F&D
FINANCE AND DEVELOPMENT

SEPTEMBER 2018

Raj Chetty profiled P.36

Boiling point P.22

Is there a remittance trap? P.44

Southeast Asia
Region on the Rise

INTERNATIONAL MONETARY FUND

Contents

For Southeast Asia, the next couple of decades **could prove exhilarating** but also tumultuous.

SOUTHEAST ASIA ON THE RISE

FINANCE & DEVELOPMENT
A Quarterly Publication of the International Monetary Fund
September 2018 | Volume 55 | Number 3


52

ALSO IN THIS ISSUE

DEPARTMENTS

60


36

Region on the Rise

SREYNITH HAK, 25, MOVED to Phnom Penh eight years ago to pursue a bachelor's degree in media management. Cambodia's capital offered her much more opportunity than the small town where her parents and siblings still live. "I can see more of the world; I can do what I want," she says.

Together with millions of young people like her, Hak is shaping the future of Southeast Asia, one of the world's fastest-growing regions and home to 643 million people. From the city state of Singapore, to the vast and sprawling archipelago of Indonesia, the ten countries that make up the Association of Southeast Asian Nations form a vibrant and diverse community.

Southeast Asia has lived through devastating financial crises, armed conflicts, and untold natural disasters. And yet it has managed to leverage the possibilities created by globalization to build competitive economies that play a vital role in the global supply chain, lifting millions of people out of poverty.

As the IMF prepares to hold its annual membership meeting in Indonesia, we take a deep dive into the region. We look at the multitude of challenges facing ASEAN countries, including the very real threat posed by climate change, the rapid aging of society, human trafficking, and geopolitical shifts. And we discuss the exhilarating opportunities presented by digital technology, the integration of women into the labor force, and closer collaboration within the region.

"With the right policies, Southeast Asia can rely on the creativity, resilience, and dynamism of its people to meet those challenges," writes Chang Yong Rhee, director of the IMF's Asia and Pacific Department.

For young people like Hak, the future is bright. But she knows she will need to persevere to be successful. "I have my own timeline, my own clock," she says. "I want to prove to people that I can do it—maybe even better than some guy." FD

CAMILLA LUND ANDERSEN, Editor-in-Chief

ON THE COVER

As the IMF and World Bank gear up for their Annual Meetings this year in Indonesia, we present a special issue focusing on the countries of Southeast Asia. Illustrator Michael Waraksa's September 2018 *F&D* cover offers a fanciful rendering of Indonesia and lands beyond.

FINANCE & DEVELOPMENT
A Quarterly Publication of the International Monetary Fund

Subscriber services, changes of address, and advertising inquiries:
IMF Publication Services
Finance & Development
PO Box 92780
Washington, DC 20090, USA
Telephone: (202) 623-7430
Fax: (202) 623-7201
E-mail: publications@imf.org

Postmaster: send changes of address to *Finance & Development*, International Monetary Fund, PO Box 92780, Washington, DC 20090, USA. Periodicals postage is paid at Washington, DC, and at additional mailing offices.

The English edition is printed at Dartmouth Printing Company, Hanover, NH.

Finance & Development is published quarterly by the International Monetary Fund, 700 19th Street NW, Washington, DC 20431, in English, Arabic, Chinese, French, Russian, and Spanish. English edition ISSN 0145-1707

FSC FPO


BNI

Maintaining Momentum

From shifting demographics to climate change, Southeast Asia confronts a host of challenges. Surmounting them will require both resilience and flexibility

Manu Bhaskaran

Southeast Asia scarcely disappoints with its capacity to produce uplifting surprises. Malaysia's voters recently proved the pundits wrong and elected a reformist government that is taking on that country's challenges with gusto. Since 1998, Indonesia has done the same by pulling off one of the most impressive democratic transitions among emerging market economies. Companies such as budget airline AirAsia have come seemingly from nowhere to become giants in their field, while Grab, the region's answer to ride-hailing firms, is just one of many unicorns to emerge.

Examples like these make me reasonably optimistic about the outlook for Southeast Asia in an increasingly turbulent global environment. Granted, it is not easy to generalize about a region that encompasses 643 million people in 10 nations as diverse as Lao P.D.R., an agricultural country of rugged mountains and forests, and Singapore, a gleaming city-state with one of the world's highest standards of living. But I am confident that the region will succeed in overcoming a host of global challenges, ranging from aging populations and climate change to advances in technology and the shifting currents of international trade and finance. Southeast Asia has successfully dealt with serious shocks in the past, not least the crisis of 1997–98, and it has emerged stronger. Its success in the future will depend on its ability to adjust flexibly to these global forces and on its resilience to the shocks and stresses that history tells us are inevitable.

