or mine coal in Appalachia. Even in Britain, where conservatism doesn't require science denial, the Cameron government has eliminated financing for two demonstration power plants employing CCS, along with ending subsidies for onshore wind power.

It is human nature to seek silver bullets even if a shotgun approach is more practical – as when your financial adviser recommends a diversified portfolio of low-cost index funds when what you really crave is a tip on the next Google or Facebook. So it seems with climate change and the rush to deploy renewables to the exclusion of other solutions, like a combination of natural gas combustion cleaned up with CCS.

But reality is just beginning to bite: there is the first hint of an awakening among environmentalists that achieving carbon reduction goals within the short time left before major economic and social dislocation becomes inevitable will require an "all of the above" strategy. Indeed, some are willing to go further than the distasteful notion of CCS. Long-time emissions warriors, including Stewart Brand of *The Whole Earth Catalog* fame and James Hansen, the Columbia University scientist who first brought public attention to climate change, are even urging construction of new nuclear power plants, which don't emit CO_2 – but that's another story.

WHAT CCS DOES, HOW IT WORKS

The bulk of research and most of the pilot plants around the world focus on post-combustion carbon capture. This is primarily applicable to fossil-fuel-based systems like conventional coal-fired power plants, where the powdered fuel is burned with air to produce steam that drives a turbine generator to produce electricity. The carbon dioxide is captured from the flue gas after fuel combustion, using a chemical absorbent. The captured CO_2 can then be put to productive uses – everything from injecting it into old wells to help recover residual oil to carbonating soft drinks. But in a world in which carbon capture was scaled up sufficiently to make a real dent in atmospheric carbon, the amount of CO_2 yielded from power generation would far exceed prospective need.

So all that captured carbon would have to go somewhere other than back into the

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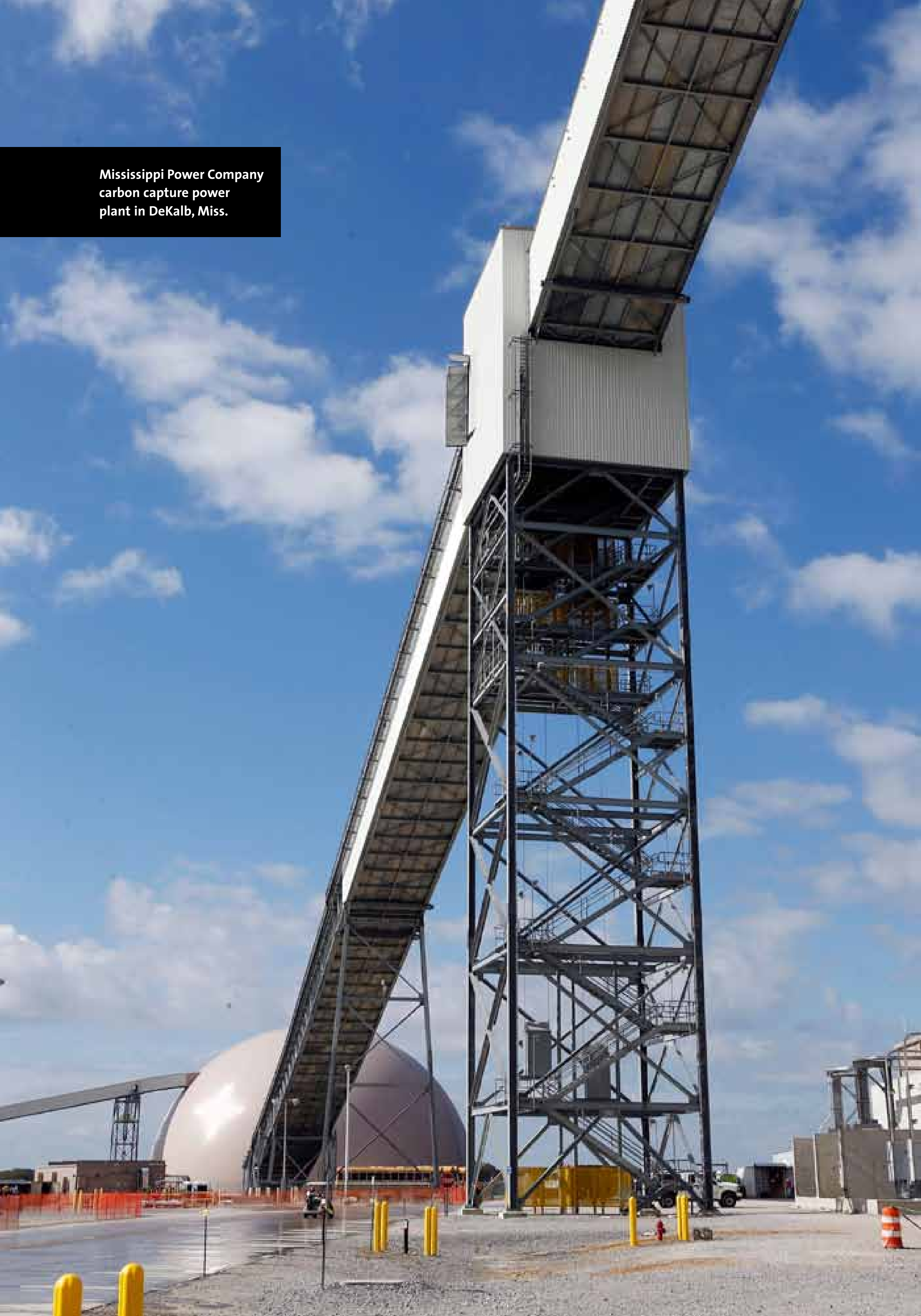


Mississippi Power Company carbon capture power plant in DeKalb, Miss.

A pipe used to carry liquid CO_2 at the Schwarze Pumpe power station in Germany.

MICHAEL URBAN/AFP/GETTY IMAGES

atmosphere. Most schemes call for the CO_2 to be liquefied for easier transport, and then stored, or "sequestered," in geologic or oceanic reservoirs. Not surprisingly, a number of caveats apply:

• the storage period would need to be long – as in hundreds to thousands of years

• the cost of storage, including liquefaction and transportation to the site, would need to be low enough to be practical

• the risk of accidents would need to be low

• the collateral adverse environmental impact would need to be modest

• the storage method would need to meet legal criteria.

In light of these criteria, suggested by the Massachusetts Institute of Technology Laboratory for Energy and the Environment, it would hardly be a piece of cake. But it is doable. In Norway, Statoil, the national oil company, has been injecting and storing about one million tons of CO_2 per year from a natural gas processing facility for nearly 20 years at its Sleipner project in the North Sea.

Sleipner doesn't produce power, however. The honor for the world's first commercial-scale carbon dioxide capture and storage power plant goes to the coal-fired Boundary Dam in Saskatchewan, Canada, which came online in October 2014. Two additional projects in the power sector – the Kemper County project in Mississippi and the Petra Nova Carbon Capture Project in Texas – are scheduled to start this year. Shell Oil's Quest CCS project, launched in Alberta, Canada, in November 2015, is the world's first CCS project to reduce emissions from one stage in the refinement of tar sands into fuel.

All of these projects capture CO_2 at the source, whether in a power plant flue or in the process of extracting oil and gas. But there have also been some highly publicized efforts to suck the gas directly out of the atmosphere. These include the Canadian startup Carbon Engineering, formed in 2009 with $3.5 million from Bill Gates and others, and the audaciously named Global Thermostat in New York, which is backed by Seagram's scion and former Warner Music chief executive Edgar Bronfman Jr. Both companies received a lot of ink a few years back from *The New York Times*, *The Washington Post* and the like. But they have been much quieter lately, and declined to talk to this reporter. Skeptics say their approach is simply impractical.

"If you're talking about capturing CO_2 from the air, that's garbage," said Howard Herzog, director of the Carbon Capture and Sequestration Technologies Program at MIT. "From a power plant, it's expensive; from the air, it's prohibitive. It's the concentration of the CO_2: in a power plant, it's about 10 percent concentration; in the atmosphere, it's diluted 300 times."

GETTING IT BUILT, GETTING IT PAID FOR

MIT maintains one of the most exhaustive databases of carbon capture, and provides an interactive Google map on its website showing the location of all the active carbon capture and storage projects worldwide. These include power-plant CCS projects, non-power CCS projects and CCS pilot projects. The database is notably not dominated by Silicon Valley startups with celebrity investors, but rather features a list of tried-and-true names from the energy and heavy machinery industries: Shell, General Electric, Siemens, Schlumberger.

"A few companies, like Shell, are still very active in CCS," Herzog said. "The utilities can't afford it, and the coal companies are a total wreck. Low natural gas prices have sort of crossed over all our sins. The pipeline for new big projects is drying up."

In this country there's too much polarity in the political system, he laments. "The right denies the problem; the left hates fossil fuels, and even though that's 80 percent of our power, they say we're going to replace it all."

There has been little discussion of climate change in the current presidential campaign, though the Democratic contenders did give the occasional shout-out to renewables, which plays well with their base. This is in sharp contrast to President Obama's 2008 campaign, in which he made frequent mention of multiple methods for reducing CO_2, including CCS. The prospect of a cap-and-trade system, which would have made cost-effective CCS self-financing, seemed very real.

After his election, the CCS research, development and deployment budgets were effectively tripled for the next seven years with the injection of $3.4 billion of stimulus funds.

Most schemes call for the CO_2 to be liquefied for easier transport, and then stored, or "sequestered" in geologic or oceanic reservoirs.

Then came the Republican sweep of 2010, and instead of cogent climate policy, we got snowballs in the Senate.

In Britain, five years of a Tory-Liberal Democrat coalition government ended in 2015 with the Conservative party winning a clear majority in the House of Commons. British conservatives, and indeed most conservatives in most countries other than the United States, do not deny climate change. But they're not keen to spend money combating it, either. As the Tory manifesto put it: "We will cut emissions as cost-effectively as possible, and will not support additional distorting and expensive power sector targets." In practice, that has meant the continued development of North Sea oil and gas, the end of subsidies for onshore wind power and the elimination of CCS funding.

As Jenifer Baxter, head of energy and environment at the Institution of Mechanical Engineers in London, explains:

For a long time in the UK there was a competition running for £1 billion [about $1.45 billion], for a bit over two years to support innovation and demonstration projects in CCS and their application to commercialization. Last year, in budget review after four years of this program running, the government canceled it. This meant that the two power stations that had been working on it withdrew from carbon capture and storage. Industry then withdrew because it was very expensive anyway and the economics for them were already difficult.

WHAT COULD POSSIBLY GO WRONG?

No power source is without externalities. Carpeting the country with photovoltaic cells has an environmental – and aesthetic – impact. Wind turbines kill birds and can mess up idyllic views. CCS has its own problems. First is the issue of where to put all the captured carbon, and the same people who worry about climate change have major reservations about pumping CO_2 deep into the earth or piping it to the bottom of the sea. Critics also say that the economics of retrofitting CCS to existing coal plants do not add up, especially at a time when coal is fading, and that the capital needed to build new natural gas power plants is better invested in wind, solar and innovations in energy storage that are inherently carbon-free.

"The reality is we haven't seen a lot of successes" for CCS, said Rachel Cleetus, lead economist and climate policy manager at the Union of Concerned Scientists. "Take the Kemper Plant [in Kemper County, Miss.], which a lot of people hoped would be the first demonstration at scale. They're up to nearly $7 billion in costs and they still haven't come online. When you take that and you imagine the level CCS would need to come in at, and the time frame we have to make a difference, scaling it up is a real challenge."

During the 2008 election, President Obama often spoke of something called "clean coal," which was really code for coal-fired power with carbon capture. But in the years since, as natural gas prices have dropped significantly, the coal industry has gone into steep decline. New natural gas plants offer the opportunity to add CCS. But that adds cost as well, and without government subsidies or tax incentives, it doesn't happen. Current policy includes various tax breaks and incentives for renewables, but not for CCS.

"Retrofitting is inevitably more expensive than actually designing plants from the get-go with CCS," Cleetus said. "But we aren't seeing that in the market to the extent that new natural gas build-outs are happening. What we're seeing is that wind and solar additions are outpacing every other source, and that includes natural gas."

Cleetus says that market forces and the technology's own externalities hamper CCS adoption more than public policy does. "The Department of Energy does have a number of loan guarantee programs for these projects," she said. "Kemper had one of these grants. But the reality is we're seeing cost escalation and project delays. In renewables, we're seeing cost declines. The trend is not going in a favorable direction with CCS. Also, CCS, as currently configured, is quite a water hog. We are in an increasingly water-constrained world, so we have to find a way for technologies like this to work in that environment."

Another knock on CCS is that it has been hyped in combination with biomass energy (BECCS) in the International Panel on Climate Change model for achieving negative emissions. In a scathing OpEd piece in *The Guardian*, Tim Kruger and Steven Rayner, both scientists at Oxford University, and Oliver Geden, head of the EU division at the German Institute for International and Security Affairs, wrote that relying on this pairing

Another view of the Mississippi Power Co. carbon capture power plant in DeKalb.

ASSOCIATED PRESS/ROGELIO V. SOLIS

of technologies "to deliver us from climate change is to demonstrate a degree of faith that is out of keeping with scientific rigor."

"Technically, there are serious doubts about the ability to sequester the vast quantities of carbon dioxide that are implied in the models," they wrote. "Economically, without a substantial carbon price [through a tax or a cap-and-trade system], the costs would be much higher than competing power-generation technologies. Environmentally, growing such volumes of biomass would have profound effects on biodiversity. Socially, the use of land for BECCS would restrict agriculture – contributing to substantial increases in food prices."

ALTERNATIVE ALTERNATIVES

But even as these scientists question the viability of BECCS, others are exploring still more ambitious alternatives. Why sequester CO_2 at all, when it can be a viable commodity in its own right. As the Grateful Dead sang long ago, "one man gathers what another man spills." Most of the captured CO_2 around the world is currently used for enhanced oil recovery, meaning it is pumped into older wells to push out the remaining crude.

But CO_2 can be used in many chemical and industrial processes. "We are looking mostly at recycling, not sequestration," said Alain Goeppert, a research scientist at the

Loker Hydrocarbon Research Institute at the University of Southern California, and co-author of *Beyond Oil and Gas: The Methanol Economy*. "We are chemists, so we want to do something with the CO_2 we capture. That means recycling it into fuels and other materials, especially methanol."

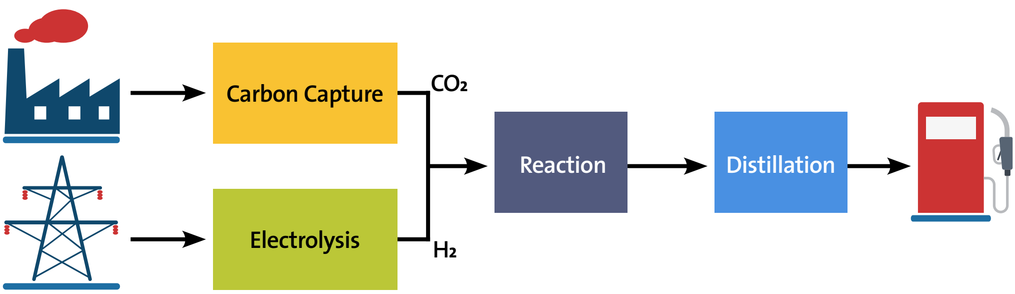
Goeppert is primarily working on capturing CO_2 from the air, not from flue gases, which he says have too many impurities. He concedes that current air capture technology is not efficient enough for large scale CO_2 recycling, but says it has other advantages, including that it can be sited anywhere, not just at power plants, and that the materials used to absorb the CO_2 last much longer. Moreover, he says that the concept has already been proved.

"A company in Iceland is already doing that: Carbon Recycling International," Goeppert said. "There, they are recycling CO_2 with hydrogen they obtain from water. They use geothermal energy, which is relatively cheap. They have been producing methanol that way for five years, exporting it to Europe, to use as a fuel. It's still relatively small scale, but it's a start."

Automobiles can be converted to run on pure methanol for about $100. The alcohol can also be blended with ordinary gasoline (up to 15 percent) with no modification required, Goeppert says. "It even has a higher octane rating, so you can use a higher compression ratio and use less fuel for the same power."

"You can use it in diesel engines," he added. "There is a ship between Sweden and Germany, every day, running on methanol. It's much less polluting than diesel."

There are even ways to generate power that do not rely on fossil fuels and that consume CO_2. Back during the Jimmy Carter administration, Christopher D. Barry, now chairman of the Ocean Renewable Energy technical and research panel of the Society of Naval Architects, began working on ocean thermal energy conversion. OTEC exploits the temperature difference between surface water and near-freezing water from the deep ocean to drive turbines producing electricity. The turbine and heat exchangers have to be very efficient – but even back in the 1970s, a test project generated a megawatt.



Here's the relevant part: OTEC can be carbon negative. "Ocean thermal energy brings up enormous amounts of cold water, which is laden with nutrients," Barry said. "If you bring nutrients up to the surface, you have big fisheries. Most of the tropical ocean has very little life. And where you have life, you have carbon pickup, and eventually you have sequestration. The creatures eat it," he said. "The ocean is a natural carbon sink; we just need to enhance it."

Barry has a number of biological schemes to capture carbon that should warm the

ADAPTED FROM CARBON RECYCLING INTERNATIONAL hearts of environmentalists. Restoring the health of littoral waters, like Chesapeake Bay, would encourage the return of oysters and other shellfish. "A bushel of oysters is about 30 pounds of carbon dioxide, because it's mostly shell, and the shell is mostly calcium carbonate," he said. "I don't know how expensive it will be to restore littoral waters, but certainly less than pulling CO_2 out of a flue and then pumping it hundreds of miles to bury it."

My personal favorite, however, is the restoration of the sea otter population. Giant kelp beds stretched from Japan to the West Coast until the decimation of the sea otter population for their furs allowed sea urchins to proliferate wildly. The sea urchins eat the kelp roots. "Kelp forests are carbon sinks themselves," Barry said. "Loss of the sea otter caused the loss of the Pacific coast kelp forests except in Monterey and parts of Alaska. One way to improve carbon sequestration is to restore sea otters."

Now, if only oysters and otters could generate electricity, too.

Carbon Recycling International is recycling CO_2 with hydrogen they obtain from water. They have been exporting it to Europe to use as a fuel.

AS A PRACTICAL MATTER

The irony is that CCS technology is ready to go, right now, but may fall by the wayside for lack of political and popular support even when it is competitive with renewables. As Herzog of MIT notes, renewables have enjoyed a huge technology push from governments worldwide, including investment tax credits, production tax credits, feed-in tariffs and portfolio mandates. Similar programs for other low carbon technologies like CCS and nuclear power have been lacking.

"We have a renewables/efficiency policy," Herzog pointed out. "We don't have a climate policy. I personally feel you need a revenue-neutral carbon tax, and you need the markets to solve the problem."

Despite the fanfare that surrounded the Paris agreement, achieving even modest reductions in carbon emissions will be a stretch as China and India flex their industrial muscles. Limiting the warming of the planet to 2 degrees Celsius above the pre-industrial level remains far out of reach. Ending the era of fossil-fuel emissions and converting entirely to clean energy by the middle of this century is a grand ambition, but a more pragmatic portfolio approach seems prudent.

Carbon capture and storage "is based on our current technology, a necessary element of any deep decarbonization of our energy system and economies," said Oliver Sator, a research fellow at the Institute for Sustainable Development and International Relations in Paris. "There is a big gap between the technological potential, which is there for CCS, and where the policy positions are. We've been willing to throw an enormous amount of money to scale up renewables, though it was nowhere near cost-effective, but for CCS there's been nothing comparable, even though it seems essential," he said.

Sator sees a role for CCS in industrial processes that release CO_2. "There are also a lot of non-energy emissions, where there are no obvious alternatives" to CCS, he said. "We're not going to stop using steel." But while rapid advances in renewables have reduced the role for CCS in energy, it still has a critical part to play. "The focus really needs to be on CCS as part of a broader portfolio."

BY WILLIAM H. FREY

Barring the appearance of a black swan, November's presidential election will pit the first major-party woman candidate against an opponent whose core backers are men. The electoral gender gap is thus likely to be bigger than ever before – but to whose advantage?

Women have been more partial than men to Democratic presidential candidates since 1980. In 2012, this proved decisive when 55 percent of women voted for Barack Obama, while 52 percent of men voted for Mitt Romney. But the gender divide will likely be greater this time around, as more women – and perhaps more men – cast ballots.

Actually, the electoral calculus is more nuanced. White women, as a group, are more likely to vote Republican, while racial minorities – both men and women – heavily favor Democrats. It's thus useful to look at segments of the white population where Democrats could fill out a majority.

A key distinction here is between unmarried and married white women. In 2012, the former – especially those with college degrees – voted Democratic, while white married women – especially those without diplomas – voted for the GOP.

Hence Clinton's success seems to hinge on two factors. First, she must raise the turnout of white, unmarried women. Their turnout rate has in the past been dwarfed by their married counterparts (58 percent to 72 percent in 2012).

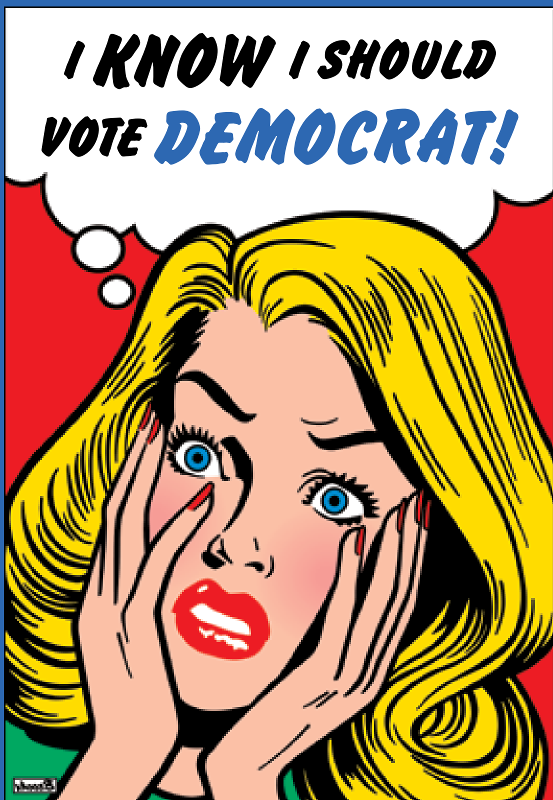
Second, she must widen the preference gap between white, married women and their husbands. White married women already vote less strongly Republican than white married men, but this edge could be stretched by a campaign in which gender issues come to the fore.

Not only were women responsible for Obama's majority in the 2012 popular vote, they also played a big role in 11 of the 12 swing states he carried (the exception: North Carolina). This time, though, heavy turnout from Trump-inspired white men could reverse that dynamic. In fact, if both the turnout among all white males and their preference for a Republican candidate increased by 4 percent over 2012 (and nothing else changed), Trump would win in Ohio, Florida, Pennsylvania, Iowa and Colorado – enough to make the difference in the Electoral College.

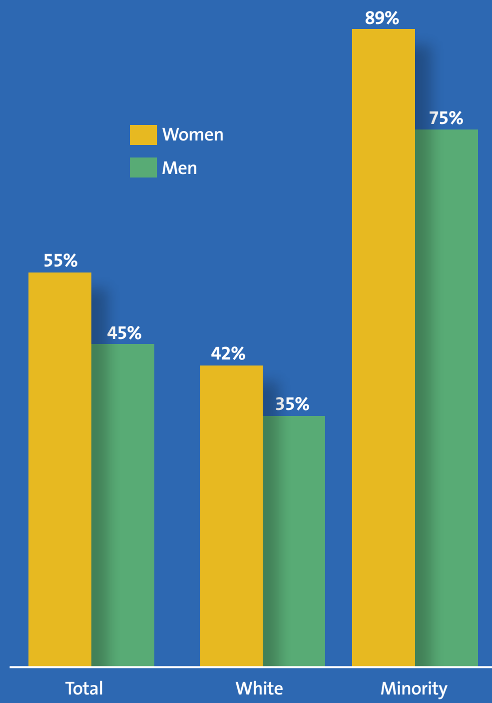
But, of course, other things may well change. If white women's turnout and voting also shifted by 4 percent in the opposite direction, Trump would win only one of the five (Pennsylvania). For better or worse, we live in very interesting times.