Aging trends

How will Southeast Asia adapt? Let's start with demographics since so many other things follow from it. The region is undergoing a major demographic transition. Not only will population growth slow, aging trends will become more pronounced. While Singapore and Thailand will age faster, even countries with relatively young populations, such as Malaysia and the Philippines, will experience slower growth in their populations and labor forces. The era of plentiful and cheap labor, which helped the region industrialize through export-led and labor-intensive manufacturing, will be over, pretty much all over the region.

At the same time, the United Nations projects the urban population will expand from 49 percent of the current total to about 56 percent by 2030. That's another 80 million people jostling each other in towns and cities, competing for jobs and facilities. But, more positively, it also represents 80 million workers with a chance to be more productive and earn higher wages in a dynamic urban setting. These workers will make up a lucrative market for companies selling a wide variety of goods and services.

Might technological developments help the region cope with these demographic shifts? Advances in artificial intelligence, including robotics, together with innovations such as 3-D printing and new composite materials, will transform manufacturing processes, making them less labor-intensive while creating opportunities for new products. This will enable new ways of making things and change the drivers of competitiveness. There will be indirect effects as well. For example, aircraft manufacturers, taking advantage of new composite materials such as carbon fibers, have developed a class of super-long-haul aircraft that could bring more tourists to Southeast Asia as relatively cheap point-to-point travel options emerge.

Other examples:

- Wider use of SMAC (social, mobile, analytics, and cloud) should offer businesses many pathways to enhance profitability and reach out to consumers, who could benefit from goods and services that more directly meet their needs.
- Renewable energy will be used more widely, especially solar and wind power. This could reduce the region's reliance on polluting fossil fuels while enhancing energy security.
- An array of new biomedical therapies, some based on genomics, will transform medical treatments for a range of diseases and quite possibly raise not just life expectancy but the quality of life as well. New business activities could grow out of these innovations in a region that has seen some globally competitive medical hubs emerge, such as Bangkok.

As the region absorbs these new technologies, it will also have to deal with new forms of globalization

and regional integration. Yet the current pessimism about globalization may be excessive. There certainly has been a backlash in developed economies against free trade and immigration, but this is not the end of the game. Over time, this backlash is likely to produce, in both advanced economies and in Southeast Asia, a revised social compact and more balanced policies that can better compensate the losers from globalization through stronger safety nets and retraining programs.

Forms of integration

In the end, the region should still enjoy synergies from globalization and other modes of economic integration, but the form and shape of such integration could change. At one level, "whole-of-the-globe" multilateral initiatives will probably be more difficult to pull off. However, smaller-scale integration efforts such as subregional economic partnerships or cross-border trade are likely to expand. The 10-member Association of Southeast Asian Nations (ASEAN) is already mapping out practical plans for integration, such as the ASEAN Economic Community 2025 plan. This uniquely Southeast Asian approach to integration sets long-term goals and allows each country considerable flexibility to meet them, with the aim of improving the flow of goods, services, capital, data, and people.

The region has already enjoyed the benefits of many other forms of integration. One example is the Greater Mekong Sub-Region, where the northern ASEAN countries have worked together for more than 20 years to increase integration, with considerably improved transportation as well as rapidly growing trade and labor flows. Cross-border trade between Thailand and its neighbors has helped transform small towns into thriving hubs. Southeast Asia's integration efforts are likely to serve as models for other emerging market economies. This is important because countries exposed to such integration tend to have greater incentives to reform and improve their competitiveness—as happened during the past two decades of globalization.

Southeast Asia is also likely to remain highly integrated with the global economy. Continued exposure to global financial flows will pose two challenges. First, financial markets are subject to more frequent bouts of stress, occasional shocks, and outright crises. The root of the problem lies deep in the international financial architecture, and while some postcrisis reforms have helped strengthen the global financial system, emerging market economies in Southeast Asia and elsewhere will continue to be buffeted by large and volatile capital flows. In many cases, this may simply mean that unpredictable fluctuations in regional currencies complicate monetary policymaking and create uncertainty for businesses. But at other times, capital flows could be much more destabilizing, creating panic in currency, equity, and bond markets, with harmful consequences for economic growth and financial stability.

Second, China will become a much more tangible actor in global finance as its massive pool of savings is liberalized and flows out of the country. China has also launched several initiatives, such as Belt & Road, and financial institutions such as the New

To cope with this period of unsettling change, Southeast Asia needs to build resilience.