BILL FREY is a senior fellow at both the Milken Institute and the Brookings Institution, and author of *Diversity Explosion: How New Racial Demographics Are Remaking America*.

LOU BROOKS

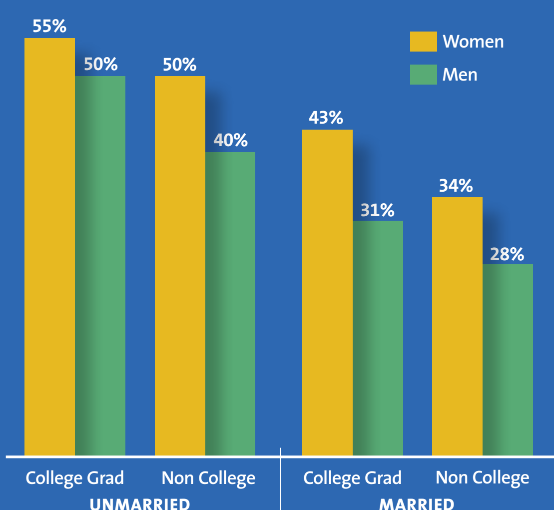


PERCENT VOTING FOR OBAMA IN 2012

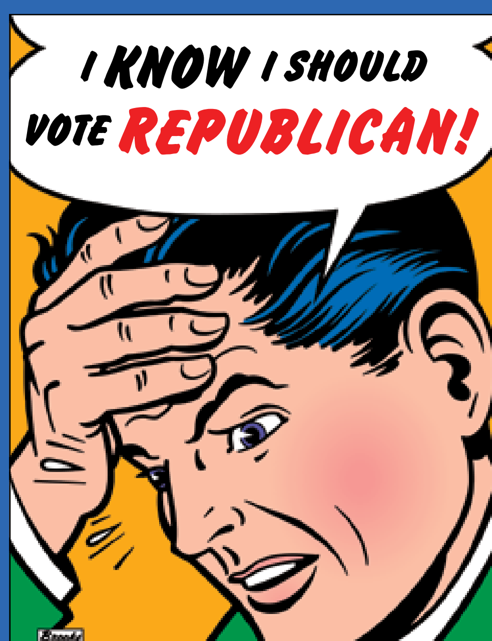


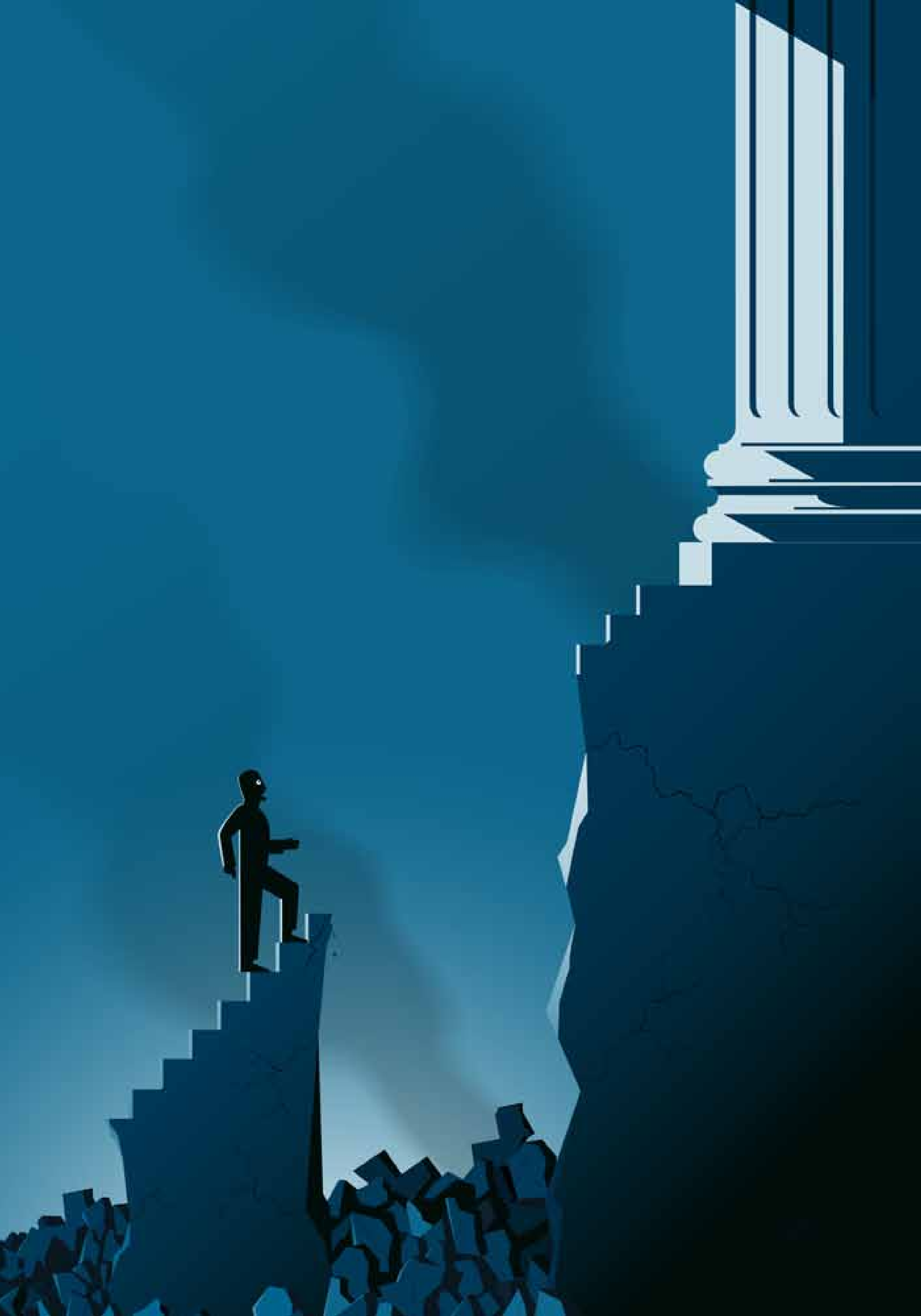
SOURCE: 2012 Exit Polls/Edison Research as reported in CNN Election Center

PROFILE OF WOMEN ELIGIBLE VOTERS, 2016



SOURCE: 2012 Exit Polls/Edison Research as reported by Ronald Brownstein, National Journal





Social Mobility
A Promise That Could Still Be Kept

BY RICHARD V. REEVES
AND ISABEL SAWHILL

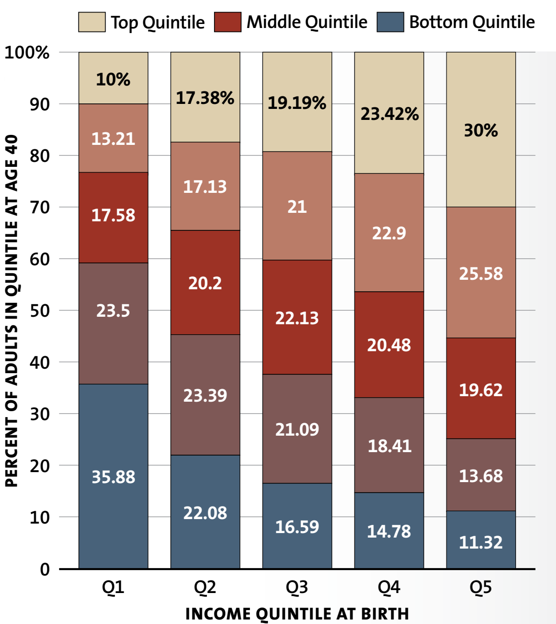
ILLUSTRATIONS
BY JOHN TOMAC

As a rhetorical ideal, greater opportunity is hard to beat. Just about all candidates for high elected office declare their commitments to promoting opportunity – who, after all, could be against it? But opportunity is, to borrow a term from the philosopher and political theorist Isaiah Berlin, a "protean" word, with different meanings for different people at different times.

Typically, opportunity is closely entwined with an idea of upward mobility, especially between generations. The American Dream is couched in terms of a daughter or son of bartenders or farm workers becoming a lawyer, or perhaps even a U.S. senator. But even here, there are competing definitions of upward mobility.

It might mean being better off than your parents were at a similar age. This is what researchers call "absolute mobility," and largely relies on economic growth – the proverbial rising tide that raises most boats.

SOCIAL MOBILITY MATRIX: U.S. OVERALL



Examples: Of those born in the bottom fifth of the family income distribution (Q1), 33.88 percent are still there at age 40, while only 10 percent have reached the top fifth. Of those born in the top fifth (Q5), 30 percent remained there at age 40 while only 11.32 percent fell to the bottom fifth.

SOURCE: Richard Reeves, "Saving Horatio Alger: Equality, Opportunity, and the American Dream." The Brookings Essay series. Washington, D.C.: Brookings Institution.

Or it could mean moving to a higher rung of the ladder within society, and so ending up in a better relative position than one's parents. Scholars label this movement "relative mobility." And while there are many ways to think about status or standard of living – education, wealth, health, occupation – the most common yardstick is household income at or near middle age (which, somewhat depressingly, tends to be defined as 40).

As a basic principle, we ought to care about both kinds of mobility as proxies for opportunity. We want children to have the chance to do absolutely and relatively well in comparison to their parents.

RICHARD V. REEVES and ISABEL SAWHILL are senior fellows in economic studies at the Brookings Institution.

ON THE ONE HAND…

So how are we doing? The good news is that economic standards of living have improved over time. Most children are therefore better off than their parents. Among children born in the 1970s and 1980s, 84 percent had higher incomes (even after adjusting for inflation) than their parents did at a similar age, according to a Pew study. Absolute upward income mobility, then, has been strong, and has helped children from every income class, especially those nearer the bottom of the ladder. More than 9 in 10 of those born into families in the bottom fifth of the income distribution have been upwardly mobile in this absolute sense.

There's a catch, though. Strong absolute mobility goes hand in hand with strong economic growth. So it is quite likely that these rates of generational progress will slow, since the potential growth rate of the economy has probably diminished. This risk is heightened by an increasingly unequal division of the proceeds of growth in recent years. Today's parents are certainly worried. Surveys show that they are far less certain than earlier cohorts that their children will be better off than they are.

If the story on absolute mobility may be about to turn for the worse, the picture for relative mobility is already pretty bad. The basic message here: pick your parents carefully. If you are born to parents in the poorest fifth of the income distribution, your chance of remaining stuck in that income group is around 35 to 40 percent. If you manage to be born into a higher-income family, the chances are similarly good that you will remain there in adulthood.

It would be wrong, however, to say that class positions are fixed. There is still a fair

amount of fluidity or social mobility in America – just not as much as most people seem to believe or want. Relative mobility is especially sticky in the tails at the high and low end of the distribution. Mobility is also considerably lower for blacks than for whites, with blacks much less likely to escape from the bottom rungs of the ladder. Equally ominously, they are much more likely to fall down from the middle quintile.

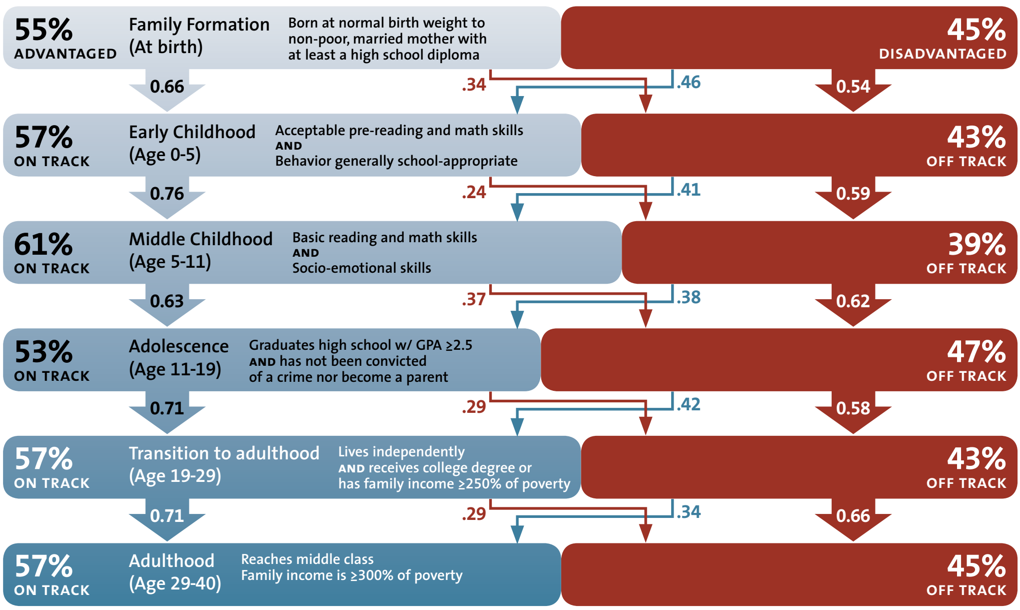
Relative mobility rates in the United States are lower than the rhetoric about equal opportunity might suggest and lower than people believe. But are they getting worse? Current evidence suggests not. In fact, the trend line for relative mobility has been quite flat for the past few decades, according to work by Raj Chetty of Stanford and his co-researchers. It is simply not the case that the amount of intergenerational relative mobility has declined over time.

Whether this will remain the case as the generations of children exposed to growing income inequality mature is not yet clear, though. As one of us (Sawhill) has noted, when the rungs on the ladder of opportunity grow further apart, it becomes more difficult to climb the ladder. To the same point, in his latest book, *Our Kids – The American Dream in Crisis*, Robert Putnam of Harvard argues that the growing gaps not just in income but also in neighborhood conditions, family structure, parenting styles and educational opportunities will almost inevitably lead to less social mobility in the future. Indeed, these multiple disadvantages or advantages are increasingly clustered, making it harder for children growing up in disadvantaged circumstances to achieve the dream of becoming middle class.

THE GEOGRAPHY OF OPPORTUNITY

Another way to assess the amount of mobility in the United States is to compare it to that found in other high-income nations. Mobility rates are highest in Scandinavia and lowest in the United States, Britain and Italy, with Australia, Western Europe and Canada lying somewhere in between, according to analyses by Jo Blanden, of the University of Surrey and Miles Corak of the University of Ottawa. Interestingly, the most recent research suggests that the United States stands out most for its lack of downward mobility from the top. Or, to paraphrase Billie Holiday, God blesses the child that's got his own.

PROBABILITY OF BEING ON OR OFF TRACK



SOURCE: The authors.

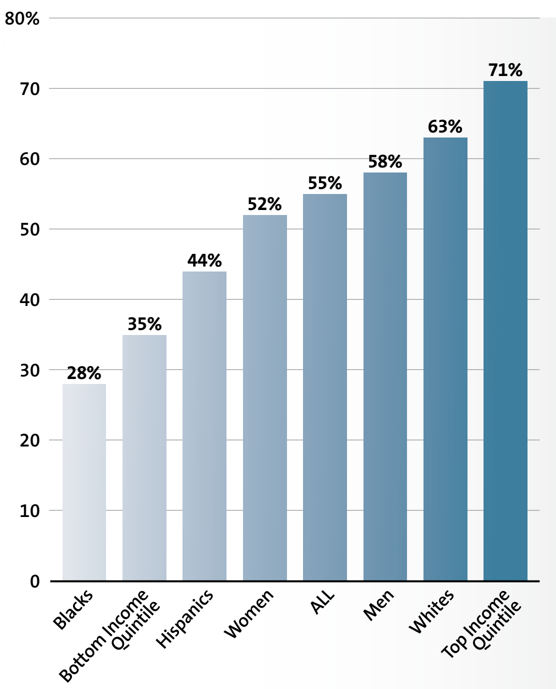
Any differences among countries, while notable, are more than matched by differences *within* the United States. Pioneering work (again by Raj Chetty and his colleagues) shows that some cities have much higher rates of upward mobility than others. From a mobility perspective, it is better to grow up in San Francisco, Seattle or Boston than in Atlanta, Baltimore or Detroit. Families that move to these high-mobility communities when their children are still relatively young enhance the chances that the children will have more education and higher incomes in early adulthood. Greater mobility can be found in places with better schools, fewer single parents, greater social capital, lower income inequality and less residential segregation. However, the extent to which these factors are causes rather than simply correlates of higher or lower mobility is not yet known. Scholarly efforts to establish why it is that some children move up the ladder and others don't are still in their infancy.

MODELS OF MOBILITY

What is it about their families, their communities and their own characteristics that determine why they do or do not achieve some measure of success later in life?

To help get at this vital question, the Brookings Institution has created a life-cycle model of children's trajectories, using data from the National Longitudinal Survey of Youth on about 5,000 children from birth to age 40. (The resulting Social Genome Model is now a partnership among three institutions: Brookings, the Urban Institute and Child Trends.) Our model tracks children's progress through multiple life stages with a corresponding set of success measures at the end of each. For example, children are considered successful at the end of elementary

CHANCES OF REACHING MIDDLE CLASS BY MIDDLE AGE



SOURCE: The authors.

school if they have mastered basic reading and math skills and have acquired the behavioral or non-cognitive competencies that have been shown to predict later success. At the end of adolescence, success is measured by whether the young person has completed high school with a GPA average of 2.5 or better and has not been convicted of a crime or had a baby as a teenager.

These metrics capture common-sense intuition about what drives success. But they are also aligned with the empirical evidence on life trajectories. Educational achievement, for example, has a strong effect on later earnings and income, and this well-known linkage is reflected in the model. We have worked hard to adjust for confounding variables but cannot be sure that all such effects are truly causal. We do know that the model does a good job of predicting or projecting later outcomes.

Three findings from the model stand out. First, it's clear that success is a cumulative process. According to our measures, a child who is ready for school at age 5 is almost twice as likely to be successful at the end of elementary school as one who is not.

This doesn't mean that a life course is set in stone this early, however.

Children who get off track at an early age frequently get back on track at a later age; it's just that their chances are not nearly as good. So this is a powerful argument for intervening early in life. But it is not an argument for giving up on older youth.

Second, the chances of clearing our last hurdle – being middle class by middle age (specifically, having an income of around $68,000 for a family of four by age 40) – vary quite significantly. A little over half of all children born in the 1980s and 1990s achieved this goal. But those who are black or born into low-income families were very much less likely than others to achieve this benchmark.

Third, the effect of a child's circumstances at birth is strong. We use a multidimensional measure here, including not just the family's income but also the mother's education, the marital status of the parents and the birth weight of the child. Together, these factors have substantial effects on a child's subsequent success. Maternal education seems especially important.

The Social Genome Model, then, is a useful tool for looking under the hood at why some children succeed and others don't. But it can also be used to assess the likely impact of a variety of interventions designed to improve upward mobility. For one illustrative simulation, we hand-picked a battery of programs shown to be effective at different life stages – a parenting program, a high-quality early-eduaction program, a reading and socio-emotional learning program in elementary school, a comprehensive high school reform model – and assessed the possible impact for low-income children benefiting from each of them, or all of them.

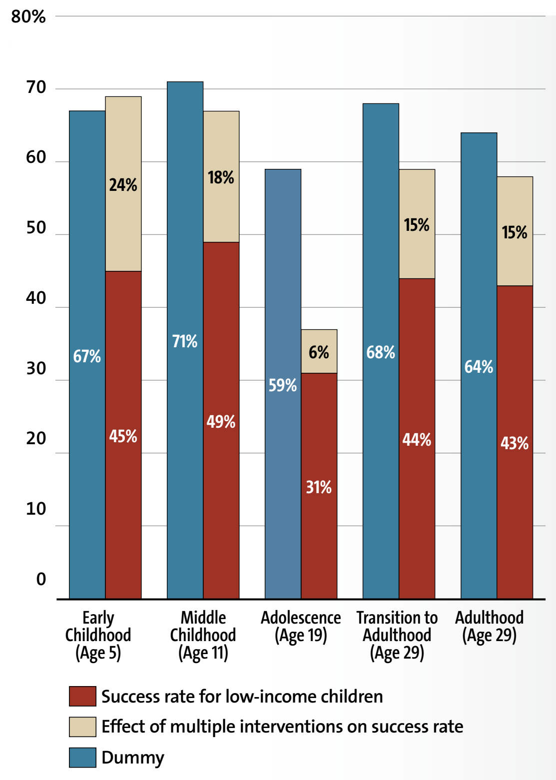
No single program does very much to close the gap between children from lower- and higher-income families. But the combined effects of multiple programs – that is, from intervening early and often in a child's life – has a surprisingly big impact. The gap of almost 20 percentage points in the chances of low-income and high-income children reaching the middle class shrinks to six percentage points. In other words, we are able to close about two-thirds of the initial gap in the life chances of these two groups of children. The black-white gap narrows, too.

Looking at the cumulative impact on adult incomes over a working life (all appropriately discounted with time) and comparing these lifetime income benefits to the costs of the programs, we believe that such investments would pass a cost-benefit test from the perspective of society as a whole and even from the narrower prospective of the taxpayers who fund the programs.

WHAT NOW?

Understanding the processes that lie beneath the patterns of social mobility is critical. It is not enough to know how good the odds of escaping are for a child born into poverty. We want to know *why*. We can never eliminate the effects of family background on an individual's life chances. But the wide variation among countries and among cities in the U.S. suggests that we could do better – and that public policy may have an important role to play. Models like the Social Genome are intended to assist in that endeavor, in part by allowing policymakers to bench- test competing initiatives based on the statistical evidence.

SUCCESS AT EACH LIFE STAGE, INCOME AT BIRTH



SOURCE: The authors.

America's presumed exceptionalism is rooted in part on a belief that class-based distinctions are less important than in Western Europe. From this perspective, it is distressing to learn that American children do not have exceptional opportunities to get ahead – and that the consequences of gaps in children's initial circumstances might embed themselves in the social fabric over time, leading to even less social mobility in the future.

But there is also some cause for optimism. Programs that compensate at least to some degree for disadvantages earlier in life really can close opportunity gaps and increase rates of social mobility. Moreover, by most any reasonable reckoning, the return on the public investment is high.

Rethinking Controls

BY BARRY EICHENGREEN

Economists are taught – and taught and taught – to appreciate the virtues of free markets. But they are also trained to be alert to circumstances in which markets, left to their own devices, produce less-than-optimal results. Sorting out the cases in which markets fail to generate efficient use of productive resources and justify government intervention can be tricky, though. And, as China's ongoing financial convulsions should remind us, few examples can be trickier to assess than international markets for capital.

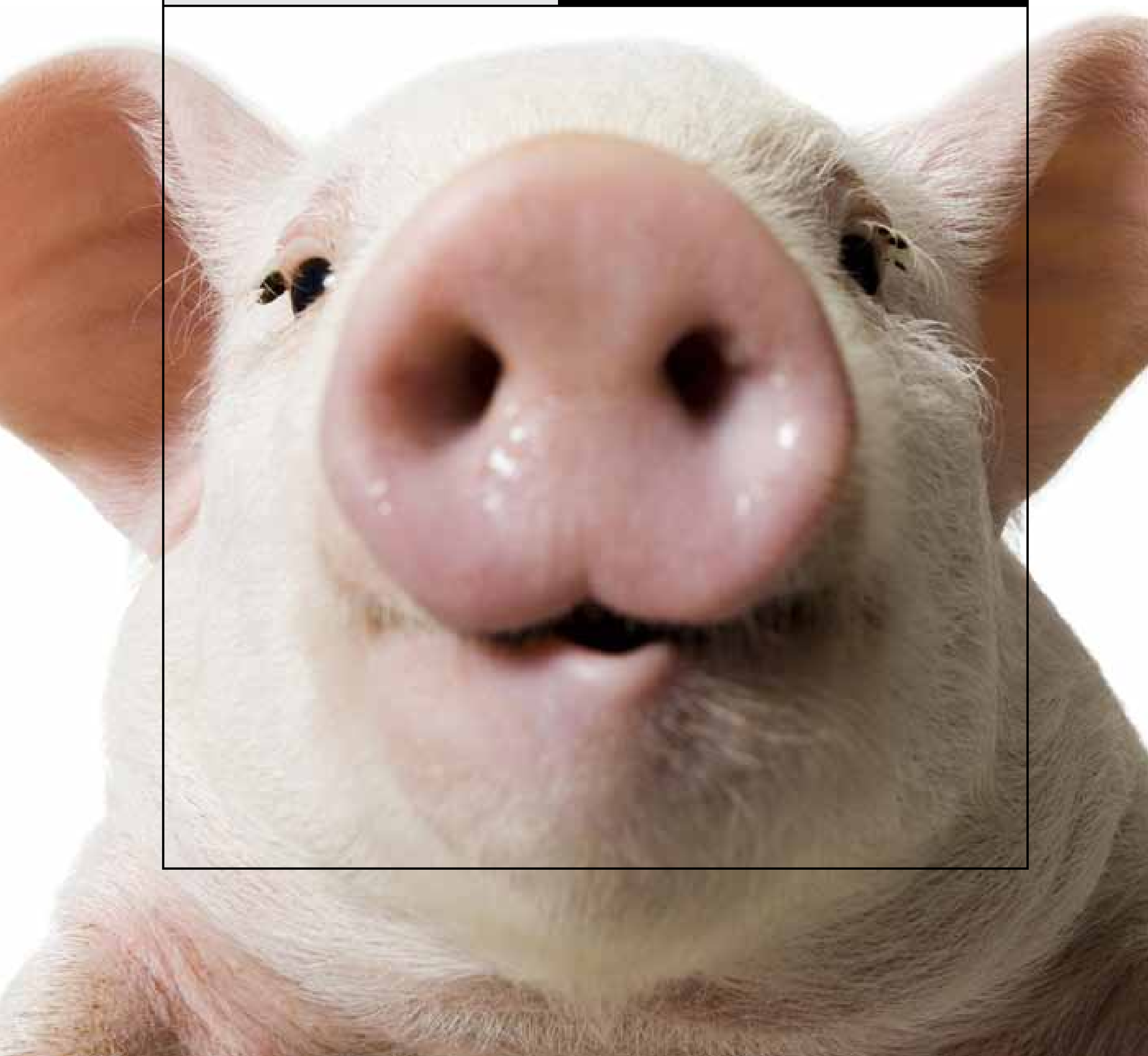
First things first. If you took Economics 101, you can probably dredge up cases of market failure in which government intervention is justified. For example, governments tax the emission of pollutants (or regulate them directly) because the cost of pollution would otherwise be borne by third parties and thus not taken into account in the balance of supply and demand. By the same token, governments regulate pharmaceuticals because buyers would otherwise lack enough information about their safety and efficacy to judge their value.

The rationales for regulating both pollution emissions and drugs have also been applied to financial markets – for example, regulating the complex mortgage contracts that millions of poorly informed

C a p i t a l

SMITHFIELD FOODS

Acquired by China's Shuanghui International, 2013.
Valued at $7.1 billion.



borrowers signed in the housing bubble of the early 2000s, which generated vast collateral damage when the bubble collapsed in 2008.

Parallel arguments apply to international transactions. Most economists support the prohibition of imports made with slave labor, at least in part because consumers lack adequate information about the conditions under which those imports are produced. And they generally support safety regulation of imported food on the grounds that imperfectly informed purchasers would not otherwise know what they're ingesting.

With all that in mind, consider the issue of taxing or regulating international capital flows – capital controls, for short. It's fair to say that the vast majority of economists are deeply skeptical about (if not downright hostile toward) their imposition. Yet it is not hard to find evidence in international financial markets of the kind of distortions that are likely to lead to imperfect information and, as a result, to economically inefficient and socially undesirable outcomes.

Consider, for example, the phenomenon of "adverse selection." Just as sick people have more incentive to buy health insurance, the least creditworthy firms and governments are more inclined to borrow. Or, for that matter, the phenomenon of moral hazard, in which borrowers who have no difficulty gaining access to foreign money are more likely to take on additional risk in the expectation that additional funds will always be available to bail them out.

Moreover, international capital flows can be a source of negative externalities. When capital flows out of a country that is in financial difficulty, fire sales of domestic assets by foreign investors will cause the currency's exchange rate to plummet. This decline will reduce the value of the collateral of other residents who have borrowed in foreign currency, heightening their own – and their country's – financial difficulties. Still more investors will then flee in a self-reinforcing spiral, worsening the crisis.

Hence, the classic rationales for regulation – imperfect information and externalities – are arguably present in the context of international capital flows. Economists' traditional hostility toward capital controls thus stands out as an anomaly worth a closer look.

BARRY EICHENGREEN is the George and Helen Pardee professor of economics and political science at the University of California, Berkeley. His most recent book is *Hall of Mirrors: The Great Depression, the Great Recession, and the Uses and Misuses of History*.

CONTROLS IN THEORY AND PRACTICE

We'll use the shorthand of "capital controls" for all policy measures influencing international capital flows based on the residence of the investor. And the global economy offers plenty of contemporary examples.

In 2009 the government of Brazil imposed a tax on foreigners' purchases of Brazilian stocks and bonds equal to 2 percent of their value. (The rate was eventually raised to 6 percent.) Since the same tax was not imposed on domestic residents, it was a form of capital control. In 2010 Thailand imposed a 15 percent withholding tax on interest and capital gains on Thai government bonds held by foreign investors, but not on interest and capital gains on those same bonds accruing to domestic investors. In 2012, Uruguay required foreign investors purchasing government debt to maintain non-interest-bearing deposits equal to 40 percent of the value of the purchase for a fixed period. Since the reserve requirement was not imposed on domestic investors, it too constituted a capital control.

Today, by far the largest economy imposing major capital controls is China. As it has throughout its history, the Peoples' Republic limits purchases of Chinese assets by foreigners to certain types of securities and only provides authorization to undertake even those purchases to specified categories of foreign investors.

These examples flag an important distinction between market-based and administrative capital controls. Market-based controls – taxes and measures like non-interest-bearing reserve requirements that are the equivalent of a tax – do affect market prices and reduce capital flows, but still allow the market to operate. They leave foreign investors free to decide whether to invest, provided they are willing to pay a premium. Administrative controls, by contrast, limit foreign investment to specific assets or specific investors or specific sums rather than using price to inhibit asset purchases.

Economists generally view market-based or price-based controls as the lesser evil, on the grounds that they are relatively transparent (and thus less likely to be catnip for corruption) and still allow some scope for the market to allocate productive assets to those who value them most. But there's a catch: price- or tax-based measures presuppose the existence of a tax system that is difficult to evade, leading not just China, but also many less-developed economies, to rely mainly on administrative controls.

Governments applying both market-based and administrative controls have invoked a number of different rationales for their actions. Brazil, in 2009, Thailand, in 2010, and Uruguay, in 2012, were all concerned about the potential externalities linked to massive inflows from foreigners seeking higher yields when the central banks of high-income countries cut interest rates to zero in response to the Great Recession. They worried that capital inflows would raise security prices to unsustainable heights, inflating financial bubbles that would cause collateral damage when they burst. They worried that ill-informed foreign investors scrambling for yield were blindly following the herd, and

INGRAM MICRO

Sold to China's Tianjin Tianhai, 2016, for $6 billion.

AMC ENTERTAINMENT

Acquired by China's Dalian Wanda Group, 2012. Valued at $2.69 billion.

ISTOCK

would just as blindly retreat with the herd when asset prices stopped going up. They worried that their own private banks, able to borrow abroad at bargain rates, were making excessively risky investments and levering up their bets – and would thus be hung out to dry when foreign finance dried up.

Consider another (quite different) reason for concern. Policymakers in emerging-market countries saw that capital inflows were causing their own currencies' exchange rates to appreciate, damaging the competitiveness of their export industries and deterring export-driven startups. This latter phenomenon can be a very serious drag on long-term growth. Development economists argue that firms learn to export by observing other exporters. Hence the diminution of exports from existing industries constitutes a negative externality along the lines discussed above.

The existence of this externality would appear to be one motive for China's longstanding maintenance of capital controls. Chinese enterprises learn from exporting and from observing one another's success at exporting. Controls on capital inflows have therefore been used to limit the appreciation of the renminbi's exchange rate to promote learning by doing as well as to generate profits for existing exporters.

The list goes on. Starting in 2009, policymakers in many emerging-market economies worried that capital inflows were fueling a domestic consumption and investment boom, thereby creating the danger of inflation and overheating. They were also worried that domestic monetary policy would not be able to turn down the thermostat. To understand why, bear with me for a brief refresher on macroeconomic theory.

In an open economy, policymakers can achieve any two of three objectives: free capital mobility, stable exchange rates, and control of the domestic money supply. The standard treatment for inflation and overheating is, of course, to tighten monetary policy. But with free capital mobility, exercising monetary autonomy means that the third objective, control of the exchange rate, must be sacrificed. And that puts policymakers in a bind.

Tightening monetary policy in an environment in which capital can freely cross borders would cause the exchange rate to appreciate as capital flowed in to take advantage of higher interest rates, making exports less competitive in foreign markets – something that policymakers in export-led economies like China view as especially costly in both economic and political terms. Hence policymakers are under considerable pressure to control capital inflows.

The examples cited earlier suggest that even where controls are, on balance, helpful, there may be more efficient ways of addressing the problems to which capital flows give rise. For example, if the availability of cheap foreign finance allows domestic banks to make excessively risky investments and to dangerously leverage their bets, then the best response is to address their risk-taking behavior directly, by strengthening supervision and regulation of the domestic banking – not to discriminate between domestic and foreign funding with capital controls.

To be sure, this is often easier said than done. In the absence of capital controls, banks and corporations with foreign subsidiaries may still be able to borrow offshore, evading domestic regulation. By the same token, branches of foreign banks operating in the country will typically be subject to regulation by the government of their home country and may thus be free to continue to extend risky loans to local customers. Effective prudential supervision and regulation require experienced, well-trained bank inspectors and well-developed administrative capacity – skills not available in abundance in developing countries.

In the absence of capital controls, banks and corporations with foreign subsidiaries may still be able to borrow offshore, evading domestic regulation.

These practical constraints on addressing the source of the problem directly create an argument for capital controls as a second-best way to preserve the stability of the domestic financial system. Indeed, this is the currently fashionable argument for capital controls as "macroprudential" policy.

But the design of the controls matters if efficiency is the goal. Rather than applying controls across the board, policymakers should target their taxes and administrative measures at the specific types of capital flows most likely to create problems.

If volatility is the problem and if short-term capital flows are especially volatile, then capital controls should be targeted at short-term flows. Thailand and Uruguay required foreign investors to set aside a percentage of the value of the money they brought into the country without earning interest for a relatively brief period. This presumably deterred investors buying liquid financial assets who intended to hold them only briefly. But it would have little impact on the incentives of investors in for the long haul.

Note, too, that the stringency of restrictions on capital flows intended to compensate for imperfect knowledge or to offset externalities should vary with the financial cycle. If over-borrowing is the problem, then controls should be especially strict when over-borrowing is prevalent – that is, when global credit is accommodating and large amounts of foreign capital are flowing into a country. Brazil, Thailand, and Uruguay all adjusted capital controls in this way.

THEN WHY THE SKEPTICISM?

If the rationales for (and circumstances under which) capital controls are useful are clear, why are economists still so skeptical? One answer is that historical experience with capital controls suggests they are blunt instruments and often subject to abuse. Before 1914, regulation of international capital flows was relatively limited, just as financial regulation in general was relatively limited. Comprehensive controls were only put in place by the major belligerents during World War I, when it was deemed essential to husband resources for the war effort.

But freeing capital from controls proved a lot harder than imposing them. Controls remained in place in the 1920s in countries experiencing problems of postwar readjustment – in particular, those finding it hard to restore their prewar currency-exchange rates. The British government, for example, continued to restrict the ability of banks in London to underwrite long-term foreign loans as part of an effort to offset the weakness of the British balance of payments and thereby restore the pound sterling to its prewar parity against gold and the dollar.

Controls proliferated after the financial crash and the onset of the Great Depression. Countries experiencing banking runs and seeing panicked withdrawals by foreign depositors embargoed the repatriation of funds. With the gold-standard crisis in 1931, one set of countries led by Great Britain devalued their currencies, leaving the others – members of the so-called Gold Bloc – with overvalued exchange rates and weak balances of payments. This second group responded by tightening both import restrictions and capital controls.

Most notoriously, Germany imposed comprehensive restrictions on its international financial transactions as part of the plan to bring the German economy under the control of Nazi planners. It used that comprehensive system to regulate its trade and financial relations with its Central and Eastern European neighbors, which had been badly battered by the global depression. This allowed the Reich to extract resources from them to build the German war machine on terms favorable to the government.

World War II brought on even stricter controls on capital flows as part of the larger set of wartime restrictions that involved controlling goods, prices, wages, production and foreign trade. Governments emerged from the Second World War with even larger financial imbalances than those following the First.

The British government's debt, for example, was on the order of 250 percent of national income, with much of it owed to foreigners. Britain was thus forced to limit the ability of foreign investors to liquidate their British government securities and to repatriate their funds for many years. Moreover, these controls remained in place for a remarkably long time – into the 1970s.

Other governments maintained similar restrictions. Given the banking crises of the 1930s and the still-weak condition of banking systems after World War II, they tightly regulated domestic financial transactions – something that was feasible only if they also maintained tight restrictions on cross-border lending and borrowing. Note, moreover, that capital controls similarly created room for governments and central banks to maneuver to pursue domestic demand-management policies (as increasingly expected by their electorates) while also holding exchange rates stable.

Administrative controls on capital movements were even tighter in the third world. In the 1950s and 1960s, many newly independent developing countries were impressed by the breakneck growth achieved by the centrally planned Soviet Union and sought to follow a similar path. Again, tight regulation of the financial system and the economy by planners was only possible with tight controls over capital flows.

The gradual movement away from capital controls in the final quarter of the 20th century was part and parcel of the move away from central planning and the widening belief that a market-oriented, or at least mixed, economy model was more conducive to growth. Critics contended that the efforts of bureaucrats to control capital outflows as a way of subsidizing domestic investment – and their selective control of capital inflows as a way of channeling domestic investment toward particular industries – were ultimately counterproductive for the broader economy. Since planners had no special talent for picking winners, controls resulted in a misallocation of resources, ultimately hindering growth.

Exacerbating the resulting mess, control of foreign lending and borrowing (like control of other activities) encouraged corruption. To tap foreign funding, banks and firms needed to obtain government approval, which usually came at a price. India's notorious license raj, the elaborate system of regulation, red tape and under-the-table payments

COURTESY OF GENERAL ELECTRIC APPLIANCES

LEGENDARY ENTERTAINMENT

Acquired by China's Dalian Wanda Group in 2016 for $3.5 billion.

COURTESY OF LEGENDARY ENTERTAINMENT

affecting all manner of economic transactions, prominently included restrictions on inward and outward foreign investment.

In more-advanced countries, controls appeared to lose much of their effectiveness as governments relaxed draconian regulation of domestic financial institutions and markets, opening additional avenues for evasion and making effective enforcement difficult. More generally, advanced-country experience suggested that economic and financial development and the liberalization of international capital flows went hand in hand.

The United States, the country with the most liquid financial markets and the strongest international financial position, quickly removed its wartime controls. Other members of the Organization for Economic Cooperation and Development (the club of advanced economies) moved in the same direction, the OECD having adopted a Code of Liberalization obliging its members to do so. Japan liberalized its international financial transactions relatively late since the removal of controls would have undermined the government's system of top-down planning, administered by the Ministry of Trade and Industry – to which it was still wedded in the 1970s and 1980s.

Western European nations, for their part, removed remaining capital controls in the 1980s. The countries that would become the European Union all moved away from pegged exchange rates. Abandoning currency pegs allowed them to increase cross-border capital mobility while retaining their ability to control the domestic money supply, providing an alternative solution to the open-economy trilemma discussed above.

Correlation, here between relatively high levels of income and the absence of capital controls, is not, of course, proof of causation. High-income status, and the well-functioning markets and well-developed regulatory capacity associated with it, may well be what minimize domestic market imperfections and permit the removal of capital controls. It could be that those well-functioning markets and well-developed regulatory capacity, not the absence of controls, are what in fact limit the prevalence of corruption, favoritism by government officials and domestic allocative distortions.

WHAT TO DO

Still, worries persist that capital controls create a breeding ground for both corruption and distortions in resource allocation. Their critics warn that controls are inertial: once put in place for reasons good or bad, they are often almost impossible to remove. That's because the benefits of controls are concentrated, giving the favored groups (exporters, in the case of China) a strong incentive to lobby for their retention, while the costs are diffuse, making opponents (think of consumers) difficult to mobilize.

Controls may also provide an excuse not to undertake painful but necessary reforms. When they are put in place as bandages to cover banking problems, the pressure to fix the banking system will be less. When they are put in place in response to budget and inflation problems, the pressure to adjust macroeconomic policies will be correspondingly reduced. Thus, even when the case for capital controls is supported by the information asymmetries and externalities outlined earlier, they come with risks whose costs, in the eyes of some, are prohibitive.

What can be done to limit those risks? One possibility is to develop standards for the use – and for avoiding the misuse – of capital controls and to construct enforcement mechanisms designed to hold countries to those standards. Five years ago, the G20 countries endorsed a position paper outlining how countries should manage capital flows. The paper argued that controls (which governments euphemistically labeled "capital-flow management measures") should be targeted at specific risks rather than used indiscriminately. They should be reviewed regularly with an eye toward phasing out redundant measures. They should be relaxed or reversed when destabilizing pressures abate. They should be transparent, preferably price-based, in order to limit opportunities for corruption and favoritism. They should not be used as an excuse to avoid painful but vital domestic-policy reforms.

Wishing won't make it come true, though. One possible way to ensure that governments adhere to these standards would be to make compliance an obligation for members of the International Monetary Fund and to authorize the fund to name and shame countries that fail to comply. More ambitiously, countries that fail to comply could be denied access to the fund's financing facilities.

In 2011, the fund attempted to develop a code of conduct for the use of capital controls. In the end, however, this initiative was torpedoed by emerging-market countries, led by Brazil and India. They feared that the fund, which had long been ideologically opposed to the use of controls, would constrain the options available to governments facing surges in capital flows.

But since then, the International Monetary Fund has displayed greater open-mindedness about capital controls, articulating a "new institutional view" acknowledging that their use may be warranted in some circumstances. And given this new open-mindedness, there may be a way to create the long-elusive consensus. Stay tuned.

Dis rup tion...

Disrupted

BY FRANK ROSE

ILLUSTRATIONS BY JAN FEINDT

In 1995, when he was a little-known assistant professor at Harvard Business School, Clayton Christensen published an article in the *Harvard Business Review* that would revolutionize the way we think about business. Written with his mentor, Joseph L. Bower, "Disruptive Technologies: Catching the Wave" offered an answer to an urgent question: what is wrong with corporate America?

The paper built on Christensen's research on the disk drive industry, which had seen one successful company after another fall victim to younger firms with innovative new products. But it wasn't just disk drives. Xerox. IBM. Digital Equipment Corporation. Time and again, once-proud standard bearers were being humbled, if not felled, by scrappy upstarts. Christensen's answer, which would find full expression two years later in his book *The Innovator's Dilemma*, was surprising. The giants weren't doing anything wrong, he wrote. They were doing it right – right for their existing customers, that is. And that was the problem, because in a time of rapidly advancing technology, what was right for customers today might soon be superseded by something that seemed at first too trifling to bother with.

At this point, Christensen has gotten disruption theory into such a tangle that even he is tripping over it.

Last December, 20 years after that landmark paper, Christensen published again in the *HBR*, this time under very different circumstances. Disruption theory had made him a superstar in the business world. And in the previous 18 months, it had made him a target as well.

Jill Lepore, a Harvard historian, had chewed over disruption theory at length in *The New Yorker* and spat it out like so much bad fish. A professor in the engineering school celebrated her takedown by publicly branding Christensen a "snake oil salesman." *Bloomberg Businessweek* headlined its coverage "The Innovator's New Clothes: Is Disruption a Failed Model?" Justin Fox, editorial director of the *HBR*, wondered in *The Atlantic* if disruption were even still happening – and noted in an aside the appearance of an extension for Web browsers that automatically replaces the word "disrupt" with "bullshit." Andrew King, a professor at Dartmouth's Tuck School of Business, was co-author of a paper in the *MIT Sloan Management Review* that examined 77 of Christensen's case studies and asked, "How Useful Is the Theory of Disruptive Innovation?" The answer, some 8,900 words later: not very.

But it may have been Christensen's response in the December *HBR* that was most telling. Written with Michael Raynor of Deloitte and Rory McDonald of Harvard Business School, "What Is Disruptive Innovation?" was an attempt to restate and rein in an idea that, for good or for ill, has taken on a life of its own. Among other things, Christensen and company raised the question of Uber, a company that, by any commonly accepted English-language definition of the word, is seriously disrupting the global taxi industry. But is Uber really disruptive? No, they maintained, because it fails to meet certain basic criteria of Christensen's theory, rooted in observations he made on the disk-drive industry when he was writing his doctoral dissertation a quarter-century ago. Uber would have to be considered a "sustaining" innovation – one that improves an existing product or service rather than challenging it with something that, at least at the outset, seems not as good.

When Christensen introduced the idea of sustaining innovations, they were described as working to the benefit of established com-

FRANK ROSE is the author of *The Art of Immersion* and a senior fellow at Columbia University School of the Arts, where he leads an executive education seminar in digital story-telling strategy.

panies. But if Uber is classified as a sustaining innovation, you have to wonder what, exactly, it is sustaining. Science and economics are rife with specialized terms (starting with the word "theory") that don't carry the same meaning they have in common parlance. But at this point, Christensen has gotten disruption theory into such a tangle that even he is tripping over it. This leaves a big hole for anyone looking for a viable explanation of how and why mighty corporations fall.

SCARY TIMES

It's hard to overstate the impact Christensen has had on business thinking since *The Innovator's Dilemma* was published in 1997. Here was a catchily named, easily grasped theory (a little too easily grasped, perhaps) that appeared to explain a critical enigma in American business. "These are scary times for managers in big companies," Christensen and a co-author wrote in the March-April 2000 issue of the *Harvard Business Review* – an opening line that perfectly encapsulated disruption theory's appeal.

In an indirect, yet unsettling, way, the American corporate establishment's inability to compete echoed the muscle-bound powerlessness of the United States itself, which seemed as ill-equipped to fight insurgencies in less developed countries as Xerox was to fight Canon and its small personal copiers.

Later, as attention shifted to tech entrepreneurs and their fabulous success stories, the focus of disruption theory shifted along with it: the same theory that spelled out how big companies could lose showed how small companies could win. Either way you looked at it, Christensen offered an explanation – a solution to questions that ultimately involved not just disk drives or copiers or computers or even geopolitics, but fed on far deeper and more personal concerns. Whether it was the fear of growing old or the excitement of being young, disruption theory played to the rational and the subconscious alike.

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One of the most compelling aspects of Christensen's analysis was the paradox it presented — a company at its zenith could be making the very decisions that would allow it to be

to be undercut from below. In *The Innovator's Dilemma*, he cited a 1986 *Businessweek* article that compared Digital Equipment, which reigned supreme during the brief era of the minicomputer, to an oncoming freight train: competitors, watch out. Eight years later, the same magazine declared DEC "in need of triage." Sears, Christensen wrote, "received its accolades at exactly the time – in the mid-1960s – when it was ignoring the rise of discount retailing and home centers, the lower cost formats for marketing name-brand hard goods that ultimately stripped Sears of its core franchise."

You could argue, he pointed out, that these companies were never well managed – that they got to the top by luck alone. But his own explanation was more intriguing and ultimately more satisfying. It's not that the companies were poorly run, but "that there is something about the way decisions get made in successful organizations that sows the seeds of eventual failure." What that something might be was explained in the 200 pages that followed – and in the many books, scores of papers and case studies and countless speeches that came after that.

In the business world, it was as if Christensen had bottled lightning. *The Innovator's Dilemma* arrived with high praise from the likes of Michael Bloomberg and the techno-guru George Gilder. In 1999, *Forbes* put him on its cover with Intel's chairman, Andy Grove, under the headline, "Andy Grove's Big Thinker." After that, the accolades piled up. Eric Schmidt, executive chairman of Google's parent company, declared that Christensen's recommendations had helped make Google's success possible. In 2011, and again in 2013, he was named the world's top management thinker in a leading poll of academics and business executives. When he appeared on the cover of *Forbes* a second time in 2011, the magazine hailed him as "one of the most influential business theorists of the last 50 years" – a testimonial that put him in the company of Peter Drucker and few others.