Development Bank and the Asian Infrastructure Investment Bank, which will become integral parts of the global financial architecture.

Climate change

Environmental challenges, including climate change, will be no less important. While it is hard to predict the economic damage likely to be wrought by rising sea levels and increasingly violent storms, the Asian Development Bank reckons that Southeast Asia will be among the world's hardest-hit regions [see related article on page 22]. The smoke from forest fires that envelops parts of Indonesia, Malaysia, and Singapore each year suggests that the damage can be extensive and painful.

Water scarcity, though less highlighted, is another potential source of conflict and economic trouble. Already, there are signs of stress, caused in part by a series of dams built on the upper reaches of the Mekong River, in China. These have been shown to change the flow of the nutrient-rich sediment as well as the annual flood pulse (the fluctuating flows of the river during different seasons) needed downstream to sustain fishing and other activities critical to the livelihoods of people in the lower Mekong Basin. Managing Southeast Asia's water resources and ensuring that enough safe water is made available equitably will not be easy.

New technologies

Let's look at what these global trends mean for the region, starting with the impact of technological advances. Predictions of wholesale displacement of workers seem overly pessimistic. Some displacement is normal in a market economy as new industries are born and others decline: at times this process accelerates; at times it slows. In coming decades, the pace of dislocation is likely to accelerate, but so will the pace of job creation. How many of us expected the Internet to spawn the cybersecurity industry, which employs hundreds of thousands of workers across the globe? The United States alone has a cybersecurity workforce estimated at 768,000, according to CompTIA, a technology association. Similarly, the advent of artificial intelligence and data analytics will create new jobs.

How will Southeast Asia cope with technological change and other developments that promise to shake up the existing structure of competitiveness? It is quite possible that reshoring of manufacturing to developed economies could gain more traction. Moreover, some technologies generate network effects that give bigger economies advantages over smaller ones. It is no coincidence that companies such as Alibaba, Alphabet, Facebook, and Tencent arose in China and the United States.

It is also likely that China will continue to move up the value chain, while India is likely to increase its presence in more niches of manufacturing as its infrastructure and business environment improve and its manufacturers are better able to exploit economies of scale. But all this does not mean that the export-led manufacturing model will be denied to late developers such as Indonesia and the Philippines, for two reasons.

First, existing industries cover a spectrum of activities, and it is unlikely that technology will transform every single one to such an extent that there is no longer scope for labor-intensive work. In industries such as textiles, garments, and footwear, for instance, there are limits to how much automation is possible.

Second, new technologies can invigorate developing economies in Southeast Asia. Look at how advances in communications and computers have helped the Philippines build an entirely new industry—business process outsourcing—from scratch. The multiplicity of emerging technologies could well offer more such opportunities.

Building resilience

To cope with this period of unsettling change, Southeast Asia needs to build resilience, or the capacity to bounce back from shocks and stresses. At the same time, it must remain flexible, to take advantage of the opportunities while mitigating the risks posed by longer-term challenges such as technological disruption and climate change.

Resilience has improved since the regional crisis of 1997. Economies are more diversified; governments have adopted more flexible exchange rate regimes; financial structures are much less prone to crises as banks, for example, are better capitalized; and the balance sheets of companies, households, financial institutions, and government are in better shape. For proof, just look at how well the region weathered the shocks and wild market movements of recent years, such as the global financial crisis, successive euro area crises, and the collapse in commodity prices.

To gauge how flexibly the region will respond to the transformations and dislocations it is likely to encounter, it helps to look both at spontaneous, bottom-up adjustment by companies and individuals and at policy-driven adjustment.

Bottom-up, spontaneous adjustment is largely in good shape. Companies in the region have a strong track record of transformation. There are those like AirAsia, a low-cost carrier that has grown to become Malaysia's largest airline, with affiliates across the region. Thai companies such as Charoen Pokphand Group and the Siam Cement Group have scaled up impressively in recent years to operate across the Mekong region and beyond.

Government support

In the realm of policy-driven adjustment, globally competitive clusters of activity have emerged across the region, which can be springboards for innovation. Many of these benefited from government support in the form of industrial master plans and incentives to develop industrial estates and attract foreign investors. A good example is the eastern seaboard of Thailand, which has become a major manufacturing hub for petrochemicals and automobiles. The Thai government is now seeking to transform this region into an expanded Eastern Economic Corridor. Malaysia has the Penang-Kulim corridor and the southern region of Iskandar, which are also globally competitive manufacturing and logistics clusters.