As disruption theory grew in popularity, its scope widened as well. In *The Innovator's Dilemma*, Christensen applied the theory to consumer offerings and business products alike, but the focus was on technologies – smaller disk drives, smaller and more-personal computers, smaller and more-efficient steel mills. Even the failure of once-dominant Sears to defend itself against the likes of Kmart was cast in technological terms.

Then, the horizons started growing broader, in tandem with Christensen's ambitions. He set up a think tank, the Clayton Christensen Institute for Disruptive Innovation, and a consulting firm, Innosight. He lent his name, though apparently not much else, to the Disruptive Growth Fund, an investment vehicle that had the misfortune to be created just in time for the 2000 dot-com meltdown. In 2003, he and Raynor published a follow-up volume, *The Innovator's Solution*, which aimed not just to explain what was happening to disrupted companies but to show how they could counter it. He extended disruption theory to health care in the 2008 book *The Innovator's Prescription*, to public schools in *Disrupting Class* and to higher education in *The Innovative University*. "As I helped people to try and use the ideas, it became very clear there really isn't anything [it doesn't apply to]," he told *Businessweek* in 2007. "Disruption really is a business model innovation."

undercut from below

Grove had seen as much when they were discussing DEC in the late '90s. "He said, 'It wasn't a technology problem,'" Christensen recalled in a 2006 paper. 'Digital's engineers could design a PC with their eyes shut. It was a business model problem, and that's what made the PC so difficult for DEC.'" This was not all that startling an insight, considering that Ken Olsen, DEC's longtime CEO, had famously dismissed the PC as a toy that would "fall flat on its face" in business. Nonetheless, it helped provide cover for disruption theory to go just about anywhere Christensen wanted to take it.

Yet Christensen endorsed only minor adjustments to his original definition. To him, disruptive innovation remained a process that starts at the low end of the market, or in new markets that don't seem lucrative enough to bother with, and only later advances to the point that it becomes a threat.

This is the pattern Sony followed again and again between 1955, when it introduced Japan's first commercially available transistor radio, and the early '80s, when a co-founder, Akio Morita, began to step back from day-to-day management. It's what enabled Toyota to post profits in the mid-2000s, Christensen reports, that exceeded those of every other auto manufacturer combined. But some innovations are anomalous; they seem disruptive, yet fail to fit the pattern. In the same 2006 paper, Christensen noted an exception in the case of Whole Foods, an upmarket company that took business away from established mass-market chains like Kroger. "Some have suggested that these are instances of high-end disruption," he wrote. He disagreed. Since disruption by definition occurs at the low end, whatever was happening at the high end had to be something else. Disruption theory was powerful, evangelistic – and rigid.

But disruption has been hard to get right, even for Christensen. A decade ago, when Apple was racking up win after win, he consulted his theory and saw failure right around the corner. The iPod, Apple's portable music player, struck him as ripe for disruption. Mobile phones didn't have as much storage and their user interfaces weren't as good, but for lots of people they would be "good enough." As it happened, not even the ROKR, the music phone Apple introduced in 2005 in partnership with Motorola, was good enough to interfere with iPod sales.

In 2007, when Apple was about to introduce the iPhone, Christensen saw it as too good for most people's needs; to him it was a sustaining technology, improving on existing phones rather than disrupting them. "The prediction of the theory would be that Apple won't succeed with the iPhone," he declared

in the 2007 *Businessweek* interview. "It's not [truly] disruptive. History speaks pretty loudly on that, that the probability of success is going to be limited."

At the time, Apple was valued at approximately $105 billion. Five years later, the iPhone would be hailed as the world's most profitable product. And today, having sold more than one billion iPhones worldwide, Apple still derives two-thirds of its revenues from the device.

This became a problem when iPhone sales finally slowed last spring, producing the company's first quarter-over-quarter revenue decline since 2003. Apple's market cap dropped by $46 billion overnight on the news – but even then, at $540 billion, it was still the world's most valuable company.

Although Walter Isaacson reported in his biography that Steve Jobs was "deeply influenced" by *The Innovator's Dilemma*, this wasn't the first time Christensen had made a wrong call on Apple. In *The Innovator's Solution*, published as Apple was rebounding from the near-death experience it suffered in the '90s, he and Raynor wrote that it had been "relegated to niche-player status" as a result of the Mac's proprietary architecture, which put it at a disadvantage against "IBM's modular open-standard architecture."

Standards of design and convenience have advanced to the point that people expect more, not less —

This formulation ignores the real reasons for Apple's near-demise, which included the special appeal of the IBM brand to conservative corporate purchasers in the '80s, the board's 1985 decision to back CEO John Sculley at the expense of Jobs, overweening hubris on the part of all concerned and a long string of bad management decisions that included, in fact, opening up the Mac and letting rival manufacturers come out with cheap clones. (As for the modular architecture of the IBM PC, it ended up benefiting Microsoft, not IBM, which found itself undercut by Compaq, Dell, HP and pretty much any manufacturer that could slap together a circuit board.)

Christensen's explanation also fails the hindsight test, since Apple's comeback was based on the Mac and its once-again closed architecture. But it wasn't as egregiously wrong as the iPhone proclamation.

Christensen has explained that flub by saying he failed to realize that the iPhone was actually disrupting the laptop, not improving on existing smartphones. This is a bit like saying you didn't hit the barn door because you had your eye on the house. It also fits a pattern. In economics as in science, laws describe, theories explain. But over the past decade or so, disruption theory has failed to explain, among other things, the iPod, the iPhone, Whole Foods and Uber – four developments that have wrought havoc with established businesses. At this point it seems reasonable to wonder if disruption theory, as Christensen has formulated it, still holds, or whether it's an artifact of mid-to-late-20th-century industrial development that no longer applies in an era of ubiquitous digital media and ever-more-sophisticated consumer electronics.

and digital technology has advanced to the point that just about any startup can give it to them.

WHEN GOOD ENOUGH WILL NO LONGER DO

The "good enough" formulation, as in Christensen's assertion that pre-iPhone smartphones would be "good enough" as music players to disrupt sales of the iPod, has been critical to disruption theory from the start. Companies coming in at the low end – Japanese auto manufacturers, discount retail chains, early PC manufacturers – would gain a foothold because their offerings were "good enough" for some people. Only when those offerings improved would established corporations like GM, Sears and DEC start to feel the heat.

But over the past decade or so, that pattern has started to break down. Early smartphones, including the ill-fated ROKR, were not in fact good enough to counter the iPod. Whole Foods turned the idea of "good enough" on its head; it was actually too good, meeting a demand for high-end natural foods that had gone unnoticed by the big supermarket chains. Uber is too good in much the same way – taxis can't match the expectations of comfort and convenience it has created. Disruption has gone haywire.

One explanation for this is a rise in consumer expectations. For many of us, "good enough" will no longer do, especially in the absence of some trade-off to balance the equation. Transistor radios may have sounded tinny, but they were good enough for teenagers in the '50s because they let you listen to rock 'n' roll where your parents couldn't hear it. The first personal computers were clunky and underpowered, and the first portable computers even more affordable and convenient in a way that minicomputers could never be. Early Japanese auto imports were tinny, clunky and underpowered, but they were good enough for people who wanted cheap cars that didn't guzzle gas.

Today, however, such trade-offs hardly seem necessary. Standards of design and convenience have advanced to the point that people expect more, not less – and digital technology has advanced to the point that just about any startup can give it to them.

This is why the iPod was not disrupted by early music phones. It's why the iPhone, contrary to Christensen's prediction, did not "overshoot" already available smartphones from the likes of Nokia and RIM's BlackBerry. As Ben Thompson, a well-regarded tech blogger, has observed, "it is impossible for a user experience to be too good." Not only did the iPod and the iPhone have superior user interfaces; Apple employed them to browbeat two notoriously customer-unfriendly industries, music and mobile telephony respectively, into submission. Branding was another factor: Apple has been able to charge premium prices because iPhones offer a coolness factor that other smartphones lack.

For a while the iPhone seemed threatened by Google's Android mobile operating system, which was adopted by major smartphone manufacturers, including Samsung and LG. In 2014, Christensen asserted that the competition was "killing Apple," but this judgment, too, proved wrong. Samsung has risen to No. 1 in unit sales, but that hasn't stopped Apple from vacuuming up an ever-increasing share of the industry's profits – more than 90 percent at last report.

Lepore cited Christensen's Apple miscues in her 2014 *New Yorker* article, but that accounted for only a small portion of her overall barrage. Finding his sources "often dubious and his logic questionable," she accused him of relying on circular arguments ("If an established company doesn't disrupt, it will fail, and if it fails it must be because it didn't disrupt") and on carefully selected case studies that mainly buttress his theory in retrospect. She herself cited one case after another in which disruptees eventually failed, or supposedly disrupted companies ended up recovering (or at least surviving), or established companies tried to disrupt themselves and ended up in the toilet.

Unfortunately, many of her examples turn out to be problematic as well. As Raynor pointed out in rebuttal, Kmart's subsequent travails had no bearing on its successful disruption of the department-store business, nor should US Steel's survival be taken as evidence that Nucor, with its upstart mini-mill technology, did not actually disrupt its business.

As for Time Inc.'s hapless Pathfinder Web initiative, which Lepore offers as an example of in-house innovation run amok, on closer examination it doesn't look like the open-and-shut case of ill-advised auto-disruption she describes. Nor does Raynor's assessment, that it was a sustaining innovation undertaken "to improve the experience of the company's existing readers and the reach of its existing advertisers," bear scrutiny.

Existing readers and advertisers had little to do with it. Despite a promising start, Pathfinder was a misguided effort to fit a disruptive innovation (the Internet) into a sustaining role – help our magazines, or at least don't cannibalize them – by print executives who didn't have a clue what they were doing. If they had, they might not have found themselves on a road to nowhere.

But Pathfinder does serve as a prime example of the "innovator's dilemma" – that is, disrupt yourself or be disrupted. Time Inc., cast adrift by the corporate mother ship two years ago in a concrete canoe laden with $1.3 billion

Pathfinder does serve as a prime example of the "innovator's dilemma":

in below-investment-grade debt, has certainly been that.

Whatever the merits of Lepore's arguments, Christensen didn't help his case when he responded with an anguished wail in *Businessweek*. Referring repeatedly to himself in the third person ("Clayton Christensen") and to his critic as "Jill," he offered an inadvertent tipoff as to why he might be collecting detractors. The interview ends with this exchange:

> You keep referring to Lepore by her first name. Do you know her?
> I've never met her in my life.

disrupt yourself or be disrupted.

King's dissection of disruption theory, which appeared a year later in *MIT Sloan Management Review*, provided a less writerly but arguably more rigorous examination of the record.

Recruiting a panel of experts to review 77 instances of disruption described in *The Innovator's Dilemma* and *The Innovator's Solution*, King and his co-author, Baljir Baatartogtokh, asked each expert to rate a single example according to four factors they deemed critical to disruption theory. Of the 77 examples, which ranged from Amazon to Xerox, only seven were judged to meet all four criteria. Most were determined to have been the result of one or two of the criteria plus additional factors that the theory doesn't account for – onerous pension obligations, for example.

The most recent authority to weigh in is Joshua Gans of the University of Toronto, whose new book, *The Disruption Dilemma*, comes with an endorsement from Christensen himself. Not surprisingly, it offers a friendlier assessment of his theory, but it also suggests that some adjustments are in order. In Gans's view, for example, organizational structure is key: companies that have different teams responsible for individual product lines tend to fare less well than those that take an integrated approach, largely because stand-alone teams lose sight of the bigger picture.

Christensen, however, has become increasingly focused on the need to bring "discipline" to disruption theory. The problem as he sees it is that people are using the word "disruption" to mean, well, disruption, when they should be using it in the narrow, technical sense of the term as he has defined it. Innovations that don't depend on being "good enough" don't fit, he told *Forbes* after publishing his most recent *HBR* paper. "We shouldn't ignore the existence of this phenomenon – it is important and notable – but we also shouldn't call it disruption."

This pretty well sums up the devolution of disruption theory over the past two decades, from breakthrough realization to squabble over semantics. In centering his most recent paper on Uber, which he contrasts with the companies that disrupted the copier market in the 1970s, Christensen unwittingly highlights the biggest problem with disruption theory today: it seems dated.

Some examples still fit the old pattern. Airbnb began with crash pads before migrating upriver to luxury homes. Streaming video players, which have been nibbling at cable and satellite providers for years, are finally delivering on the threat with the recent upgrades of Roku and Apple TV.

But 20 years on, disruption as defined by Christensen looks like something of a relic. "My research on disruptive innovation explains only how the world works in a very specific set of circumstances," Christensen explained to the *Boston Globe* last fall. Too specific, unfortunately, to take in the big, wide world that's out there now. What you really want to hear him say is, "Toto, I have a feeling we're not in disk drives anymore."

Our Stake in Their Development

BY STEVEN RADELET

São Paulo, Brazil

Just two years ago, emerging markets were all the rage. China, it seemed, could do no wrong and was destined to become the world's leading economy. Equity investors streamed into all the BRICS – Brazil, Russia, India, China and South Africa – reaping handsome short-term gains as economic growth (along with commodity prices) soared.

But that was then; now, clear skies have turned cloudy.

Dhaka, Bangladesh

China's growth has slowed from 10 percent-plus to 6 percent, a pace too slow to realize the high expectations of hundreds of millions of people aiming for middle-class living standards. Brazil and South Africa have stalled in the face of major commodity-price shocks and intense political scandals; Russia, dependent on oil for income and an aggressive foreign policy for self-respect, is facing its most serious economic crisis since the end of the Soviet Union. Only India, it seems, stands tall.

Was the emergence of the emerging markets just another bubble, one destined to collapse? Or is the downturn merely a speed bump on the path to global economic convergence?

Well, no and no. The progress in emerging markets and developing countries over the past two decades was certainly no illusion. In fact, it was much bigger and broader than most people understand, involving some 60 countries and lifting more than a billion people out of poverty. And the indirect benefits

STEVEN RADELET, the former chief economist of the U.S. Agency for International Development, is a professor at the School of Foreign Service at Georgetown University. His latest book: ***The Great Surge: The Ascent of the Developing World***.

PREVIOUS PAGE: MIKE GOLDWATER/ALAMY

IMAGES & STORIES/ALAMY

have been profound for rich countries, too.

Alas, the downturn is also real, in particular for economies that have relied heavily on oil or hard-rock commodities like copper, iron ore and diamonds for export revenues. More-diversified developing countries are still growing, but the route back to the palmy days of a decade ago will be difficult.

All told, emerging-market growth rates are likely to remain modest for the near future, albeit with wide variation. But over a longer horizon, the outlook for robust progress remains solid, especially for those countries that diversify their economies, increase competitiveness and further strengthen institutions of governance. And it is in the best interests of the United States to help these countries succeed and to make sure we succeed along with them.

TALE OF THE TAPE

Before we can glimpse the future, we need to better understand the past. Since the early 1990s, an enormous transformation has been under way in the world's developing and emerging-market countries, with huge economic shifts, major political reconfigurations and unprecedented improvements in the quality of life. Most Americans remain unaware of the profundity of these changes, in large part because most don't think much about the world beyond the country's borders. But this inward focus has consequences: as a nation we have not yet fully recognized the repercussions of these shifts or the opportunities and challenges they create.

For while Japan's economy has stagnated, Europe's has stumbled and America's has limped ahead, developing economies that are home to more than half the world are breaking out of long stagnation. These changes are not universal, but they are widespread, encompassing around two-thirds of developing countries around the world. They range widely in their productive strengths, types of governments and protection of human rights. But pretty much all of them have shifted in varying degrees from state control toward market capitalism. Moreover, they are all better governed than they used to be; they are all investing more in health and human capital; they are more integrated into a world of open trade and capital mobility.

The consequences are easy to read in basic statistics. The number of people living in extreme poverty (defined by the World Bank as less than $1.90 a day in 2011 prices) has fallen from two billion to one billion since 1993. China accounts for about half the decline, but extreme poverty has fallen in dozens of countries around the world. Meanwhile, child death rates have been cut in half, while deaths from major infectious diseases – notably malaria, HIV/AIDS, tuberculosis and a slew of maladies linked to compromised drinking water – have fallen by a third or more. Famine is far less common, thanks to increased food production and better management and distribution of stockpiles. And women are finally getting a break: 90 percent of girls in developing countries now complete primary school.

The shift into high gear was quite abrupt. GDP growth per person in developing countries averaged precisely zero between 1977 and 1994. But since 1995, real growth has averaged 3 percent per person per year, with even faster growth in dozens of countries. As a result, average incomes have nearly doubled in just two decades – and that excludes the much greater growth in China. In practical terms, this advancement means that families can live in cement houses with tin roofs over their heads, feed themselves three meals a day, buy medicine when they need to and send their children to school.

At the same time, both international trade and financial flows in and out of developing countries have increased tenfold since 1980 in real terms. Total trade by developing countries now exceeds $15 trillion a year – and, strikingly, a growing proportion is *between* developing countries.

Then there is the trend toward democracy and improved governance. In 1983, only 17 developing countries with populations exceeding one million were democracies; by 2013 that number had reached 56. Think of the Latin America of 30 years ago, when almost every country was a military dictatorship. Now the generals are gone and all but Cuba and, arguably, Venezuela, are democracies.

In Asia, where Singapore's Lee Kuan Yew once declared that democracy was incompatible with "Asian values," democracy (however imperfect) has replaced dictatorship in Bangladesh, Indonesia, Mongolia, Nepal, the Philippines, Sri Lanka, South Korea and Taiwan. (India, of course, has been a democracy since its independence.) About half of sub-Saharan Africa is now democratic, led, of course, by post-apartheid South Africa but including Botswana, Ghana, Liberia, Namibia, Senegal and Sierra Leone.

There has also been a major reduction in war and violence. This positive trend is obscured by daily stories of carnage in Syria and Afghanistan, not to mention on the streets of Mexican cities. But we tend to forget how violent the 1980s and early 1990s were, when almost all of the nations of West Africa, southern Africa and Central America were fighting civil wars, and the Shining Path was terrorizing Peru. As Steven Pinker showed in *The Better Angels of Our Nature*, despite perceptions to the contrary, we live in one of the most peaceful times in world history.

GROWING PAINS

So with all this progress, why are emerging markets suddenly in the dumps? The wounds have been partly self-inflicted – think of Venezuela's gross economic mismanagement, corruption working its poisonous magic in Brazil and South Africa and Vladimir Putin's decision to fiddle while oil prices soared and crashed.

But three broad forces beyond the control of individual countries have been at work. The first is long-term structural change in China, which is facing diminishing returns to investment and a permanent shift to slower growth after decades of double-digit perfor-

Squatter camp in Hong Kong

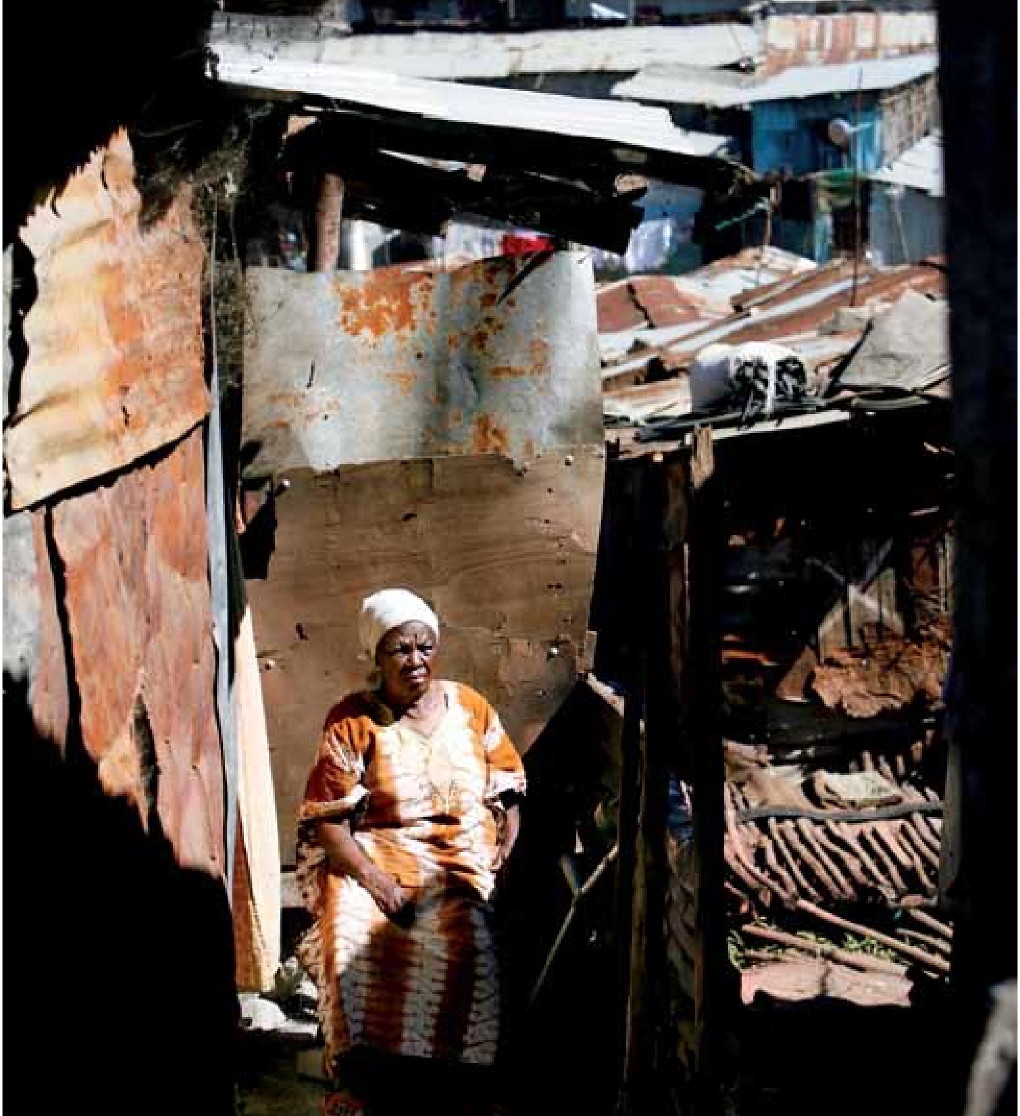
ROGER HUTCHINGS/ALAMY

mance. China's productivity gains since 1980 had been enhanced by a flood of surplus labor moving from farms to factories. But that tide is drying up, and (as can be expected in a middle-income economy) labor is beginning to shift from manufacturing to services, where productivity gains are harder to come by. Moreover, China's low birth rate and rising life expectancy are beginning to work against it, as an ever-larger share of its population moves from working age to retirement.

But while the Chinese juggernaut has slowed, it is hardly likely to stop. With growth around 6 percent to 7 percent per year projected over the next decade, China will continue to have a positive impact on the world economy – though it can no longer be expected to carry it.

Second (and not unrelated), the long commodities boom is over. Commodities prices soared beginning in 2002 and doubled in just five years. But the realities of supply and demand have since reasserted themselves. For starters, China's appetite for oil, steel, aluminum, cement, precious metals and food, which had fueled the good times, has abated. Meanwhile, high prices attracted new investment in commodities production – most visibly in shale oil and gas, but also in hard-rock minerals. And the impact has been felt from Russia to Brazil to southern Africa. With prices this depressed, markets are likely to rise eventually – but not sufficiently to spark a return to the salad days of the early 2000s.

The third force slowing emerging-market growth is the ongoing hangover in the rich countries after the 2008-09 global financial crisis and the long recession and debt wind-



Nairobi, Kenya

down that followed. The United States is growing at a modest 2 percent-plus, while growth in Europe is anemic (about 1.5 percent), and in Japan it is almost nonexistent.

Not surprisingly, then, world trade, which expanded by nearly 7 percent a year in the decade between 1998 and 2007, has dawdled around 3 percent since the end of the recession. Capital flows to support the farms, factories, mines and wells of developing economies have correspondingly slowed.

While all this dims the collective outlook of developing economies for the next couple of years, the drag will not be felt uniformly. The drop in fossil-fuel prices is devastating for Saudi Arabia, Russia, Nigeria and Venezuela. Similarly, countries that depend heavily on copper or iron ore, including Brazil, South Africa and Zambia, are getting hammered. But low commodity prices are a boon to the majority of developing economies that are net commodity importers.

It follows that countries with diversified export earnings – and ongoing reforms that are raising productivity across many sectors – are doing much better. India's growth is projected to reach 7.5 percent in 2016. Bangladesh, Kenya, Panama, the Philippines, Tanzania, Mozambique and Vietnam, which are playing catch-up in the global development race, are

EPA/STEPHEN MORRISON

all growing at a 6 percent rate. Indonesia is still growing around 5 percent, despite the fall in oil prices. In sum, the great transformation in emerging markets is far from over.

CONVERGENCE IS NOT THE ENEMY

To the extent that Americans are aware of growth in developing countries, they tend to fear it, assuming that their gains are our losses. But while there are grains of truth to this concern – some Americans are paying a price – this is definitely not a zero-sum game.

In fact, the transformation in developing countries is profoundly beneficial to the West, and could be even more so if we respond smartly. The advances by the world's poor are central to enhanced global stability, which is vital for the United States. Indeed, continued development in emerging countries is a necessary condition for solving some of our most pressing problems, such as fighting terrorism, stopping the spread of pandemic disease, dampening pressures for immigration and stopping the worst impacts of climate change. As never before, the futures of rich and poor countries are inextricably linked.

Start with the reality that rising incomes, improving health and stronger governance all reduce the threat of violence within developing countries. And while the route from cause to effect may not be a straight line, domestic tranquility and stronger capacity to maintain security will diminish the likelihood that these countries will be used as springboards for global terrorism. Al Qaeda chose to launch its attacks from Sudan and Afghanistan precisely because they were failed states lacking the will or the way to stop them.

By the same token, prosperity and good governance lessen the need for international military intervention. As former U.S. secretary of defense Robert Gates put it, "development is a lot cheaper than sending soldiers."

Development also strengthens the capacity to fight pandemic disease and other threats to the global commons, such as drug trafficking and climate change. Guinea, Liberia and Sierra Leone were overwhelmed by the Ebola crisis in large part because they have weak infrastructures for guarding public health. Moreover, while the rich counties bear the bulk of the responsibility for causing climate change, they will not be able to fight it very effectively without building alliances and sharing costs and technologies with emerging economies.

> **Continued development in emerging countries is a necessary condition for solving some of our most pressing problems. As never before, the futures of rich and poor countries are inextricably linked.**

Then, too, development reduces the incentives for migration that disrupt high-income countries' labor markets. If we want to slow (or simply rationally manage) migration, surely the best way is to make it more attractive for foreigners to stay home.

At a fundamental level, I also believe that development spreads and deepens values espoused by Western democracies. This isn't an open-and-shut case: growth has magnified bitter conflict between the urban middle class and the rural poor in Thailand, while the end of autocratic rule in Myanmar has given the Buddhist majority the green light to persecute the Muslim minority. But, by and large, progress has brought with it greater respect for human rights and greater incentives for international cooperation. The transformations in South Korea, Indonesia, South Africa and across Latin America are cases in point. And while contemporary China is no shining city on a hill, imagine how much more threatening it would be to its own citizens and to the rest of the world if Deng Xiaoping had not declared “to get rich is glorious.”

India’s development offers a parallel buffer against instability. When Americans pick up the phone to get help with their frozen PC screens and are greeted by a cheerful voice from Mumbai, their first thoughts may well be about the American workers who could have been at the other end of the line. But think of India’s neighborhood, with Pakistan, Iran, Afghanistan, Bangladesh, Nepal and China all uncomfortably close. It is hard for me to think of anything better for that dangerous part of the world than a stable, democratic and economically vibrant India with growing opportunities for its citizens and strong ties with the West. I feel much more hopeful for the world when I talk to someone in Mumbai.

The most hotly contested (and least widely understood) issues revolve around trade. While the direct cost advantages of wide-open global commerce are more modest for the United States than pro-trade interests generally acknowledge, international commerce has been a big engine for progress in developing countries and has entangled would-be adversaries in a benign web of co-dependence. Jobs (or rather the rate of pay and stability of jobs) are important in this debate, but plainly miss the sizeable indirect gains from economic integration.

The economist’s response is often just to argue that, even from the perspective of Americans alone, the aggregate gains outweigh the losses. It’s probably true that we gain marginally more jobs than we lose from trade and that many of the new jobs are better paid. But that does not help the 55-year-old machinist in Ohio whose job migrated to Shenzhen or Guangzhou. And it should not be surprising that this unemployed machinist is receptive to Donald Trump’s cries to sock it to the Chinese and show undocumented Mexicans the door.

The problem is not expanded trade per se but our failure to respond effectively to the dislocation it generates. Since the 1980s, Washington has given short shrift to the investments in human capital, technology and infrastructure (as well as improved safety nets) needed to help us compete in a changing global system without sacrificing those caught in the middle. We need more creative approaches – like providing subsidies for on-the-job training in private businesses, expanding apprenticeship programs, paying some of the costs of relocation so workers can move to the jobs and forging stronger links between businesses and technical colleges. In other words, we need to seriously up our game, not just blame others.

STAYING THE COURSE

The forces that have driven the global transformation of the past few decades are not transitory, and ongoing development will not depend on the serendipitous confluence of China’s rapid growth and America’s shop-till-you-drop consumerism. Far more important are the rise of neo-liberal economic policies, increased skills and the spread of competent governments across the developing world. Global integration has made critical technologies available to more and more people, while increasingly complex supply chains have forced a convergence of global business interests. State institutions have become more effective, with improved (if imperfect) legal systems, clearer property rights and greater respect for individual liberties.

Yes, the pace of progress will slow in the

REUTERS/KAZBEK BASAYEV

Vladokavkav, North Ossetia-Alania (Russia)

next few years, especially for countries suffering from the combination of relatively weak governance and near-total dependence on commodity exports. Indeed, it is hard to see how countries such as Russia, Saudi Arabia and Venezuela will break out of the traps they created for themselves. But looking ahead a decade or more, this major transformation will likely continue, with big benefits for rich and poor countries alike.

Getting from here to there, though, will require smart policy choices and strong leadership. In the near term, the countries under stress need adroit macroeconomic management, allowing currencies to depreciate, protecting foreign-exchange reserves and keeping budget deficits within prudent limits. Over the long haul, they must diversify their economies and reduce dependence on commodity exports. Doing so will require major investments in roads, electricity supplies, health and education, along with continuing efforts to rationalize regulation, reduce corruption and strengthen the rule of law.

For our (that is, high-income nations') part, we need to hold the line against protectionism and to bear the lion's share of the financial burden of curtailing climate change. Rich countries have contributed the most to global greenhouse gas emissions over the years, but it is the world's poorest countries that will bear the brunt of the damage. Fighting climate change will require leadership (and cash) from wealthy countries. By the same token, while ongoing technological change in pharmaceuticals, water management and alternative energy sources will benefit developing countries as much as or more than the rich ones, most of the R&D will need to come from the advanced economies.

The pause in breakneck growth now being experienced in the developing world is costly. But it's only a detour on a path toward global economic convergence that should be celebrated and supported. Our future – as well as theirs – depends on it.

DEVELOPMENT 2.0

Small Farms as the Engine for Emerging Market Economies

BY JAVIER EKBOIR

A renewed debate about the role of agriculture in economic development is brewing. It's widely accepted that the early successes in development – for example, Britain's Industrial Revolution in the 18th century – were sparked by radical changes in rural economies. Extrapolating from these experiences, many economists and international organizations still argue that expansion of agriculture, especially small farms, in developing countries, is necessary to trigger growth in other sectors.

But an increasing number of economists believe that today's socioeconomic dynamics are completely different from those prevailing even 40 years ago and that a new set of factors, ranging from globalization to technological and organizational advancement, links agricultural change to development.

While at the beginning of the Industrial Revolution, rising productivity in agriculture was the source of capital and labor for manufacturing, today the focus is on how a variety of factors are poised to transform agriculture. The most important changes in the developing countries' rural sector include the emergence of new markets for farm products, the progressive differentiation of a heretofore homogeneous rural population and changes in the livelihood strategies of the rural poor.

For many decades the name of the game in rural development has been the expansion of the supply of foods and fibers to meet the demand of swelling urban populations, increase the incomes of poor farmers and generate export revenue. Today, reductions in malnutrition and improvements in sustainability have also become major development goals. Malnutrition around the globe is less a problem of insufficient food production than of low incomes and price volatility.

Everyone agrees that over the next half-century, the supply of agricultural products will have to continue to grow rapidly to meet the demands of an increasingly affluent global economy. The disagreements arise over how to achieve such growth while attending to the new priorities. This challenge will be not only a matter of increasing yields per unit of land (or water) through scientific discovery, but also of mobilizing investments in infrastructure, establishing effective financial instruments for risk management and making changes in institutions and attitudes that foster the rapid diffusion of new technologies and flexible business models. One benchmark of success: the merger of small farms into larger units. Another: a generational transition that allows entrepreneurial farmers to buy land from traditional landowners.

Public policy can guide and accelerate the process. But to get from here to there with minimal social and political dislocation, policymakers will have to recognize that change will largely be driven by forces beyond their direct control. Therefore, an important concern ought to be the creation of safety nets for those displaced by change, rather than intervention that too often has the effect of freezing methods of production.

NEW-FASHIONED AGRICULTURE

Before the 1980s, most developing countries were in the initial stages of urbanization,

JAVIER EKBOIR is a Buenos Aires-based consultant to multilateral agencies (the World Bank, the United Nations Food and Agriculture Organization and the Inter-American Development Bank), governments and private firms on issues ranging from organizational innovation to agricultural development.

PREVIOUS PAGE: REUTERS/JOHN VIZCAINO

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communication was difficult and transportation was both slow and expensive. This meant that poor rural households were effectively bound to their farms, deriving most of their income from tilling the soil and raising animals. Because local markets were small and isolated, increases in production (due to technological change or good weather) often led to precipitous declines in commodity prices that undermined incentives to invest in productivity enhancements. Rural poverty was synonymous with agricultural poverty.

Economists generally believed that this poverty was largely a product of overpopulation and lack of capital that prevented adoption of modern technologies – that rural households were compelled to support more laborers than could be used effectively. Hence the marginal product of labor (the output that could be added by another worker) was zero, or at least below the level that could support subsistence. This conviction shaped agricultural policies in developing countries for almost three decades. Researchers focused on improving labor-intensive technologies to absorb excess labor supply while governments discouraged mechanization in order to avoid aggravating underemployment and driving the rural poor to urban shantytowns.

Note, too, that agricultural-development programs were generally based on the assumption that productivity jumps could only come from modern technologies (for instance, combinations of improved seeds and chemical fertilizers) that were designed by scientists who knew better than the farmers. Because farmers' insufficient understanding of the benefits of the modern technologies was seen as the greatest limitation on agricultural growth, efforts were focused on the transfer of the new technologies by extension agents. The success of the Green Revolution – a catchall term embracing a variety of policies that included price subsidies and productivity-enhancing technological improvements that almost doubled grain production in the developing world in the 1960s and 1970s – was perceived as confirmation of the wisdom of this focus. Indeed, this approach, with some variations, is still embraced by most development organizations.

As is the case with most complex processes, change was about to come from a different, largely unanticipated direction. After the debt crisis of the 1980s in Latin America and beyond, most developing countries implemented structural-adjustment programs that included market liberalization and downsizing the public sector. These policies, combined with technological change in production, transportation and marketing, enabled the rapid expansion of agricultural markets.

The value of international trade in farm products has increased five-fold since 1965. And not surprisingly, the vastly larger markets and new institutional climate favoring free markets induced major changes in rural economies. Twenty years ago, agriculture in developing countries was largely in the hands of traditional land-owning elites and of small, poor farmers who sold their crops in local markets. Today, two new types of farmers can be identified: large commercial farmers producing grains and livestock with cutting-edge technologies and farmers specializing in high-value crops like perishable fruits, vegetables and flowers.

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BIG AG

Beginning in the 1980s, grain production in Latin America underwent a major revolution built on a variety of market-driven changes that included the introduction of soybeans as an export crop, no-till practices, larger machinery and new financing mechanisms. These changes generated economies of scale, which induced an increase in the size of operations. Today, these Latin American farmers use methods that are similar to those of their counterparts in the American Midwest.

Livestock production has also been changing rapidly. Thirty years ago, most beef in Latin America was pasture-fed and integrated into multiyear cycles with cereal production; relatively small herds were economically viable. But technological change in both grain and beef production fostered both specialization and greater scale.

Grain farms now occupy the most fertile lands, while livestock has been displaced to marginal lands where crops cannot be grown – sometimes at the expense of rain-forest preservation. Hence the rise of the feedlot, with scale efficiencies that make it practical to fatten 10,000 steers at a time. All the beef is exported or consumed domestically in cities. There are signs, moreover, that these super-sized North American-style ranching operations will eventually dominate livestock production in developing countries outside Latin America. Meanwhile, large-scale commercial farming producing cereals and oil seeds is already spreading to Africa to take advantage of the improved business climate, similar ecological conditions and cheap land.

BOUTIQUE AGRICULTURE

High-value agriculture in developing countries has evolved in three stages. The first started more than 100 years ago and included the rise of export crops such as coffee, tea, rubber and bananas that were produced on

REUTERS/THOMAS MUKOYA

plantations and marketed by large companies.

The second stage, which supplied developed countries with fresh fruits and vegetables, fish, nuts, spices and floriculture, started in the early 1960s and picked up speed in the 1980s. This stage was initiated by American traders who, taking advantage of trade liberalization and dramatic improvements in logistics, contracted Mexican farmers to produce fresh vegetables in the winter for American markets. The approach later expanded to other products and other regions – think of fish farming in Southeast Asia, along with growing grapes, berries and peaches in Chile and fresh produce in Africa. International traders usually work with large farmers, buying from small farmers only when they have no other option (due to the nature of the crop) or to avoid dependence on a single supplier. In the 1980s, most development agencies started to finance projects to help small farmers gain access to these high-value markets. This strategy was known as market-led development and was built on the assumption that a majority of small farmers could thrive in competitive markets.

The U.S. Agency for International Development was one of the first and strongest supporters of this strategy, because it opened a way to create economic alternatives for small farmers in war-torn Central America and, as part of drug eradication programs, in South America. However, this strategy did not work as expected; few farmers have proved to be good enough managers and innovators to be able to compete in demanding international markets characterized by strong economies of scale in commercialization.

The third stage, which has been called the supermarket revolution, was triggered by a combination of urbanization and rising incomes in developing countries that fueled domestic urban consumption, along with the expansion of fast-food chains and supermarkets, like Walmart and Carrefour, in these developing countries. The companies coordinate the whole supply chain through specialized, dedicated wholesalers who buy mostly from preferred suppliers.

Farmers selling in this channel tend to be in the upper end of the small-farmer category (whereas sellers in traditional channels are in the lower end), have more capital (notably, irrigation systems) and are more specialized in commercial horticulture than traditional farmers. Their rise is both economically and politically important since they constitute a new rural middle class. But note that no more than 10 percent of small farmers have been able to flourish in these markets. Moreover, once the supply chain has been established, few new farmers can break in, since buyers tend to stick with the farmers they trust in order to minimize risk and variations in quality and quantity.

Both the large farmers producing for export and the small farmers supplying supermarkets and fast-food chains have been buying land and water rights from small farmers who remain in the traditional markets. This process has had an important impact on the rural economies, which are discussed in more detail below.

STAYING ALIVE

The ways poor rural households make a living in developing countries have been changing rapidly. A minority of small farmers has made the leap to producing for high-value markets. But for most, the end of trade protectionism in food products that came as part of the 1980s structural reforms meant that they had to compete in the local grain markets with large farmers from the United States, Australia, Argentina and Brazil.

At the same time, improving telecommunications and easier travel opened national and foreign labor markets, which accelerated migration from rural areas. The net result has certainly been more good than bad: household incomes are up and rural poverty is down. But the social dislocation, with the resulting increased dependence of local agriculture on women and older stay-at-home family members, has hardly been costless.

After the deregulation of food trade and the increase in international food aid (mainly donated grains produced in developed countries), the profitability of growing staple crops in small farms fell. But contrary to what was expected, small farmers continued to produce them. The most plausible explanation for this phenomenon is that the share of the income that poor rural families derive from agriculture is declining as off-farm employment and remittances from family members abroad (or in domestic cities) become the main sources of income. These households keep their farms as retirement insurance for the members who migrate (although many decide not to return) and farm only to secure their own consumption of staples or to produce the ingredients of traditional foods that cannot be easily bought in local markets.

The scale of this dislocation is striking. In 2015, some 250 million international migrants sent home $600 billion – four times as much as transfers through foreign aid. There are no estimates of domestic migration and remittances, but rapid urbanization indicates that they are quite large.

Note, moreover, that unlike foreign aid, remittances go directly to households. Most of the money is invested in education, health or housing, with only a small proportion going to agricultural improvements. This pretty clearly indicates that most poor rural households no longer entertain hopes of raising their incomes by investing in agriculture. And the fact that the farm is valued less as a productive asset than as a retirement retreat is preventing more-entrepreneurial farmers from consolidating land holdings to reach efficient scale, which in turn is delaying the growth of agricultural production and forcing developing countries to rely more on food imports.

Migration and remittances are changing rural consumption patterns, and rural economies are changing in response. Thanks to rising income (largely through remittances), even poor rural households are demanding a greater variety of goods and services (for example, prepared foods), which is stimulating small-scale local enterprises (such as stalls that sell junk food and soft drinks). What's more, greater exposure to foreign cultures is creating demand for a vast array of goods never seen in once-isolated regions. It is now possible to buy the same packaged foods in remote parts of Ghana that fill the shelves of the 7-Elevens in Grand Rapids. But the good news goes beyond the wider availability of Cheetos and Oreos. The Pew Research Center recently reported that the percentage of the population in seven African countries that owned a mobile phone had reached the percentage in the United States.

Greater exposure to foreign cultures is creating demand for a vast array of goods never seen in once-isolated regions.

SCRAMBLING FOR A LIVING

Before the rapid widening of international agricultural markets in the 1980s, poor rural households had few alternatives to farming only for local consumption. When new opportunities emerged, the households with a little capital and more than a little enterprise took advantage of them, dividing a largely homogeneous population into three clearly separated groups: better-off rural households producing for high-value markets, poor rural households with at least one migrant member sending remittances and poor rural households with no alternatives to scratching a living out of traditional agriculture (which includes a large number of farmers who rent land or work for wages).

Surviving in high-value markets requires strong managerial and business capabilities to meet sophisticated technical and commercial standards for the products. Research shows that capabilities (in all domains of life, including art, sports, science or business) have an asymmetric distribution, with a few people having very strong capabilities and the vast majority relatively weak ones, offering a partial explanation of why only a small fraction of small farmers have successfully made the leap. The uneven distribution of business acumen also suggests that inequality in the distribution of assets is more likely to increase rather than decrease, a reality with profound implications for development and poverty alleviation policies.

The households with weaker business capacities usually depend on off-farm employment, including migration, but even this option is not open to everybody. Migration depends critically on social connections, since migrants tend to go to places where other people from their villages or families have gone before. Families with weak social capital (often the most marginalized populations, like the Mayas in Mexico or the lower castes in India) are unable to find opportunities far from their villages.

Even those families are slowly integrating into the globalized society. But until they develop enough knowledge of the external world, they will be condemned to the most abject poverty. Public policy should aim to establish safety nets and to help marginalized groups to develop capacities to better access new opportunities for earning – and not just in farming.

RURAL DEVELOPMENT 2.0

While, many decades ago, rural development was seen as vital to bringing economies out of poverty, between the mid-1970s and mid-2000s it took a back seat to urbanization and export-oriented manufacturing in long-term planning. But it's coming back to the fore for a variety of reasons. For one thing, the dominance of Asia in global manufacturing and the fast robotization of industrial production have made it far harder to envision a similar path for the late starters. For another, the potential for sustained growth of agriculture seems greater, thanks to increasing urbanization and dramatic improvements in transportation, communication and finance, even as issues of overtaxed infrastructure and pollution have begun to limit economic growth from continuing urbanization. The 2007 food crisis – a perfect storm of drought, low global food stocks, rapid escalation in energy and synthetic fertilizer costs and diversion of crops to biofuels – also drove attention to the problems caused by the long neglect of agricultural production, food access, the sustainable use of natural resources and climate change.

Since market-friendly deregulation swept through developing economies in the 1980s, goods and labor markets became more integrated into globalized markets, and poor rural households diversified their livelihood strategies, relying more on remittances and off-farm work and less on the production of staples. But the downside to these changes is evident, too: only a small proportion of small farmers has been able to take full advantage of the emerging opportunities to sell in high-value markets. These unequal responses are increasingly being recognized as the result of the highly skewed distribution of entrepreneurial capabilities. In other words, when technical and business opportunities emerge rapidly, only a few people can take advantage of the new openings, and societies become more unequal.

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The consequences of this widening divide have yet to be recognized by international donors, philanthropists and multilateral organizations. For example, most agricultural programs and policies in developing countries are based on the assumption that because poor rural households produce most of their own food, and since they represent the majority of farms in the world, it will be possible to meet future increases in global food

WENDY STONE/CORBIS VIA GETTY IMAGES

demand by increasing their productivity. The same development strategists have also assumed that the main constraint on the expansion of small-holder agriculture is lack of scale in procurement and marketing because it prevents the farmers from getting better prices for bigger volumes. Thus, development projects have strongly promoted the organization of farmers into groups for everything from the purchase of fertilizer and capital goods to collective management of watersheds or joint sales of their products.

However, as I suggested above, those policies do not take into consideration the unequal distribution of capacities and the alternative uses that rural households have for their labor and capital. This is confirmed by the fact that the vast majority of poor rural households are not investing their own resources in agricultural production (except for labor-saving technologies), while they are investing in human capital that can be used outside agriculture.

The result is that, in some cases, donor-driven advice (and funding) is actually undermining development prospects. Because subsidies from rural improvement programs change farmers' incentives, they often induce them to invest their own resources in activities that are not economically viable in the long run. And if the projects are not ultimately viable without subsidies, farmers are at risk of losing their already-scarce resources.

Note, moreover, that the emphasis on collective action has subtler drawbacks. For one thing, collective action is very difficult to enforce, especially when the benefits that can be gained from low-value sales or minor purchases are small. Consider, too, that since agricultural income is not their main goal, many farmers join collective efforts only to receive the subsidies offered by government and international donor programs. When a program ends, the farmers abandon the technologies and the groups promoted in order to join new groups and adopt new technologies just to receive new gifts. The implementing organizations (non-governmental organizations or public agencies) are reluctant to acknowledge this reality because they are evaluated by the numbers of participants in their projects. These perverse incentives generate competition among development projects, induce misallocation of public and private funds, and do little to help poor rural households create sustainable paths to income growth.

Full recognition of the trends discussed above would lead to different sorts of aid. First, donors would not promote commercial agriculture as a one-size-fits-all fix, but would offer a diverse menu of options so that individual households could choose according to their livelihood strategies, capacities and resources. For example, farmers with the strongest business abilities could be supported to enter high-value markets, but people with other capacities could receive education and training to become skilled workers in agriculture or in other sectors (for instance, learning how to use a computerized irrigation system or to repair sophisticated farm machinery).

To the same end, the interventions should develop the capacities of rural inhabitants so that they can find non-agricultural jobs in increasingly diverse rural economies – say, as shop clerks and health care workers – or to find work in the service economies of distant cities. Finally, the development of markets that facilitate the transfer of productive assets (like land and water rights) to more-entrepreneurial farmers should be supported. These policies should be complemented with safety nets that help those left behind by the changes induced in rural areas.

A broader lesson here: planners would be wise to place less emphasis on interventions that freeze the current productive and social structure of rural areas and more on policies that facilitate the transition to modern agriculture while reducing the adjustment costs. High-return projects, like all-weather roads connecting rural areas to market towns and potable-water systems, are critical to rural development. So, too, are education (especially of women), vaccination and sanitary campaigns, along with institutional reforms that improve governance, define and defend private property rights, enforce contracts and untangle regulations that raise transactions costs and undermine capital-market efficiency.

The development community is getting the message that the paths to growth in many countries depend on the transformation of relatively simple agricultural economies into complex business environments and the creation of new jobs in urban areas for those who are displaced. The hard part, though, is to figure out how external assistance and creation of a truly globally integrated labor market can aid adaptation of both developed and developing countries to the new realities of the global economy.