The key to improving policy-driven adjustments is to provide public goods such as infrastructure, education and skills training, research and development, and social safety nets. This is happening—witness the major turnaround in investment in infrastructure across the region after decades of slow progress.

Governments are also cutting regulation and tackling corruption. Indonesia has moved up the World Bank's ease of doing business rankings, and its anti-corruption agency has fearlessly prosecuted hundreds of officials, including a speaker of Parliament, regional governors, and senior ministry officials. This has gone a long way toward diminishing the culture of impunity, which makes corruption so difficult to eradicate. Malaysia's new government is also showing exemplary zeal in attacking corruption.

For Southeast Asia, the next couple of decades could prove exhilarating in terms of the opportunities presented by technology and global growth, but also tumultuous because of the continuing risks, such as those posed by an unreformed and unstable international financial architecture. There clearly is much hard work to be done. Policymakers still have not gotten everything right, but they are heading in the right direction. Companies are growing in scale and sophistication, helping the region's economies adjust flexibly and effectively to new challenges. Southeast Asia has had a good track record of responding to challenges over time. There is every reason to be confident that it will continue to do so. FD

MANU BHASKARAN has studied economic and political trends in Southeast Asia for more than 30 years. He is chief executive officer of Singapore-based Centennial Asia Advisors, a unit of Centennial Group, a strategic advisory firm based in Washington, DC. He previously worked in the administrative service of the Government of Singapore and as chief economist at SG Securities in Singapore.

Chang Yong Rhee, director of the IMF's Asia and Pacific Department.

PHOTO: IMF

Reaching the Next Level

For Southeast Asia, further progress calls for bold reforms

Chang Yong Rhee

SOUTHEAST ASIA HAS made extraordinary strides in recent decades. Growth in per capita incomes has been among the fastest in the world, and last year the region was the fourth largest contributor to global growth after China, India, and the United States. Living standards have improved dramatically. Poverty rates are down sharply.

What accounts for this record of success? Openness to overseas trade and investment is a big part of the answer. Malaysia and Thailand have established themselves as global manufacturing powerhouses, churning out cars, consumer electronics, and computer chips. Indonesia and the Philippines are among the world's fastest-growing large, domestic-demand-led emerging markets. Singapore is a major financial and commercial hub. Frontier economies such as Cambodia, Lao P.D.R, Myanmar, and Vietnam are exiting from decades of central planning after joining the Association of Southeast Asian Nations (ASEAN) and integrating with regional supply chains, particularly in China.

Sound economic management has also played a vital role. To be sure, the Asian crisis of 1997 was a setback, but Southeast Asia bounced back quickly and emerged stronger. Banks were restructured and financial regulation strengthened. Local currency bond markets were deepened to reduce dependence on volatile capital flows. Rising prices and credit growth were brought under control as some countries moved toward adopting inflation targets and so-called macroprudential policies, which are designed to monitor and prevent risks to the financial system.

As a result, the region weathered the global financial crisis, but it will need to further strengthen its economies to handle short-term challenges, such as rising interest rates in the United States and other advanced economies, growing trade tensions, and slowing growth in China. It all adds up to greater uncertainty and more market turbulence for increasingly interdependent economies that have accumulated more debt.

Fundamental forces

In the longer term, though, more fundamental forces will test ASEAN leaders and populations. While Southeast Asia has significantly narrowed the gap separating it from the world's richest nations, further progress is not preordained. The region cannot afford to rest easy; rising to the next level will call for a mutually reinforcing set of bold reforms.

Automation and robotics are reducing demand for relatively unskilled labor.

Shifting demographics loom large among the coming challenges. In recent decades, the number of workers grew faster than the number of dependents, providing an impetus to economic growth. That demographic dividend is now starting to wane. The working-age population continues to grow in Indonesia and the Philippines, but it is projected to shrink rapidly in other countries, including Thailand and Vietnam. Simply put, Southeast Asia risks growing old before it grows rich.

In response, Southeast Asian nations will have to beef up their pension systems and social safety nets to care for the growing ranks of older citizens. Bringing more people into the labor force, especially women, will help keep the growth engine humming. With notable exceptions, such as in Vietnam, female labor participation rates remain low across Southeast Asia. Providing child care and flexible working arrangements can encourage more women to work.