Planners would be wise to place more emphasis on policies that facilitate the transition to modern agriculture while reducing the adjustment costs.

Q&A

Searching for Growth in an Unstable Global Economy

A conversation with Mikhail Fridman and Anatole Kaletsky

Editor's note: The transcript of the conversation has been edited for clarity and readability.

Mikhail Fridman: Last year I wrote an article in the *Financial Times* – "Tricks of the mind turned oil into gold" – in which I said that the oil price had remained high because people perceived there was a shortage. I said that we were probably facing a new phase in which people would not fear the end of oil. Today, it's more or less clear that this is so.

Anatole Kaletsky: I was very struck by that article. I have a similar view about the oil price. If you look back over many years, there have been periods when people believed Malthus – that the world's population was running out of oil or food or whatever – and that natural resources were the basis for all human wealth. These have alternated with periods when the world rediscovered Schumpeter – that there is always capacity for innovation, and that innovation is the main source of economic progress and of wealth.

There is a related point about competition that I think you also made: monopolies can be preserved for a long time, but not forever. It is widely believed that oil is different from other commodities because the oil price has always been set by a monopoly. But actually, you can break up the past 40 years into distinct periods. Half the time the oil market really was a monopoly. But between 1985 and 2005, oil traded like any other commodity, with prices determined by supply and demand, and production costs.

MF: So, as we agree on the causes of the falling price of oil, we should discuss the broader consequences. In my view, the impact of the lower oil price, coupled with other economic factors, is leading to volatility in politics and markets – there are signals of a major tectonic shift happening before our eyes.

The economic outlook is unstable. Extreme volatility in the markets has become

Mikhail Fridman

the norm. This instability is usually attributed to two main factors: the sharp decline in the price of natural resources, and the slowing of China's growth. Yet these factors are seemingly contradictory. Cheaper resources should, in theory, benefit China, the largest importer of natural resources. Western economies, which are the main consumers of Chinese exports, should also be helped by cheap energy – but there is no sign of that, either.

What unites these factors is that, while we are living in an era of globalization, it's not progressing in the way that was expected a few years ago. People get access to information almost immediately, and the world believed that this access would allow more backward countries to join the club of more successful countries more quickly than before. So the emerging markets would develop faster than developed countries because the base was much lower. It's now clear that globalization is not a linear, progressive process, but a circular one – and I think this is very alarming in some respects.

AK: What do you mean by a "circular" process, and what consequences does it imply?

MF: If you look at the broader picture, and not portions of the picture like U.S. market performance or the China slowdown or the migration crisis, one can see that a whole series of seemingly unconnected events are actually connected.

MIKHAIL FRIDMAN was a principal investor in TNK-BP, which was the third largest oil producer in Russia before the company was acquired by the Russian oil company Rosneft in 2013. Now, he is the chairman of LetterOne, a diversified investment group, headquartered in Luxembourg with offices in London, that has substantial holdings in energy and technology companies. ANATOLE KALETSKY, the former economics editor of *The Times* (UK), is the chairman of the Institute for New Economic Thinking, a non-profit New York-based think tank established after the 2008 financial crisis to challenge mainstream assumptions in contemporary economic research.

Fragility and instability are spreading like a virus, infecting countries and continents. Those who only yesterday were on the margins of European politics are bursting onto center stage. Some are left-leaning political movements, like Syriza in Greece and Podemos in Spain. Some are right-leaning, such as the National Front in France, Fidesz in Hungary and AfD in Germany. But all are populist and anti-establishment. And it is not just Europe that is being shaken up.

The United States, which was built on the principles of free markets and openness, is rallying to presidential candidates who are either propagating socialist views or arguing for isolationism. This populist advance reflects an obvious and sad fact: old and tested truths no longer satisfy modern societies, and need to be reviewed and redefined.

AK: Why do you think this is happening, and how is it connected with globalization and natural resources? I wrote during the banking crisis that turmoil was a predictable response to the breakdown of one specific model of global capitalism. Judging by past experience, a likely outcome could be a decade or more of soul-searching and instability, leading eventually to a new settlement in both politics and economics. I argued in my book, *Capitalism 4.0*, that the breakdown of deregulated financial capitalism would trigger a fourth seismic change in both politics and economic thinking – that global capitalism is entering a new phase of its evolution. Are you suggesting something along these lines?

MF: I think that the crash of the oil price symbolized to a certain extent the end of the era of economic development based on natural resources. Land, minerals, oil and gas, water and other resources were seen as the main components of national treasure. This seems to me to be changing, although, of course, not overnight.

PREVIOUS PAGE: COURTESY OF LETTERONE

Anatole Kaletsky

MICHELE MOSSOP

AK: And what in your view could replace national resources as the main form of what you call national treasure?

MF: I believe that the main source is no longer natural resource rents, but the social infrastructure that allows every person to realize their intellectual and creative potential. This represents a paradigm shift in economic development, to a new era in which ideas can be turned into new scalable services in a short space of time. And the consequences are far-reaching.

I think that has happened in the developed countries. Silicon Valley is not the only example, but it's probably the brightest one if you look at a company like Google. In 1991, there were two young guys in a garage who created a search engine that has formed the basis of the world's first or second largest company. I think the West now has the best conditions for making breakthroughs in various spheres of human activity, be it in biotechnology, robotics, logistics or transportation. It is also clear that countries lacking what I call socio-political ecosystems, in which these businesses are created, are disadvantaged. The establishment of a balanced social system and a competitive, rule-based environment requires big shifts in values and thinking, as well as the breaking of stereotypes.

AK: That's a point you make very clearly. But where do we go from this diagnosis? What is the prescription that follows?

MF: To understand this shift, and therefore what a country needs to do to replicate it, you need to look at how the change occurred.

There are three pillars to this new competitive advantage. First, you need talented people who are very well educated, like those two guys at Google – one of whom was born in Russia. (His family immigrated to the United States when he was young.) This combination of exceptional talent and education is more crucial than ever because we are entering a disruptive era driven by extraordinary levels of human creativity.

KIM KULISH/GETTY IMAGES

The term "indigo" has been used to refer to children with special or unusual abilities. Today we are in a new era in which especially talented individuals and the organizations they create are able to realize new levels of human potential and economic achievement. So I refer to an "indigo" generation that is shaping tomorrow's economy and creating national wealth.

We know from biology that human intelligence, talent and creativity exist everywhere and are equally distributed among nations and races. Good education may not be available everywhere, but all large developing countries have serious universities. Moreover, people from these countries have a chance to study abroad or to take online courses provided by the best universities in the developed world.

AK: So talent and education are available everywhere. What, then, is missing?

MF: The second of my three pillars is probably the most important. It is really an ecosystem, with legal infrastructure that can protect property rights; competition policies to ensure that a small company cannot be oppressed by a big one; hundreds of suppliers of different business services, starting from venture capital, to banks ready to finance, to suppliers of services like web design, IT support – whatever. This kind of collateral enables ideas to arise and businesses to be created quickly and to expand within a very short time.

Third, this indigo economy needs a digital world that allows the innovators to distribute their products widely almost immediately and to collect data to understand the behavior of their potential customers.

AK: So how can developing markets take advantage of these new conditions?

MF: Well, the most problematic area for the functioning of a new-era economy is the creation of a social and institutional environment congenial to innovative companies. What might be called the politico-economic "cloud," which is even more important than the technological cloud that everyone now talks about.

This institutional cloud cannot be created overnight. It has evolved as a result of a profound social and political development that Western societies have experienced over centuries. A firm legal system, competition rules and a system of checks and balances do not automatically result in the creation of a Silicon Valley – but they are necessary preconditions.

AK: That's very persuasive. But why should it be so much more difficult for emerging economies to create this social infrastructure if the understanding already exists? If you look at Singapore or Taiwan or Korea (and their achievements), why are you convinced that other developing countries will find it more difficult to create this infrastructure?

After all, there is a contrary argument: a few years ago, people believed that globalization and technological progress would allow emerging economies to catch up faster than ever before. It takes 15 or 20 years and hundreds of billions of dollars to build a railway network, an electricity grid or a road system. But, in principle, it doesn't take that long or cost that much to create a properly functioning legal system or accounting system.

MF: This is the nub of the problem. Everything depends on whether there is the political will to do what's required to create and sustain a modern business system. It doesn't need financial investment; it needs a social consensus. By the way, the former Soviet Union was a great counterexample that shows what I mean.

When the USSR collapsed at the end of the 80s and beginning of the 90s, I remember I started to meet foreign investors. All were totally certain that the Soviet Union would overcome its problems because of a very convincing argument. They said "you have a very well educated population; you have a huge amount of natural resources; you have technological achievements in areas like rockets and atomic energy, military techniques and all these kinds of things. So, therefore, you will very quickly reach the level of developed countries."

It didn't happen in Russia because the mind-set of people is not based on a piece of paper that is called the law; it's based on history, tradition, beliefs and religion, going back hundreds and hundreds of years. The culture of any society is probably the most nurtured parameter of any society. You and I, as cosmopolitan people who travel internationally, know that it's impossible to change culture quickly. It's possible to make new leaders. But if their culture is not respectful of the society, all their changes will be very temporary, very superficial.

Today we are in a new era in which especially talented individuals and the organizations they create are able to realize new levels of human potential and economic achievement.

Let's continue with the example of Russia. All these "new" concepts of freedom of the press, freedom of speech, of democracy and elections, privatization, everything is very vulnerable. Why? Not because President Putin is imposing a new form of law, which is believed here in the West, but because the reforms that were done by former President Yeltsin never penetrated to the bottom of the soul of Russian people. Never.

AK: So this is the cultural infrastructure that you describe as key to global economic development? You cannot just sign a piece of paper, which is what Yeltsin thought was enough to create a new kind of society. You'll recall when Yeltsin rescued Gorbachev after the coup in 1991. He turns up, signs a piece of paper – and the Communist Party is abolished. Communism is finished; we are now in the new world.

t's impossible to change culture quickly. It's possible to make new leaders. But if their culture is not respectful of the society, all their changes will be very temporary, very superficial.

I think you are saying that creating a modern economy and business system is actually more difficult, more time consuming, more costly than building the railway or electricity system. So what does this mean for developing economies like China and India that are more important than Russia as engines of growth for the world economy?

MF: Emerging-market governments have typically favored fast physical infrastructure projects at the expense of building institutions and independent legal systems, and encouraging competition. These latter goals seemed like long and difficult tasks that did not match traditional values and often contradicted the interests of the ruling elite.

The most obvious example is China. There, the development of institutions was sacrificed for the sake of building new cities. Having realized the scale of problems related to the weakness of its institutions, the government has responded in its usual way, employing tactics of further centralization and repression.

Another great example is Brazil. It seemed like it had been completely fixed with Lula. He had set up a proper system of laws and everything. But the moment you begin to peel away the surface, it turns out that nothing has changed and it's worse than ever before. Turkey is another unfortunate example.

In short, with the possible exception of India, a repeat of China's economic miracle or a boom in any of the other big emerging markets is unlikely.

AK: Isn't there a contrary argument based on Eastern Europe? Look at the Eastern European countries that have relatively quickly joined the European collaboration, like the Czech Republic, or even Poland. Why? Because there was unity of purpose? Because they were mentally ready?

MF: Well, look at Poland and Hungary. Even there it turns out that perhaps these Western values are not as deeply rooted as we imagined two years ago. But this brings me to another important point. I believe that religious rules and traditions are crucially important, even though in the modern world religion is not so visible anymore.

AK: Is this because cultures are built on religion? That seems to be one lesson of history.

MF: Yes, religion is a part of culture, a seed that is so deep. Look at the Baltic states. You know when they broke free of the Soviet Union they just immediately switched. Look at Estonia. It's a normal country. Of course, you could not completely avoid the effects of 40-50 years of Soviet rule. There is still a generation there of ex-Soviet people. But nevertheless it is much easier to change Estonia than Romania or Hungary.

AK: So if you are living in Brazil or Turkey do you just give up and say, if I'm an intelligent person I have to emigrate to the United States or to Western Europe? Or is there something else, some kind of hope that we could hold out?

ALBERT BONSFILLS/ANADOLU AGENCY/GETTY IMAGES

MF: This is very difficult challenge. To cure problems you should have clarity about what kind of bitter pill you need to take. It seems to me that the support these countries expect from all their natural resources or cheap labor will diminish quickly, and they should focus on building institutional ecosystems. It's sad news. But the cloud has a silver lining: in the end, success or failure does not depend on abundant fertile land, deposits of oil or ore, or whatever.

AK: I think there's a contradiction here. You're saying that they need to change their societies. But actually, you've established that they really can't do this quickly – it takes a very long time. Even if they're trying, even if the people at the top understand your diagnosis, do you think they can implement the necessary reforms before their people lose patience and turn against the reform process?

MF: I think most governments in emerging markets have never addressed this very clearly. They have to create more-just societies in places where the sense of justice and the rule of law are lacking. What's important is to create an open society. And a functional open society depends on the social infrastructure on which voting is built. Just having a vote doesn't give you that social infrastructure.

AK: I think that is an important conclusion. Democracy may be a necessary condition, but it is not a sufficient condition. So some parts of the developing world will move in the right direction, but many will not.

MF: Yes. The demands of the indigo economy mean that the rate of economic growth in many emerging markets will lag behind that of the developed world, further widening the gap in incomes and standards of living. The resentment driven this inability to catch up with the developed world will increase. Emerging countries are likely to feel increasingly jealous and hostile toward rich countries, while rich countries will try to isolate themselves from their poorer and embittered neighbors.

On the other hand, there will be some successes. Among developing nations, India is a good example of a country on the rise because it doesn't have the legacy of an authoritarian past. Let's not call India a democracy; let's call it a country with a system of checks and balances.

AK: With a proper legal system based on English law?

MF: Of course it's not perfect. But still, it's working somehow; somehow the infrastructure required for business there does work. That's why I see the chance of a breakthrough in India.

AK: So in your view India has a good chance because of its legal and political infrastructure. This relates, by the way, to one of the points that I have been making for the past few years about China. One of the biggest contributions to China's remarkable development in the past 10-15 years was actually made by Margaret Thatcher. Why? Because Thatcher gave China something that they could not have created for themselves in 10, 15 or 20 years by handing over Hong Kong.

Hong Kong was a functioning financial center that had developed over 99 years precisely because it had the legal and social infrastructure that you have been talking about. The Chinese were able to import this for nothing and rely on it to a very significant extent to help the development of Chinese business and finance. Without that gift, a lot of China's business development might not have happened.

On the other hand, Taiwan, Korea and Japan have managed to create their own successful business and financial cultures. But to some extent, they were forced to create this infrastructure under American occupation or influence. Another way of expressing the phenomenon you're describing is that emerging economies are facing resource traps or so-called middle-income traps. Many of them have reached per capita incomes of, say, $7,000 to $10,000 a year. But only three or four of them have managed the leap beyond.

MF: That's the point. You can't go further unless you reshuffle the whole system.

I think globalization is becoming circular. A few years ago it contributed to the narrowing of the gap between emerging markets and the Western world. But it could come to serve as a channel for selling the goods and services of the indigo economies to the countries that cannot compete in quality or price.

Rising resentment could further empower political populists to fan hatred toward the more prosperous and successful. Populist politicians are already among us, promising simple solutions to complex problems. It is a dangerous recipe.

But in this new economic era, one cannot build an economy based on the creative energy, free spirit and self-fulfillment of millions of individuals if they are cut off from influencing the most important decisions about their own society. I hope that the indigo era toward which we are heading will finally end these dangerous misconceptions. The successful economy is an economy of free people. And this means that the world must become more and more free.

The End of Alchemy

BY MERVYN KING

ILLUSTRATIONS BY PETER HORVATH

Mervyn King's credentials don't generate much expectation that his new book would provide an insightful read. After all, retired senior civil servants rarely bite the hands that fed them well. Besides, King, who until 2013 was the governor of the Bank of England (the U.K.'s Federal Reserve), has been widely criticized for doing too little to prevent Britain's financial meltdown in 2008 and, after the fact, for moving too slowly to repair the damage. Thus, one might have expected *The End of Alchemy** to be a tell-little defense of his role – one that added modestly to what we already knew. ¶ In fact, the book is full of surprises. It's a take-no-prisoners analysis of the failure of the global banking system and a call for radical change. And did I mention that King is a master at explaining complex economics to non-experts without the slightest hint of condescension? ¶ Here, we've reprinted the chapter in which Baron King of Lothbury (in the U.K., the fate of retired government technocrats seems to be life peerages rather than seven-figure consultant gigs) explains the depths of the mess created by the rigidity of monetary union in Europe and the desperate need for debt relief on the part of the union's creditor nations. —*Peter Passell*

*THE END OF ALCHEMY: MONEY, BANKING, AND THE FUTURE OF THE GLOBAL ECONOMY (W.W. NORTON 2016).

What experience and history teach us is that people and governments have never learned anything from history, or acted on principles deduced from it.

—Georg Wilhelm Friedrich Hegel, *Lectures on the Philosophy of History* (1832)

In earlier chapters I dwelled on past crises. But what about the next crisis? Without reform of the financial system, another crisis is certain, and the failure to tackle the disequilibrium in the world economy makes it likely that it will come sooner rather than later. Rather than give in to pessimism, however, we have the opportunity to do something about it.

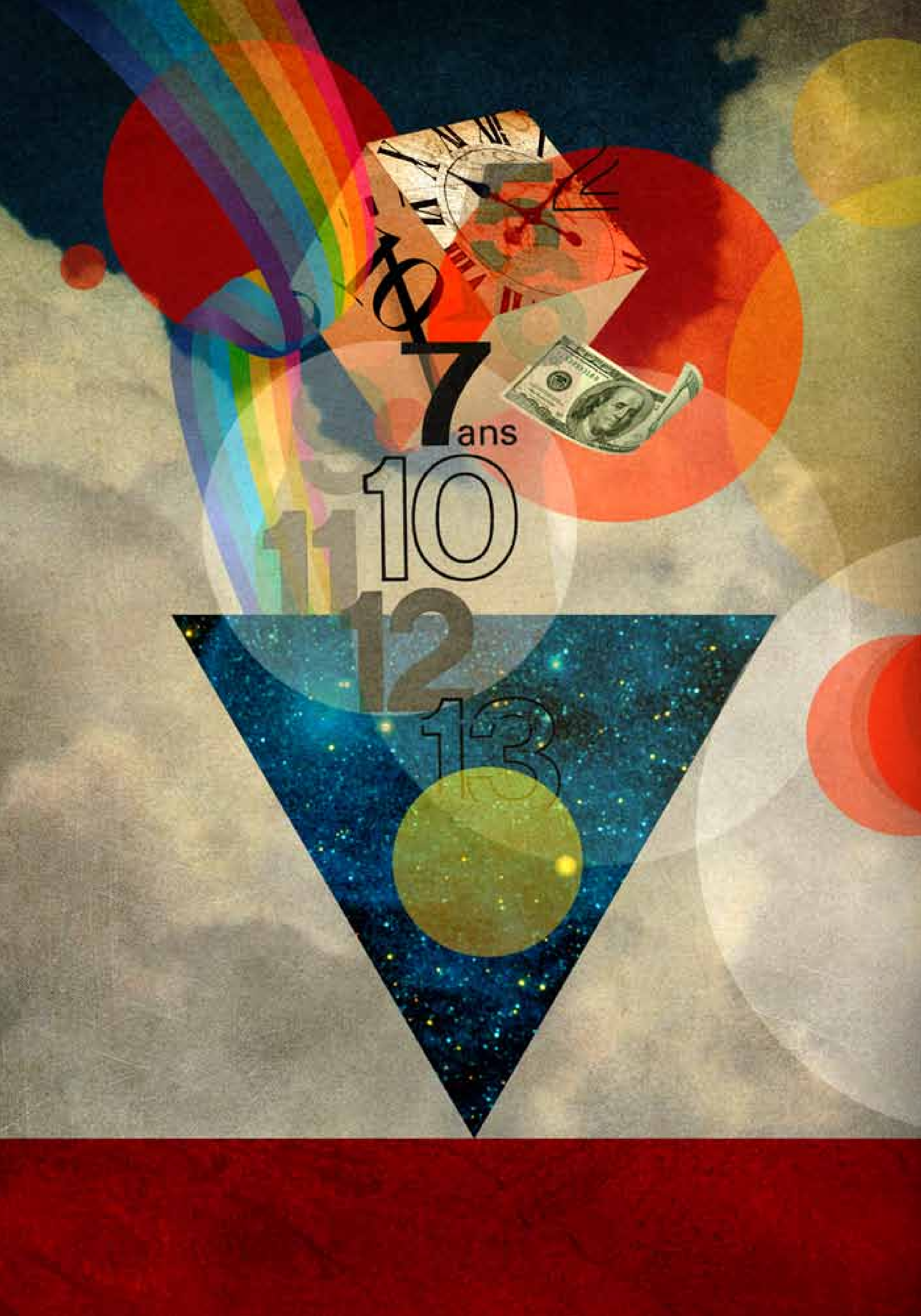
The most obvious symptom of the current disequilibrium is the extraordinarily low level of interest rates that, since the crisis, have fallen further. The consequences have been further rises in asset prices and a desperate search for yield as investors, from individuals to insurance companies, realize that the current return on their investments is inadequate to support their spending needs. Central banks are trapped into a policy of low interest rates because of the continuing belief that the solution to weak demand is further monetary stimulus. They are in a prisoner's dilemma: if any one of them were to raise interest rates, they would risk a slowing of growth and possibly another downturn.

When interest rates were cut almost to zero at the height of the crisis, no one expected that they would still be at those emergency levels more than six years later. A long period of zero interest rates is unprecedented. For much of the post-war period the worry was that interest rates might be too high. Now the concern is that low rates are eroding savings. It is reminiscent of Walter Bagehot's maxim about the archetypal Englishman: "John Bull can stand many things, but he cannot stand 2 percent." For more than six years now, he has had to stand rates well below that.

From its foundation in 1694 until 315 years later in 2009, the Bank of England never set the bank rate below 2 percent. By 2015, the major central banks had all lowered official policy rates to as close to zero it made no difference; a number of European economies, including the euro area, Denmark, Sweden and Switzerland, had embraced negative interest rates. Some mortgage borrowers on floating rates were actually being paid to borrow. Over the long sweep of history, the long-term annual real rate of interest has averaged between 3 and 4 percent. The world real interest rate on 10-year inflation-protected government bonds has been close to zero for several years, and by 2015 was little more than 0.5 percent. In part that reflects the belief that short-term official interest rates will remain low for a few years more.

WHAT DOES THE MARKET THINK WILL HAPPEN?

Suppose it takes 10 years to get back to somewhere close to normal, a pessimistic view according to most central banks. What is the market expectation today of where the 10-year real interest rate will be 10 years from now? An estimate of that can be made by noting that the interest rate today on a 20-year security is the average of the rate over the first 10 years (the rate today on a 10-year security) and the rate over the second 10 years (the 10-year rate that is expected today to prevail 10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years from now). So we can infer the latter from observations on market interest rates on 10- and 20-year index-linked government bonds. Such a calculation reveals that the 10-year real rate expected in 10 years' time has averaged little more than 1 percent in recent years and by late 2015 was still below 1.5 percent, well below any level that could be considered remotely "normal." Markets do not expect interest rates to return to normal for many years.

If real interest rates remain close to zero, the disequilibrium in spending and saving will continue and the ultimate adjustment to a new equilibrium will be all the more painful. If real interest rates start to move back to more normal levels, markets will reassess their view of the future and asset prices could fall sharply. Neither prospect suggests a smooth and gradual return to a stable path for the economy. Further turbulence in the world economy, and quite possibly another crisis, are to be expected.

> **Lost output and employment of such magnitude have revealed the true cost of the crisis and shaken confidence in our understanding of how economies behave.**

The epicenter of the next financial earthquake is as hard to predict as a geological earthquake. It is unlikely to be among banks in New York or London, where the aftershocks of 2008 have led to efforts to improve the resilience of the financial system. But there are many places where the underlying forces of the disequilibrium in their economies could lead to cracks in the surface – emerging markets that have increased indebtedness, the euro area with its fault lines, China with a financial sector facing large losses, and the Middle and Near East with a rise in political tensions.