Skills needed

Waning productivity growth is another obstacle. More advanced ASEAN economies are starting to lose some of their competitive advantage as wages rise. At the same time, automation and robotics are reducing demand for relatively unskilled labor; increasingly, manufacturing will require fewer, better-educated workers. To move beyond middle-income status, the region will no longer be able to depend on the existing growth model of labor-intensive manufacturing for export.

Advances in artificial intelligence and machine learning, while creating opportunities, present additional challenges. Workers will need education and training to prepare for the jobs of the digital age. Governments should also improve the business environment by investing more in research and development and upgrading roads, ports, and broadband infrastructure.

Of course, all this requires money. Taxes as a proportion of GDP, at 13 percent, are below the global average of over 15 percent. That will have to change if the region is to finance essential investments, unlock productivity growth, and prepare for an aging population. But raising more money won't be enough: strong policies and institutions will be needed to make sure that precious taxpayer money is spent wisely.

As trade patterns and technology reshape the competitive landscape, Southeast Asia will have to rely more on domestic demand and less on sales of goods outside the region. To that end, further integration will be needed. ASEAN has significantly reduced tariff barriers to trade in manufactured goods; it should further reduce trade costs and open its markets more fully to trade in services and the movement of labor.

The goal of completing an ASEAN trade in services agreement by 2025 will be a big step. If living standards are to rise further, the region cannot rely indefinitely on low-wage, low-skill service jobs in corner shops and restaurants; it will have to train more scientists and programmers, as well as professionals such as home health aides to care for the elderly. Investing more in its people and opening markets to expertise and technologies from abroad would advance that goal.

Of course, we must always remember that the goal of rapid growth is to improve living standards for the many, not the few. To be sustainable and command broad social support, economic policies must ensure inclusive growth. Governments should strengthen social safety nets, encourage competition, and challenge entrenched interests.

The region has made huge strides since the founding of ASEAN more than half a century ago, but significant challenges remain. Thankfully, with the right policies, Southeast Asia can rely on the creativity, resilience, and dynamism of its people to meet those challenges. The IMF has been an important partner in the region's development, and it stands ready to continue serving its Southeast Asian members in the future. FD

CHANG YONG RHEE is director of the IMF's Asia and Pacific Department.

ASIAN WOMEN AT WORK

As women advance in Asia's labor force, Vietnam is a standout

Angana Banerji, Albe Gjonbalaj, Sandile Hlatshwayo, and Anh Van Le

Rosie the Riveter's 21st century legacy is alive in Vietnam.

The fictional Rosie, depicted on posters and magazine covers, became the symbol of women who joined the US factory workforce during World War II, jump-starting the rise in female labor force participation in postwar America.

The Vietnam War had a similar effect in that nation, so that today the daughters and granddaughters of Vietnam's Rosies have made their country among the world's leaders when it comes to employment for women. Almost three-quarters of Vietnam's female working-age population has been in the labor force for at least two decades, one of the highest and most persistent rates in Asia and the world.

Why does this matter? Higher female labor force participation—the share of working-age women with a job or actively looking for employment—raises the economy's growth potential by increasing the pool of workers available for productive purposes. This can lean against the negative economic effects of aging, which shrinks the workforce and lowers growth.

Asia, the most populous continent, with 60 percent of the world's people, is aging rapidly. Bringing more women into the workforce is therefore crucial to reinforce Asia's economic dynamism and ensure its future prosperity, while also empowering the economic autonomy and aspirations of its female population. A 2018 report by the McKinsey Global Institute, "The Power of Parity: Advancing Women's Equality in Asia Pacific," estimates that equality for women in the region could increase collective annual GDP by 12 percent, or $4.5 trillion, by 2025.

Several researchers have also demonstrated that a larger presence of women in the workforce and the elevation of women to prominent positions can help foster income equality, diversify the economy, and boost the profitability and efficiency of businesses.

Trending up

Female labor force participation is trending up across Asia, with many other countries catching up to Vietnam. On average, female participation rates in Asia have increased by about 6 percentage points since 1990 (see Chart 1) and lie not far behind the levels seen in advanced Western economies (IMF 2018). Our forthcoming paper looks at the evolution of female labor force participation in Asia.

The improving overall picture reflects some convergence in female labor force participation rates in Asia toward the better performers in the region and globally.

Several countries with low participation rates before the Asian financial crisis successfully raised them by some 12 percentage points on average over 1996–2016. Australia, Hong Kong SAR, Malaysia, New Zealand, and Singapore recorded significant gains—above 10 percentage points—over the past decade, in line with improvements seen in nations such as Sweden, which has one of the highest female participation rates among advanced economies. Japan and South Korea have marginally improved upon historically stagnant or declining participation. Together these gains have lifted average female participation rates in the Asia-Pacific region in recent years.

Although female workforce participation has increased in general, cross-country differences have also been rising. Some countries have failed to keep up with improvements witnessed elsewhere in Asia.

The growing differences in female labor force participation rates across Asia reflect declining or stagnant participation in countries that had low participation to begin with, notably India, Indonesia, the Philippines, and Sri Lanka. Participation rates have also declined in China and Thailand, albeit from relatively high levels.

Vietnam's performance is particularly noteworthy. Its high female labor force participation rate outstrips the best performers among advanced Western economies (see Chart 2). And it has also succeeded in maintaining female labor force participation of some 70 percent for more than two decades—a feat unsurpassed even among advanced economies.

Drivers of female participation

To understand the reason for better outcomes in Asia, it is important to identify where improvements have been the largest.

As populations gray, the rising share of older workers tends to lower the workforce participation rate for both men and women, as older workers tend to be less active in the workforce. Yet in Asia, despite the negative effects from aging, participation has improved for prime-age female workers—those 25–54 years of age—even as a rise in school enrollment for younger workers, both male and female, has delayed their entry into the workforce (Anh and others, forthcoming).

These trends generally hold across all Asian countries, with a few exceptions—notably China, India, and Thailand—where prime-age female workers are becoming less attached to the workforce.

The economic cycle has a strong bearing on labor market developments. Slower growth or recessions raise unemployment, which can lead workers to drop out of the labor market as they grow discouraged or their skills atrophy. Some may delay entering the job market until the economy recovers.

Asian economies have benefited from strong growth in recent years, which has supported female labor force participation and countered the effects of aging. In this regard, the Asian experience is different from that of advanced Western economies, which bore the brunt of the global financial crisis and where the ensuing economic downturn dragged down female labor force participation, adding to pressures generated by aging (IMF 2018).

But growth and aging do not entirely explain variations in female labor force participation in Asia. Structural shifts in the economy and family-friendly policies have also played a role.

A growing body of work shows that female labor market outcomes are also the result of interrelated social, structural, and individual characteristics, as well as of labor market policies and institutions that affect labor market outcomes both generally and for female workers specifically. These factors influence people's decision to join the workforce and employers' decision to hire. The drivers include better infrastructure, more equal labor rights, low adolescent fertility rates, and the availability and affordability of child care, as well as cultural attitudes that affect women's engagement in the workforce.

The impact of policies may vary depending on the structure of the economy and the stage of economic and institutional development. For instance, in more advanced economies, the extent of urbanization and postsecondary education tends to be linked with higher female labor force participation because female workers tend to be employed in higher-skill jobs in the urban service sector. These factors are less closely tied to female labor force participation rates in low-income countries characterized by high informal employment in the rural (agricultural) sector.

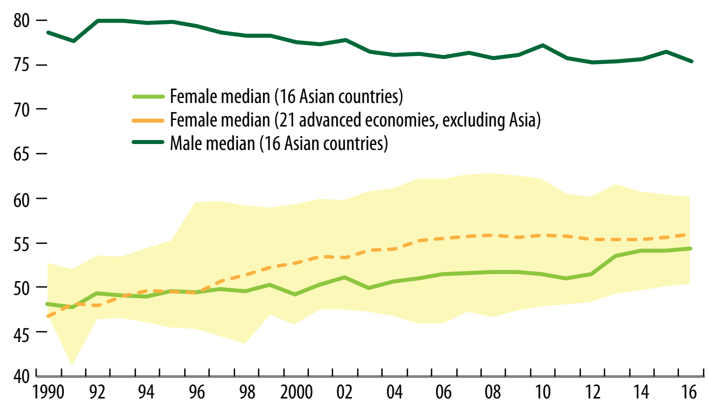
The group of Asian countries examined here covers a wide spectrum when it comes to the stage of economic development, labor market endowments, and policy and institutional settings. Some factors may—on average—be less important statistically in explaining changes in female labor force participation simply because they affect only smaller country subgroups.

Chart 1

Trending up gradually

Female labor force participation in Asia is improving and lies close to the average levels in advanced Western economies, but cross-country divergence has increased.