Since the end of the immediate banking crisis in 2009, recovery has been anemic at best. By late 2015, the world recovery had been slower than predicted by policymakers, and central banks had postponed the inevitable rise in interest rates for longer than had seemed either possible or likely. There was a continuing shortfall of demand and output from their pre-crisis trend path of close to 15 percent. Stagnation – in the sense of output remaining persistently below its previously anticipated path – had once again become synonymous with the word capitalism. Lost output and employment of such magnitude has revealed the true cost of the crisis and shaken confidence in our understanding of how economies behave. How might we restore growth, and what could happen if we don't?

SOVEREIGN DEBT FORGIVENESS

Maintaining interest rates at extraordinarily low levels for years on end has contributed to the rise in asset prices and the increase in debt. Debt has now reached a level where it is a drag on the willingness to spend and likely to be the trigger for a future crisis. The main risks come from the prospect of a fall in asset prices as interest rates return to normal levels, and the writing down of the value of investments as banks and companies start to reflect economic reality in their balance sheets. In both cases, a wave of defaults might lead to corporate failures and household bankruptcies.

By 2015, corporate debt defaults in the industrial and emerging market economies were rising. Disruptive though a wave of defaults would be in the short run, it might enable a "reboot" of the economy so that it could grow in a more sustainable and balanced way. External debt – debt owed by residents of one country to residents of another country – is more difficult, especially when that debt is denominated in a foreign currency.

When exchange rates are free to move, they reflect the underlying circumstances of different economies. Some governments, such as China in relation to the U.S. dollar and Germany in relation to its European neighbors, have limited that freedom so that economies have had to adapt to exchange rates rather than the other way round. As a result, trade surpluses and deficits have also contributed to the build-up of debts and credits that now threaten countries' abilities to maintain full employment at current exchange rates. Nowhere is this more evident than in the euro area, although emerging market economies could also run into trouble. Sovereign debts are likely to be a major headache for the world in the years to come, both in emerging markets and in the euro area. Should these debts be forgiven?

The situation in Greece encapsulates the problems of external indebtedness in a monetary union. GDP in Greece has collapsed by more than the percentage drop in the United States during the Great Depression. Despite an enormous fiscal contraction bringing the budget deficit down from around 12 percent of GDP in 2010 to below 3 percent in 2014, the ratio of government debt to GDP has continued to rise, and is now almost 200 percent.

All of this debt is denominated in a currency that is likely to rise in value relative to Greek incomes. Market interest rates are extremely high and Greece has little access to international capital markets. When debt was restructured in 2012, private sector creditors were bailed out. Most Greek debt is now owed to public-sector institutions, such as the European Central Bank, other member countries of the euro area and the IMF. Fiscal austerity has proved self-defeating because the exchange rate could not fall to stimulate trade. In their 1980s debt crisis, Latin American countries found a route to economic growth only when they were able to move out from under the shadow of an extraordinary burden of debt owed to foreigners. To put it another way, there is very little chance now that Greece will be able to repay its sovereign debt. And the longer the austerity program continues, the worse becomes the ability of Greece to repay.

Much of what happened in Greece is reminiscent of an earlier episode: in 1991, Argentina fixed the exchange rate of its currency,

the peso, to the U.S. dollar. It had implemented a raft of reforms in the 1990s, and was often cited as a model economy. At the end of the 1990s, there was a sharp drop in commodity prices and Argentina went into recession.

Locked into a fixed-rate regime, the real exchange rate had become too high, and the only way to improve competitiveness was through a depression that reduced domestic wages and prices. Argentina's debt position was akin to that of Greece, and it had a similarly high unemployment rate. So in the face of a deep depression, the exchange rate regime was abandoned and capital controls were introduced. Bank accounts were redenominated in new pesos, imposing substantial losses on account holders. Initially, the chaos led to a 10 percent drop in GDP during 2002. But after the initial turmoil, Argentina was able to return to a period of economic growth. Commodity prices rose steadily for a decade and Argentina was able to enjoy rapid growth of GDP – almost 10 percent a year for five years.

It is evident, as it has been for a very long while, that the only way forward for Greece is to default on (or be forgiven) a substantial proportion of its debt and to devalue its currency so that exports and the substitution of domestic products for imports can compensate for the depressing effects of the fiscal contraction imposed to date. Structural reforms would help ease the transition, but such reforms will be effective only if they are adopted by decisions of the Greek people rather than being imposed as external conditions by the IMF or the European Commission. The lack of trust between Greece and its creditors means that public recognition of the underlying reality is some way off.

The inevitability of restructuring Greek debt means that taxpayers in Germany and elsewhere will have to absorb substantial losses. It was more than a little depressing to see the countries of the euro area haggling over how much to lend to Greece so that it would be able to pay them back some of the earlier loans. Such a circular flow of payments made little difference to the health, or lack of it, of the Greek economy. It is particularly unfortunate that Germany seemed to have forgotten its own history.

At the end of the World War I, the Treaty of Versailles imposed reparations on the defeated nations – primarily Germany, but also Austria, Hungary, Bulgaria and Turkey. Some of the required payments were made in kind (for example, coal and livestock), but in the case of Germany most payments were to be in the form of gold or foreign currency. The Reparations Commission set an initial figure of 132 billion gold marks. Frustrated by Germany's foot-dragging in making payments, France and Belgium occupied the Ruhr in January 1923, allegedly to enforce payment. That led to an agreement among the Allies – the Dawes Plan of 1924 – that restructured and reduced the burden of reparations. But even those payments were being financed by borrowing from overseas, an unsustainable position. So a new conference met in the spring of 1929 and after four months of wrangling produced the Young Plan, signed in Paris in June at the Hotel George V, which further lowered the total payment to 112 billion marks and extended the period of repayment to expire in 1988. But the economic reality was that, unless Germany could obtain an export surplus, its only method of financing payments of reparations was borrowing from overseas.

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In May 1931, the failure of the Austrian bank Creditanstalt led to a crisis of the Austrian and German banking systems, and a month later the Hoover Moratorium suspended reparations. They were largely cancelled altogether at the Lausanne conference in 1932. In all, Germany paid less than 21 billion marks, much of which was financed by overseas borrowing on which Germany subsequently defaulted.

After the Versailles Treaty was signed, Keynes and others argued that to demand substantial reparations from Germany would be counterproductive, leading to a collapse of the mark and of the German economy, damaging the wider European economy in the process. But the most compelling statement of Germany's predicament came from its central bank governor, Hjalmar Schacht. In 1934, writing in that most respectable and most American of publications, *Foreign Affairs*, Schacht explained that "a debtor country can pay only when it has earned a surplus on its balance of trade, and … the attack on German exports by means of tariffs, quotas, boycotts, etc., achieves the opposite result." Not a man to question his own judgments (the English version of his autobiography was titled *My First Seventy-six Years*, although sadly a second volume never appeared), on this occasion Schacht was unquestionably correct. As he wrote in his memoirs about a visit to Paris in January 1924:

> It took another eight years before the Allied politicians realized that the whole policy of reparations was an economic evil which was bound to inflict the utmost injury not only upon Germany but upon the Allied nations as well. Of the 120 milliards [billions] which Germany was supposed to pay, between 10 and 12 milliards were actually paid during the years 1924 to 1932. And they were not paid out of surplus exports as they should have been. During those eight years Germany never achieved any surplus exports. Rather they were paid out of the proceeds of loans which other countries, acting under a complete misapprehension as to Germany's resources, pressed upon her to such an extent that in 1931 it transpired that she could no longer meet even the interest on them. Finally, in 1932, there followed the Lausanne Conference at which the reparations commitments were practically written off.

After World War II, and with Germany divided, the problem of German debt reared its ugly head again. In 1953, the London Agreement on German External Debts rescheduled and restructured the debts of the new Federal Republic of Germany. Repayment of some of the debts incurred by the whole of Germany was made conditional on the country's reunification. In 1990 the condition was triggered and on 3 October 2010 a final payment of German war debts of €69.9 million was made.

More interesting from today's perspective is the statement in the agreement that West Germany would have to make repayments only when it was running a trade surplus, and the repayments were limited to 3 percent of export earnings. The euro area could learn from this experience. One way of easing the financing problems of the periphery countries would be to postpone repayment of external debts to other member countries of the euro area until the debtor country had achieved an export surplus, creating an incentive for creditors and debtors to work together to reduce trade imbalances.

It is deeply ironic that today it is Germany

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that is insisting on repayments of debt from countries that are unable to earn an export surplus, out of which their external debts could be serviced, because of the constraints of monetary union. Schacht must be turning in his grave.

As the periphery countries of southern Europe embark on the long and slow journey back to full employment, their external deficits will start to widen again, and it is far from clear how existing external debt, let alone any new borrowing from abroad, can be repaid. Inflows of private-sector capital helped the euro area survive after 2012, but they are most unlikely to continue forever. It is instructive to quote Keynes' analysis in the interwar period, replacing Germany in 1922 with Greece in 2015, and France then with Germany today:

> The idea that the rest of the world is going to lend to Greece, for her to hand over to Germany, about 100 percent of their liquid savings – for that is what it amounts to – is utterly preposterous. And the sooner we get that into our heads the better.

Much of the euro area has either created or gone along with the illusion that creditor countries will always be repaid. When a debtor country has difficulties in repaying, the answer is to "extend and pretend" by lengthening the repayment period and valuing the assets represented by the loans at face value. It is a familiar tactic of banks unwilling to face up to losses on bad loans, and it has crept into sovereign lending. To misquote Samuel Taylor Coleridge (in his poem *The Rime of the Ancient Mariner*), "Debtors, debtors everywhere, and not a loss in sight."

Debt forgiveness is more natural within a political union. But with different political histories and traditions, a move to political union is unlikely to be achieved quickly through popular support. Put bluntly, monetary union has created a conflict between a centralized elite on the one hand, and the forces of democracy at the national level on the other.

This is extraordinarily dangerous. In 2015, the presidents of the European Commission, the Euro Summit, the Eurogroup, the European Central Bank and the European Parliament (the existence of five presidents is testimony to the bureaucratic skills of the elite) published a report arguing for fiscal union in which "decisions will increasingly need to be made collectively," and implicitly supporting the idea of a single finance minister for the euro area. This approach of creeping transfer of sovereignty to an unelected center is deeply flawed and will meet popular resistance. As Otmar Issing, the first chief economist of the European Central Bank and the intellectual force behind the ECB in its early years, argued:

> Political union … cannot be achieved through the back door, by eroding members' fiscal-policy sovereignty. Attempting to compel transfer payments would generate moral hazard on the part of the recipients and resistance from the donors.

In pursuit of peace, the elites in Europe, the United States and international organizations such as the IMF have, by pushing bailouts and a move to a transfer union as the solution to crises, simply sowed the seeds of divisions in Europe and created support for what were previously seen as extreme political parties and candidates. It will lead to not only an economic but a political crisis.

their external debts could be serviced, because of the constraints of monetary union. Schacht must be turning in his grave.

In 2012, when concern about sovereign debt in several periphery countries was at its height, it would have been possible to divide the euro area into two divisions, some members being temporarily relegated to a second division with the clear expectation that after a period – perhaps 10 or 15 years – of real convergence, those members would be promoted back to the first division.

It may be too late for that now. The underlying differences among countries and the political costs of accepting defeat have become too great. That is unfortunate both for the countries concerned – because sometimes premature promotion can be a misfortune and relegation the opportunity for a new start – and for the world as a whole because the euro area today is a drag on world growth.

Germany faces a terrible choice. Should it support the weaker brethren in the euro area at great and unending cost to its taxpayers, or should it call a halt to the project of monetary union across the whole of Europe?

The attempt to find a middle course is not working. One day German voters may rebel against the losses imposed on them by the need to support their weaker brethren, and undoubtedly the easiest way to divide the euro area would be for Germany itself to exit. But the more likely cause of a breakup of the euro area is that voters in the south will tire of the grinding and relentless burden of mass unemployment and the emigration of talented young people.

The counter-argument – that exit from the euro area would lead to chaos, falls in living standards and continuing uncertainty about the survival of the currency union – has real weight. But if the alternative is crushing austerity, continuing mass unemployment, and no end in sight to the burden of debt, then leaving the euro area may be the only way to plot a route back to economic growth and full employment. The long-term benefits outweigh the short-term costs. Outsiders cannot make that choice, but they can encourage Germany, and the rest of the euro area, to face up to it.

If the members of the euro decide to hang together, the burden of servicing external debts may become too great to remain consistent with political stability. As John Maynard

Keynes wrote in 1922:

> It is foolish … to suppose that any means exist by which one modern nation can exact from another an annual tribute continuing over many years.

It would be desirable, therefore, to create a mechanism by which international sovereign debts could be restructured within a framework supported by the expertise and neutrality of the IMF, so avoiding, at least in part, the animosity and humiliation that accompanied the latest agreement on debt between Greece and the rest of the euro area in 2015. It was, I regret to say, an Englishman, First Lord of the Admiralty Sir Eric Campbell-Geddes, who set the tone for the harsh treatment of debtors when he said in a speech before the Versailles Peace Conference that "we shall squeeze the German lemon until the pips squeak!"

As early as 2003, the IMF debated the creation of a "sovereign debt restructuring mechanism." The idea was to ensure a timely resolution of debt problems to help both debtors and creditors, and to recognize the prisoner's dilemma in which an individual creditor had an incentive to hold out for full repayment, even though, collectively, creditors would be better off by negotiating with the debtor. Progress on the creation of such a mechanism was defeated by opposition from the United States, which favored bailouts over defaults, and Germany, which did not want to encourage the belief that sovereigns might be allowed to default.

Neither objection made sense. By failing to impose losses on the private-sector creditors of periphery countries in the euro area in 2012, the IMF and the European institutions took on obligations on which they were subsequently forced to accept losses. It is all too easy to pretend that throwing yet more money at a highly indebted country will solve the immediate crisis. It is only too likely that a sovereign debt restructuring mechanism will be needed in the foreseeable future. Without one, an ad hoc international debt conference to sort out the external sovereign debts that have built up may be needed.

But debt forgiveness, inevitable though it may be, is not a sufficient answer to all our problems. In the short run, it could even have the perverse effect of slowing growth. Sover-

eign borrowers have already had their repayment periods extended, easing the pressure on their finances. There would be little change in their immediate position following explicit debt forgiveness. Creditors, by contrast, may be under a misapprehension that they will be repaid in full, and when reality dawns they could reduce their spending. The underlying challenge is to move to a new equilibrium in which new debts are no longer being created on the same scale as before.

ESCAPING THE PRISONER'S DILEMMA

A major impediment to the resolution of the disequilibrium facing so many economies is the prisoner's dilemma they face – if they and they alone take action, they could be worse off. The problem now is how to reconcile the prisoner's dilemma with people's overwhelming desire to control their own destiny. The prisoner's dilemma prevented countries from rebalancing their economies. A coordinated move to a new equilibrium would be the best outcome for all.

By this I do not mean attempts to coordinate monetary and fiscal policy. Such efforts have a poor track record, ranging from the policies of the Federal Reserve in the 1920s, which held down interest rates in order to help other countries rejoin the gold standard, so creating a boom that led to the stock market crash in 1929 and the Great Depression, to the attempts in the mid-1980s to stabilize exchange rates among the major economies, which led to the stock market crash in 1987. Moreover, monetary and fiscal policies are not the route to a new equilibrium.

Many countries can now see that they have taken monetary policy as far as it can go. The weakness of demand across the world means that many, if not most, countries can credibly say that if only the rest of the world were growing normally then they would be in reasonable shape. But since it isn't, they aren't. So with interest rates close to zero, and fiscal policy constrained by high government debt, the objective of economic policy in a growing number of countries is to lower the exchange rate.

In countries as far apart as New Zealand, Australia, Japan, France and Italy, central banks and governments are becoming more and more strident in their determination to talk the exchange rate down. Competitive depreciation is a zero-sum game as countries try to "steal" demand from each other. In the 1930s, the abandonment of the gold standard, and hence of fixed exchange rates between countries, allowed central banks across the globe to adopt easier monetary policies. Although the benefits of the reduction in exchange rates cancelled each other out, the easier monetary policies helped to bring about a recovery from the Great Depression. Today, however, monetary policy is already about as loose as it could be. There is a real risk of an implicit or explicit "currency war."

The wider problem in the world economy is the mutual incompatibility of democracy, national sovereignty and economic integration.

These questions are symptomatic of a wider problem in the world economy – a problem that Dani Rodrik of Harvard University has christened the "political trilemma of the global economy." It is the mutual incompatibility of democracy, national sovereignty and economic integration. Which one do we surrender?

If national sovereignty is eroded without clear public support, democracy will come under strain – as we are seeing in Europe, where democracy and national sovereignty are closely intertwined. Political union, in the sense of a genuinely federal Europe, has stalled. To reconcile democracy and monetary union would require clearly defined procedures for exit from monetary union. There are none.

The degree of political integration necessary for survival of monetary union is vastly greater than, and wholly different from, the political cooperation necessary to create a path toward a sustainable economic recovery in Europe. Even if the former could be imposed by the central authorities on countries in the euro area – and there are few signs that this would be a popular development – to extend the same degree of integration to countries outside the euro area would surely shatter the wider union. For the foreseeable future, the European Union will comprise two categories of member: those in and those not in the euro area. Arrangements for the evolution of the European Union need to reflect that fact.

Which one do we surrender?

Such issues are a microcosm of broader challenges to the global order. The Asian financial crisis of the 1990s, when Thailand, South Korea and Indonesia borrowed tens of billions of dollars from Western countries through the IMF to support their banks and currencies, showed how difficult it is to cope with sudden capital reversals resulting from a change in sentiment about the degree of currency or maturity mismatch in a nation's balance sheet, and especially in that of its banking system.

The IMF cannot easily act as a lender of last resort because it does not own or manage a currency. In the Asian crisis, therefore, it was almost inevitable that conditionality was set by the United States because the need of those countries was for dollars. The result was the adoption by a number of Asian countries of do-it-yourself lender-of-last-resort policies, which involved their building up huge reserves of U.S. dollars out of large trade surpluses. That, together with their export-led growth strategy, led directly to the fall in real interest rates across the globe after the fall of the Berlin Wall.

Resentment toward the conditions imposed by the IMF (or the U.S.) in return for financial support has also led to the creation of new institutions in Asia, ranging from the Chiang Mai Initiative, a network of bilateral swap arrangements between China, Japan, Korea and the ASEAN countries to serve as a regional safety net mechanism now amounting to $240 billion, to the new Chinese-led Asian Infrastructure Investment Bank that was created in 2015. It is likely that Asia will develop its own informal arrangements that will, in essence, create an Asian IMF, an idea that was floated in 1997 at the IMF Annual Meetings in Hong Kong and killed off by the United States. Twenty years on, the power of the U.S. to prevent a mutual insurance arrangement among Asian countries is limited.

The governance of the global monetary order is in danger of fragmentation. In the evolving multipolar world, there are few remnants of the idealism of Bretton Woods. The combination of free trade and American power was a stabilizing force. As the financier and historian James MacDonald puts it in his book *When Globalization Fails*:

> The unspoken bargain was that the United States would exercise a near monopoly of military force. However, it would use its force not to gain exclusive economic advantages, but as an impartial protector of Western interests. Under the American umbrella, the non-Communist world flourished.

The world of Bretton Woods passed away a long while ago, and with it the effectiveness of the post-war institutions that defined it – the International Monetary Fund, the World Bank and the Organization for Economic Co-operation and Development (OECD). The veto power of the United States in the IMF, and the distribution of voting rights more generally, undermines the legitimacy of the Bretton Woods institutions in a world where economic and political power is moving in new directions.

It is not easy for any multilateral institution to adapt to major changes in the assumptions that underlay its creation. The continuing refusal of the U.S. Congress to agree to relatively minor changes to the governance of the IMF threatens to condemn the latter to a declining role. The stance of the IMF in the Asian crisis, its role as part of the so-called troika in the European crisis, and its reputation in Latin America mean that it is in danger of becoming ineffective. A key role of the IMF is to speak truth to power, not the other way round as it came close to doing in Asia in the 1990s and in Europe more recently.

The United States is still the largest player in the world economy, and the dollar the dominant currency. But little else has remained the same. In Asia and in Europe, new players have emerged. China is now, with output measured in comparable prices, the largest economy in the world, returning to the position it occupied by virtue of its population size in the 19th century. China and the United States will have an uneasy coexistence as the two major powers in Asia and, until a new, more-equal relationship emerges, uncertainty about the most vibrant region of the world will cast a shadow over economic prospects for the continent. A multi-polar world is inherently more unstable than the post-war stability provided by the umbrella of the Pax Americana.

Misguided attempts to suppress national sovereignty in the management of an integrated world economy will threaten democracy and the legitimacy of the world order. Yet, acting alone, countries may not be able to

achieve a desirable return to full employment. There are too many countries in the world today for an attempt to renew the visionary ideals of the Bretton Woods conference to be feasible. For a short time in 2008-09 countries did work together, culminating in the G20 summit in London in the spring of 2009. But since then, leadership from major countries, the international financial institutions and bodies such as the G7 and G20 has been sorely lacking. They provide more employment for security staff and journalists than they add value to our understanding of the world economy, as a glance at their regular communiqués reveals. Talking shop can be useful, but only if the talk is good.

As time goes by, parallels between the interwar period and the present become disturbingly more apparent. The decade before 2007, when the financial crisis began, seems in retrospect to have more in common with the 1920s than we realized. Both were periods when growth was satisfactory, but not exceptional, when the financial sector expanded, and when commentators were beginning to talk about "a new paradigm." After 2008, the parallels with the 1930s also began to grow. The collapse of the gold standard mirrors more recent problems with fixed exchange rates. The attempt to keep the euro together produced austerity on a scale not seen since the Great Depression, and led to the rise of extreme political parties across Europe.

A prisoner's dilemma is still holding back the speed of recovery. A sensible coping strategy to deal with this problem is not to artificially coordinate policies that naturally belong to national governments, but to seek agreement on an orderly recovery and rebalancing of the global economy. The way in which each country will choose to rebalance is a matter for itself, but it is in the interests of all countries to find a common timetable for that rebalancing. The natural broker for an agreement is the IMF.

Our best chance of solving the prisoner's dilemma while retaining national sovereignty is to use the price mechanism, not suppress it.

Arrangements to fix or limit movements of exchange rates tend to backfire as unexpected events require changes in rates to avoid economic suffering. At the heart of the problem is the question that so troubled the negotiators at Bretton Woods. How can one create symmetric obligations on countries with trade surpluses and trade deficits?

The international monetary order set up after World War II failed to do so, and the result is that fixed exchange rates have proved deflationary. For a long time the conventional wisdom among central banks has been that if each country pursues a stable domestic monetary and fiscal policy then they will come close to achieving a cooperative outcome. There is certainly much truth in this view. But when the world becomes stuck in a disequilibrium, the prisoner's dilemma bites. Cooperation then becomes essential.

Placing obligations on surplus countries has not and will not work. There is no credible means of enforcing any such obligations. Enlightened self-interest to find a way back to the path of strong growth is the only hope. The aim should be fourfold:

• to reinvigorate the IMF and reinforce its legitimacy by reforms to its voting system, including an end to a veto by any one country;

• to put in place a permanent system of swap agreements among central banks, under which they can quickly lend to each other in whichever currencies are needed to meet short-term shortages of liquidity;

• to accept floating exchange rates;

• to agree on a timetable for rebalancing of major economies, and a return to normal real interest rates, with the IMF as the custodian of the process.

The leadership of the IMF must raise its game. The two main threats to the world economy today are the continuing disequilibrium between spending and saving, both within and between major economies, and a return to a multipolar world with similarities to the unstable position before World War I. Whether the next crisis will be another collapse of our economic and financial system, or whether it will take the form of political or even military conflict, is impossible to say. Neither is inevitable. But only a new world order could prevent such an outcome. We must hope that the pressure of events will drive statesmen, even those of "inconceivable stupidity," to act.

THE AUDACITY OF PESSIMISM

The experience of stubbornly weak growth around the world since the crisis has led to a new pessimism about the ability of market economies today to generate prosperity. One increasingly common view is that the long-term potential rate of economic growth has fallen.

In the United States, there is no shortage of plausible explanations for such a change – the marked fall since the crisis in the proportion of the population who are available to work, slower growth of the population itself and heavier regulatory burdens on employers. It is important not to be carried away by changes over short periods of time. The U.S. Bureau of Labor Statistics (BLS) estimates the contribution to growth of increases in labor supply (hours worked), the amount of capital with which people work, and the efficiency of the labor and capital employed.

Ultimately, the benefits of economic growth stem from this last factor, which reflects scientific and technical progress – "multifactor productivity," in the phrase of the BLS statisticians. From the mid-1980s until the onset of the crisis in 2007, multifactor productivity rose at about 1 percent a year. Between 2007 and 2014, it rose by 0.5 percent a year. As a result, the annual rate of growth of output per hour worked – reflecting both technical progress and the amount of capital with which each person works – fell from just over 2 percent between the mid-1980s and 2007 to around 1.5 percent between 2007 and 2014. If that reduction persisted it would affect living standards in the long run. But growth rates of productivity are quite volatile over short periods of time and it is far from clear that they represent a significant change to the future potential of the economy.

Is there good cause for pessimism about the rate at which economies can grow in future? There are three reasons for caution about adopting this new-found pessimism. First, the proposition that the era of great discoveries has come to an end because the major inventions, such as electricity and airplanes, have been made and humankind has plucked the low-hanging fruit is not convincing. In areas such as information technology and biological research on genetics and stem cells we are living in a golden age of scientific discovery. By definition, ideas that provide breakthroughs are impossible to predict, so it is too easy to fall into the trap of thinking that the future will generate fewer innovations than those we saw emerge in the past.

When Alvin Hansen proposed the idea of "secular stagnation" in the 1930s, he fell into just this trap. In fact, the 1930s witnessed significant innovation, which was obscured by the dramatic macroeconomic consequences of the Great Depression. Alexander Field, an American economist, has documented large technological improvements in industries such as chemicals, transport and power generation. By 1950, real GDP in the U.S. had regained its pre-Depression trend path, and rose by 90 percent in a decade after the end of the Great Depression.

Second, although the recovery from the downturn of 2008-09 has been unusually slow in most countries, the factors contributing to the growth of labor supply have behaved quite differently across countries. For example, in contrast to the U.S., the U.K. has experienced buoyant population growth and rising participation in the labor force. And even some of the periphery countries in the euro area, such as Spain, have recently seen rises in measured average productivity growth. The factors determining long-term growth seem to be more varied across countries than the shared experience of a slow recovery since the crisis, suggesting that the cause of the latter is rooted in macroeconomic behavior rather than a deterioration in the pace of innovation.

Third, economists have a poor track record in predicting demographic changes. Books on the theme of the economic consequences of a declining population were common in the 1930s. A decade and a world war later, there was a baby boom. Agnosticism about future potential growth is a reasonable position; pessimism is not. History suggests that changes to underlying productivity growth occur only slowly. Many economists in the past have mistakenly called jumps in trend growth on the basis of short-term movements that proved short-lived.

The two main threats to the world economy today are the continuing disequilibrium between spending and saving, and a return to a multipolar world with similarities to the unstable position before World War I.

The case for pessimism concerns prospective demand growth. In the wake of a powerful shock to confidence, monetary and fiscal stimulus in 2008 and 2009 was the right answer. But it exhibits diminishing returns. In recent years, extraordinary monetary stimulus has brought forward consumption from the future, digging a hole in future demand. With a prospect of weak demand in the future, the expected return on investment becomes depressed. Even with unprecedentedly low interest rates and the printing of money, it becomes harder and harder to stimulate domestic consumption and investment.

What began as an imbalance between countries has over time become a major internal disequilibrium between saving and spending within economies. Spending is weak today, not because of irrational caution on the part of households and businesses following the shock of the crisis, but because of a rational narrative that in countries like the U.S. and U.K., consumer spending was unsustainably high before the crisis and must now follow a path below the pre-crisis trend. In countries like China and Germany, exports were unsustainably high, and they, too, are now experiencing weak growth as demand in overseas markets slows. Those countries have not been able to move to a new equilibrium either individually or collectively, and until they do, recovery will be held back.

In circumstances characterized by a paradox of policy – in which short-term stimulus to spending takes us further away from the long-term equilibrium – Keynesian stimulus can boost demand in the short run, but its effects fade as the paradox of policy kicks in. Only a move to a new equilibrium consistent with the revised narrative will end stagnation. Low growth in the global economy reflects less a lack of "animal spirits" and more the inability of the market, constrained by governments, to move to a new set of real interest rates and real exchange rates in order to find a new equilibrium.

The challenge we now face is plotting a route to a new equilibrium. The paradox of policy applies to all countries, both those that previously consumed and borrowed too much, and those that spent too little. Short-term stimulus reinforces the misallocation of investment between sectors of the economy, and its impact on spending peters out when households and businesses come to realize that the pattern of spending is unsustainable. China and Germany need investment to produce goods and services to meet domestic consumer demand rather than to support the export sector. The opposite is the case in the United States, United Kingdom and parts of Europe.

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Most discussion of this demand pessimism fall into one of two camps. On the one hand, there are those who argue that our economies are facing unusually strong but temporary "headwinds" that will die down in due course, allowing central banks to raise interest rates to more normal levels without undermining growth. We simply need to be patient, and a natural recovery will then follow.

This view is in my judgment an incomplete and misleading interpretation of the factors


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that have produced persistently weak growth. A change in the narrative used by households to judge future incomes is not a "headwind" that will gradually abate, but a permanent change in the desired level of spending. We cannot expect the United States to continue as the "consumer of last resort" and China to maintain its growth rate by investing in unprofitable construction projects. Central banks, like the cyclist climbing an ever-steeper hill, will become exhausted. And if recovery does not come, they will be seen to have failed, eroding the support for the independence of central banks that was vital to the earlier achievement in conquering inflation.

On the other hand, there are those who advocate even more monetary and fiscal stimulus to trigger a recovery. To be sure, it is hard to argue against a well-designed program of public infrastructure spending financed by government borrowing, especially when you are traveling through New York's airports. But the difficulty of quickly organizing a coherent plan for expanding public investment while maintaining confidence in long-term fiscal sustainability makes this option one for the future rather than today, albeit one worthy of careful preparation.

Further monetary stimulus, however, is likely to achieve little more than taking us further down the dead-end road of the paradox of policy. More extreme versions of monetary and fiscal expansion include proposals for an increase in government spending that would be financed by printing money, and "helicopter drops" of money into the pockets of all citizens. Radical though they sound, neither is in fact different in essence from the policies that have so far failed to generate a return to pre-crisis paths of output. Financing more government spending by printing money is equivalent, in economic terms, to a combination of (a) additional government spending financed by issuing more government debt and (b) the creation of money by the central bank to buy government debt (the process known as quantitative easing). Equally, helicopter drops of money are equivalent to a combination of debt-financed tax cuts and quantitative easing – the only difference being that the size of spending or tax cuts is decided by government and the amount of money created is decided by the central bank.

Since both elements of the combination have been tried on a large scale and have run into diminishing returns, it is hard to see how even more of both, producing a short-run boost to demand that will soon peter out, will resolve the paradox of policy. Dealing with the underlying disequilibrium is paramount.

The narrative revision downturn, triggered by the crisis, has left a hole in total spending. Central banks have, largely successfully, filled that hole by cutting interest rates and printing electronic money to encourage households and businesses to bring forward spending from the future. But because the underlying disequilibrium pattern of demand has not been corrected, it is rational to be pessimistic about future demand.

That is a significant deterrent to investment today, reinforced by uncertainty about the composition of future spending. Since traditional macroeconomic policies will not lead

Since traditional macroeconomic policies will not lead us to a new equilibrium, and there are no easy alternatives, policymakers have little choice

us to a new equilibrium, and there are no easy alternatives, policymakers have little choice but to be audacious. What should they do to escape the trap of rational pessimism? In broad terms, the aim must be twofold – to boost expected incomes through a bold program to raise future productivity, and to encourage relative prices, especially exchange rates, to move in a direction that will support a more sustainable pattern of demand and production. Those aims are easy to state and hard to achieve, but there is little alternative, other than waiting for a crash in asset values and the resulting defaults to reset the economy.

but to be audacious.

With the audacity of pessimism, we can do better. A reform program might comprise three elements.

First, the implementation of measures to boost productivity. Since the crisis, productivity growth has been barely noticeable, and well below pre-crisis rates. A major reason for this disappointing performance is that there has been a sharp fall in the growth rate, and perhaps even in the level, of the effective capital stock in the economy.

Part of this reflects the fact that past investment was in some cases a mistake, directed to sectors in which there was little prospect of future growth, and is now much less productive than had been hoped. Some of the capital stock is worth less than is estimated in either company accounts or official statistics, or even in economists' models.

Another part reflects pessimism about future demand and uncertainty about its composition, which has led to a fall in business investment around the world. Current demand is being met by expanding employment. Companies do not wish to repeat the mistake of investing in capital for which there is little future profitable use. If future demand turns out to be weak then it will be cheaper to adjust production by laying off employees.

A higher ratio of labor to effective capital explains weaker productivity growth. Reforms to improve the efficiency of the economy, and so the rate of return on new investment, would stimulate investment and allow real interest rates to return to a level consistent with a new equilibrium. Over time, as investment rebuilt the effective capital stock, productivity growth would return to rates reflecting the underlying innovation in a dynamic capitalist economy.

Reforms to boost productivity are not a "get out of jail free" card – they are easier to conceive than implement, and hit political obstacles from potential losers who express their concerns more vocally than the potential winners. But the only alternative to large and costly shifts in relative prices is changing the narrative about expected future incomes. And there certainly exist opportunities to boost productivity:

- in the product market to reduce monopolies and increase competition;
- in the tax system to reduce distortions between saving and spending, eliminate complex deductions and lower marginal tax rates;
- in the public sector to reduce the cost of providing public services;
- in the field of regulation to lower the burden imposed on the private sector;
- more generally, to improve public infrastructure to support the rest of the economy.

...this article is continued on the *Milken Institute Review*'s new website: www.milkenreview.org

BY ROSS DEVOL & SINDHU KUBENDRAN

Dementia, the progressive loss of memory and other mental capacities that is caused by a host of ailments ranging from Alzheimer's disease to Huntington's disease, afflicts some 6.4 million Americans. Adding to the toxic consequences, the scourge does not affect the sexes equally. Women account for fully two-thirds of the cases – a reality generally attributed to the fact that women live longer than men, though recent research suggests there may be biological pathways that lead to greater cognitive impairment in females.

Women bear a doubly disproportionate share of the consequences because they also make up the majority of informal caregivers, often as family members of dementia patients who need round-the-clock assistance with their most basic needs. And this unequal societal burden is almost certain to increase rapidly in light of the explosive rise in the numbers of very old (older than 80) Americans. Indeed, we estimate that the purely pecuniary costs of caring for women with dementia will add up to $5.1 trillion (in 2012 dollars) through 2040. Even if you apply a discount rate to these costs since they extend far into the future, the sum is in the trillions. And that still adds up to real money – not to mention an ocean of human misery.

Clearly, if we don't change the current trajectory by delaying the average age of dementia's onset, slowing its progression and severity and ultimately finding cures for the underlying pathologies, the toll will constitute a major drag on the economy. Moreover, in addition to the financial incentive for narrowing gender disparities, we believe there is a moral obligation to achieve these goals. Such a gender-related health disparity works to aggravate other socioeconomic disparities affecting women and impairs the quality of life for all.

ROSS DEVOL and SINDHU KUBENDRAN are, respectively, the chief research officer and a senior research analyst at the Milken Institute.

NUMBERS, PLEASE

Using data from the Medical Expenditure Panel Survey provided by the Agency for Healthcare Research and Quality, we cataloged the number of dementia cases and the costs of treating dementia, as well as developing estimates for the costs above and beyond treatment. Medical care for dementia is very expensive: direct costs for women run to $6,800 per case per month. But the indirect and unreported costs of care are much, much higher. All told, the overall economic burden borne by women in the United States in 2012 (the latest year in which solid data are available) was $91.1 billion – more than three-quarters of the total cost of dementia. This

PHILIPPE DE KEMMETER

figure is conservative since it excludes the incremental costs that dementia adds to the treatment of other chronic diseases, such as heart disease, and the detrimental impact on the health of family caregivers.

Note, too, that because dementia in many people is not diagnosed, the numbers are grossly underreported. For example, there is good reason to believe that the actual number of women with dementia is four times higher than the 1.1 million who are officially being treated for dementia-related conditions.

One major cost is the loss of labor available to the economy. The sufferers themselves don't represent much of the loss since the overwhelming majority of patients are old and no longer part of the work force. But the missed workdays (absenteeism) or diminished productivity (presenteeism), or both, of the informal female caregivers is humungous. Of the total of 5.8 million women caregivers in 2012, 60 percent were also employed in the formal work force. Using average GDP per employed person, the combined indirect effect of absenteeism and presenteeism of female caregivers and patients was $43.7 billion that year.

Further, because many caregivers need to work for financial reasons or choose to do so as a means of personal fulfillment, they often make use of adult day care services that are tailored for younger, higher functioning patients. Increased access to better targeted day care could reduce the number of women leaving their jobs to be caregivers. However, nursing homes are the most expensive form of long-term care for dementia patients, averaging $80,000 per year. So, with over 450,000 female dementia patients using nursing homes, the total cost for women with dementia alone was $39 billion in 2012.

THE MIXED BLESSING OF LONGEVITY

As noted above, because the risk of developing dementia increases rapidly with age, the so-called silver tsunami expected in the United States over the next few decades will accelerate the incidence of the disease. For example, the probability of developing dementia in the 71-to-74 age cohort is 2.8 percent, but jumps to 20.3 percent for individuals in the 85-to-89 cohort. The U.S. Census Bureau projects that the share of Americans aged 65 and over will jump to 20 percent in 2040 from just 13 percent today.

Our dementia-prevalence projection is based on an assortment of studies on the probability of being felled by dementia from a variety of diseases. The associated treatment rates, caregiver demands and living-arrangement utilization rate projections are assumed to be proportional to the growth in the population with the condition. Treatment expenditures per person and the costs of long-term care services are projected to rise commensurate with the growth rate of health care expenditures in excess of the growth rate in nominal GDP, based on projections from the Centers for Medicare & Medicaid Services. The indirect labor market effects from lost work hours and lower productivity are based on forecasts of gains in GDP per employee.

By 2040, we project that the number of women afflicted with dementia will more than double, to 8.3 million. Women who become informal caregivers will jump to 11.2 million. Annual dementia-related health expenditures for women will approach $25 billion, while long-term care costs for these women will exceed $130 billion in 2040. The indirect labor market effects from the diversion of women to the role of informal caregivers will result in a GDP loss of some $119 billion. Thus, the combined figures for treatment, living arrangements and indirect impacts increase the annual economic burden on women to about $274 billion in 2040, three times the figure for 2012. The total economic burden, including the burden from dementia in men, rises to $367 billion in 2040.

WHAT TO DO

It will take a concerted effort on various fronts to tackle dementia effectively. To that end, we suggest five goals for public policy.

Train More Specialized Caregivers. The current shortage of health care professionals trained in geriatrics will only be exacerbated as dementia cases rise. A wide range of medical

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professionals, including, but not limited to, doctors and nurses, is needed. But giving them incentives to join this battle will require substantial financial resources and falls outside the traditional definition of health care costs associated with a disease.

Expand the Scope and Flow of Services. Until cures for the underlying ailments are found or more efficacious treatments are available, an expansion in the scope of health care is needed to improve coordination between long-term care services and other social services. As dementia patients' cognitive functions deteriorate, families providing informal care require more professional long-term care services to assist with activities of daily living. Increasing insurance coverage for long-term care services such as nursing home and adult day care services, as well as making long-term care insurance more affordable, could reduce the burden on individual families and minimize labor market side effects.

HISTORICAL ECONOMIC BURDEN OF DEMENTIA (AVERAGE, 2010–2012, US$ BILLIONS)

	TREATMENT EXPENDITURES	LIVING ARRANGEMENT	INDIRECT IMPACT	TOTAL
Men	2.8	19.2	7.2	29.2
Women	7.5	39.9	43.7	91.1
Total	10.3	59.1	50.9	120.3

SOURCES: Medical Expenditure Panel Survey, National Health Interview Survey, Milken Institute.

Enhanced coordination of care between the health care system and the community is now being incorporated into new models of health care delivery, such as the patient-centered medical home.

Raise Dementia Awareness and Expand Family Caregiver Training. Dementia is undiagnosed in a significant percentage of people living with it, which means they aren't receiving treatment that could slow its progression or minimize the side effects. Thus, raising public awareness of the signs of dementia and

better communicating the steps toward diagnosis should be a priority. Earlier diagnosis could also provide opportunities for better informal caregiver training and reduce caregiver stress, which would cut absenteeism and presenteeism in the workplace. In addition, greater public awareness could encourage employers to offer elder care in the workplace as a fringe benefit, the way they now offer child care in order to retain employees and raise their productivity.

Provide Support in the Workplace. As women's participation in the labor force has risen, the demands on women as caregivers at home have become ever more stressful. Modest financial assistance from employers or government could allow informal caregivers to buy care services and thus remain employed, especially in cases where dementia is not yet severe. Simply raising awareness and understanding in the workplace would reduce disparities for women. If a policy change could result in a 60 percent reduction in lost workdays for women caregivers, it would boost GDP by a cumulative $776 billion (in 2012 dollars) through 2040.

Increase Funding for Research for Alzheimer's and Other Sources of Dementia. Since past drug trials have largely been unsuccessful, many pharmas have cut or eliminated R&D on dementia. What seems to be most needed at this point to aid drug development and other ameliorating medical technologies is basic research on how the brain works. And understanding may be on the way. A Harvard team reported (in the journal *Science Translational Medicine*) that they suspected that the brain plaque associated with Alzheimer's may be caused by the body's successful attempt to fight off a virus, fungus or bacterium that finds its way to the brain. The 2016 budget bill that Congress passed contained a $350 million increase in funding for dementia research at the National Institutes of Health. That is a good down payment, but more should be done in funding core research.

The potential payoff is immense. We simulated an alternative future in which R&D yielded a novel medical technology that reduced dementia prevalence by 20 percent, compared with its current trajectory. We chose 2025 as a starting point because the cycle of invention and testing averages 13 years before a new therapy is approved. All other assumptions for projecting treatment costs, living arrangements and labor market effects were maintained at the same levels. This scenario would result in 1.7 million fewer female patients by 2040. And that reduction would save a cumulative $33 billion in treatment expenditures and $170 billion in living arrangement costs, while boosting GDP by over $170 billion. That translates to a cumulative benefit of $374 billion, measured in 2012 dollars.

* * *

Faced with this blizzard of numbers, it's easy to lose sight of the bottom line. But a few points are clear enough. Dementia is a scourge on society – and an especially cruel scourge because the incidence is bound to grow rapidly and constitutes yet another burden on women struggling for equality in the workplace while maintaining their role as keepers of the family. Indeed, it's hard to think of a medical condition in which the potential payoff from even marginal improvements in treatment would be so large to both society and to the innovators.

But we're not close to a cure for most of the diseases that cause dementia. And in the meantime, a big investment in care alternatives that reduce the load on women who come home from work to a dementia sufferer ought to be a high priority.

Engaged with Asia

Since its modern era of growth started in 1979, China has become the world's largest exporter – and (in terms of purchasing power) the world's largest economy. Now, its restless investors have been itching to diversify their assets.

According to a new report from the Milken Institute, California stands to become one of the biggest beneficiaries. The title, "A Golden Opportunity with China: How California Can Become an Even Bigger Destination for Chinese Foreign Investment," says it all. "China plays an increasingly important role in California's economic future," explains Kevin Klowden, the Center's Executive Director. "Our report examines where the relationship is strongest and how leaders can bring further investment and jobs to California." Download it free at http://www.milkeninstitute.org/.

Engaged with Asia (Part II)

The Institute's Singapore-based Asia Center recently announced two new Asia Fellows: Dino Patti Djalal, the former Indonesian ambassador to the United States and one of Indonesia's foremost foreign-policy experts, and Reuben Abraham, the CEO of IDFC Institute, a Mumbai-based think tank. Djalal and Abraham join Curtis Chin, the former U.S. ambassador to the Asian Development Bank, and Kotaro Tamura, a former Japanese senator, as Asia Fellows, expanding the Center's network of regional expertise.

GARY FRIEDMAN/LOS ANGELES TIMES VIA GETTY IMAGES

Undue Burden

The Institute's increasing focus on public health issues is reflected in its research output. A recent report, "The Price Women Pay for Dementia: Strategies to Ease Gender Disparity and Economic Costs," details the burden of dementia on women, both as patients and caregivers. With the rapid increase in older Americans, the number of women with the condition and those serving as informal caregivers will continue to escalate, and will cost the economy a cumulative $5.1 trillion (in 2012 dollars) through 2040.

Download the report at the Institute's website. Or read a summary in this issue of the *Review*, on p. 90.

Congrats, Greg Simon

Vice President Joe Biden has named Greg Simon to lead the National Cancer Institute's national cancer "moonshot" initiative. Simon was the founding president of FasterCures, the Institute center that brings diverse stakeholders together to improve the medical research system. "Greg is undaunted by challenges," says Margaret Anderson, the current head of FasterCures. "His professional and personal experiences make him a strong and passionate leader to accelerate the vice president's vision of accelerating cancer research efforts."

Bloom off the Rose?

Everybody's heard that African economies – well, many of them, anyway – have been on a growth tear since the turn of the millennium. Meanwhile, the quality of governance in Africa (as measured by the average score of 50-plus countries between 2000 and 2008 on the highly respected Ibrahim Index) followed along. Yet since 2008, this average score has hardly budged – a troubling trend that may presage economic troubles ahead.

What's happened? The index is composed from 93 indicators that fit broadly into four categories: human development, participation/human rights, safety/rule of law, sustainable economic opportunity. The first two are still trending upward, but safety and economic opportunity are both slipping. Happily (or unhappily, depending on which countries you're rooting for), there's a lot of variation on the list. All of the data used in the index, by the way, can be downloaded free from the index website.

COUNTRY	2015 SCORE	CHANGE SINCE 2011
Mauritius	79.9	–0.7
Cape Verde	74.5	–1.9
Botswana	74.2	–1.8
South Africa	73.0	+0.9
Namibia	70.4	+2.0
Seychelles	70.3	–0.8
Ghana	67.3	–0.4
Tunisia	66.9	+2.6
Senegal	62.4	+4.5
Lesotho	61.1	+2.2
Rwanda	60.7	+2.9
Zambia	59.5	+0.5
São Tomé & Príncipe	59.1	+0.7
Kenya	58.8	+4.3
Benin	58.8	–0.2
Morocco	57.6	+3.4
Malawi	56.7	–0.2
Tanzania	56.7	–1.0
Uganda	54.6	–1.3
Algeria	52.9	+1.4
Mozambique	52.3	–2.2
Burkina Faso	52.2	+0.3
Gabon	52.2	+1.2
Egypt	51.3	+0.5
Sierra Leone	51.0	+0.7
Liberia	50.7	+0.9
Gambia	50.5	–1.7
Swaziland	49.6	+0.7

COUNTRY	2015 SCORE	CHANGE SINCE 2011
Madagascar	49.1	+2.8
Mali	48.7	–8.1
Ethiopia	48.6	+3.4
Comoros	8.5	+0.9
Niger	48.4	–0.6
Togo	48.4	+4.0
Côte d'Ivoire	48.3	+8.5
Djibouti	45.9	+0.5
Cameroon	45.9	–1.3
Burundi	45.8	+1.2
Nigeria	44.9	+0.9
Guinea	43.7	–0.1
Mauritania	43.0	+0.1
Congo	42.8	+0.6
Angola	40.8	+0.2
Zimbabwe	40.4	+4.6
Guinea-Bissau	35.7	–3.2
Equatorial Guinea	35.5	–0.7
Libya	35.5	–2.4
Democratic Republic of Congo	33.9	+0.1
Chad	32.8	+0.5
Eritrea	29.9	–0.4
Sudan	28.3	+0.4
Central African Republic	24.9	–8.4
South Sudan	19.9	–9.6
Somalia	8.5	+1.2
Average Score	**50.1**	**+0.2**

SOURCE: Mo Ibrahim Foundation