(labor force participation rate, percent)



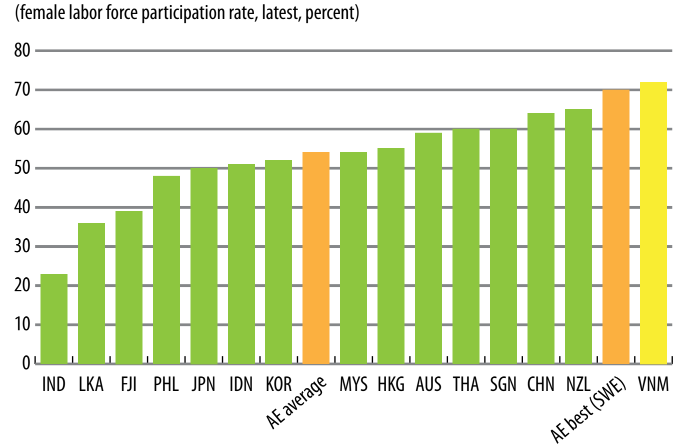
Sources: World Bank, World Development Indicators; and IMF staff calculations.
Note: Due to data unavailability, the figure excludes data for the following countries: Cambodia (1990–91, 2015–16); China (2011–16); Fiji (1990–95); India (1990, 2013–16); Vietnam (1990–95). Shaded area shows interquartile range.

Chart 2

Vietnam stands out

Vietnam's high female labor force participation rate outstrips the best performers among advanced Western economies.

(female labor force participation rate, latest, percent)

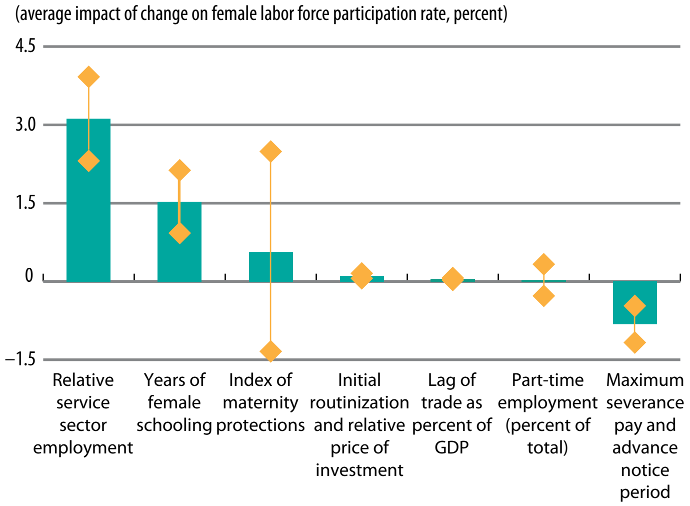


Sources: World Bank, World Development Indicators; and IMF staff calculations.
Note: Data are for 2016. Latest data for Cambodia, China, and India are for 2014, 2010, and 2012, respectively. AE = 21 advanced economies excluding Asia. Data labels in the figure use International Organization for Standardization (ISO) country codes.

Chart 3

Motivating factors

Higher education levels and greater opportunity for service sector employment are some of the key reasons women are joining the labor force in Asia.

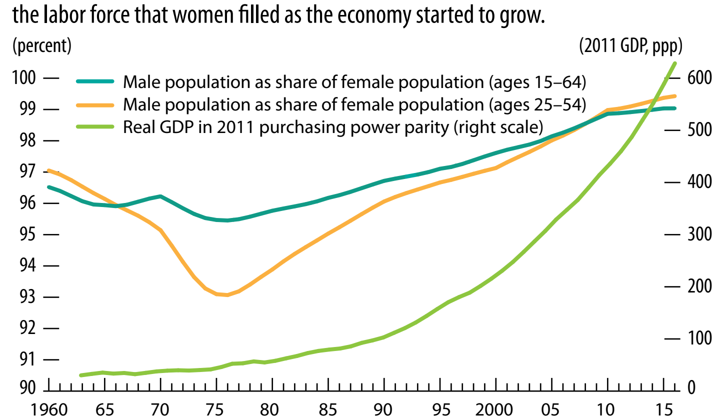


Source: IMF staff calculations.
Note: The bars denote the estimated change in female labor force participation (25 to 54 years of age) following a one-unit increase in the variable. The vertical lines show the 90 percent confidence interval. The underlying regressions all include country and time fixed effects.

Chart 4

Vietnam War's impact

The war led to a relative decline in Vietnam's male population, creating a void in the labor force that women filled as the economy started to grow.



Source: World Bank, World Development Indicators.

Among Asian economies, a larger service sector (including the public sector) relative to the industrial sector—and higher education levels—stand out as most closely associated with greater female labor force participation (see Chart 3). The openness of the economy (measured by the share of trade in GDP) and the pace of urbanization (not shown) have positive but smaller effects on average given the diversity of Asian countries.

While automation (or routinization) hurts female labor force participation in some countries, this is not the case across all of Asia. This is because of the relatively low exposure to routinization in some countries (given the large share of agriculture, for instance) and the high cost of automation.

Family-friendly policies tailored to address specific constraints faced by women in the workforce—such as maternity protection, child care, and part-time employment—play a positive role. But data gaps and the large informal sector in several Asian countries limit the size of the overall effect. Moreover, the effectiveness of family-oriented policies depends on the institutional capacity to enforce legally mandated provisions, which varies across Asian countries.

Finally, labor market rigidities that make it difficult for businesses to let go of workers can have a chilling effect on employers' decisions to hire female workers.

The special case of Vietnam

How did Vietnam achieve several decades of high female labor force participation?

While the war makes Vietnam a special case, the country's experience has lessons for the rest of Asia in advancing female labor force participation. The initial boost to female employment in Vietnam was maintained over time with the help of policy choices: economic reforms and a major push toward improving education that emphasizes gender equality.

The impact of the Vietnam War in jump-starting female labor force participation parallels the rise in female labor force participation in the United States following World War II, according to work by Claudia Goldin and Claudia Olivetti published by the National Bureau of Economic Research.

The Vietnam War led to a sharp decline in the male population relative to the size of the female population, especially in the prime-age group (see Chart 4). As the economy started to grow following the launch of the Doi Moi reforms in 1986, the available supply of labor was predominantly female, and it is no surprise that women stepped into the labor force in greater numbers.

The Doi Moi reforms aimed to build a "socialist-oriented market economy" by encouraging private businesses, ending price controls, and phasing out government enterprises, among other changes. These brought rapid economic growth, opened the economy to trade, and led to rapid urbanization. While a large share of the female labor force remained, and remains, engaged in agriculture, female wage workers increasingly joined the large service and foreign direct investment sectors.

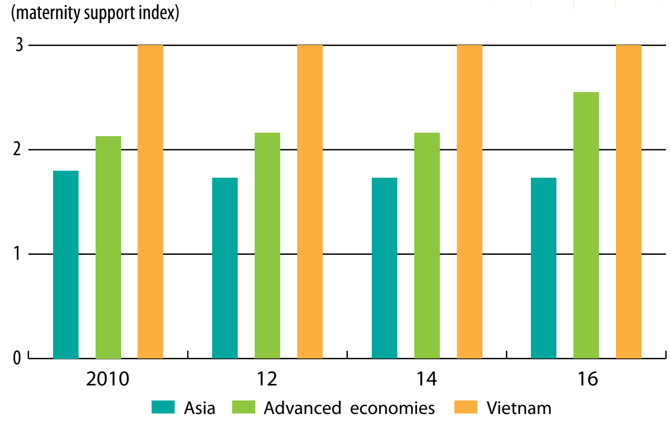
Goldin and Olivetti show that the postwar rise in US female participation was persistent among more highly educated workers, and more short term among lower-skilled workers. In Vietnam, the Doi Moi reforms were accompanied by a major push toward improving education—Education for All (EFA). The first EFA plan (1993–2000) emphasized gender equality for all levels of education. These efforts paid dividends by ensuring that the postwar increase in female labor force participation was not short-lived.

In Vietnam, men and women graduate at roughly the same rate at the postsecondary level. It is one of the few Asian countries to have succeeded in translating gender parity in educational attainment into gender equality in labor force participation rates. The relative success in bringing high-skilled women to the workforce is also a function of generous family-friendly laws regarding child care and maternity in Vietnam (see Chart 5). The nation has also strengthened its legal framework to guarantee equality and gender nondiscrimination.

Chart 5

Maternity support

Generous family-friendly laws have helped bring more women into Vietnam's workforce.



Sources: World Bank, Women, Business, and the Law (WBL); and IMF staff calculations.
Note: The maternity support index ranges from 1 to 3, in which 1 denotes a low level of support. The index is the sum of three components: (1) whether mothers are guaranteed an equivalent position after maternity leave (1 = yes, 0 otherwise); (2) whether the law mandates maternity leave (1 = yes, 0 otherwise); and (3) who pays for maternity leave benefits (1 if government pays for some or all maternity leave benefits, 0 otherwise). Advanced economies comprise 21 advanced economies excluding those in Asia. Asia covers Australia, Cambodia, China, Fiji, Hong Kong SAR, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Singapore, South Korea, Sri Lanka, and Thailand.

More to be done

While female labor force participation is improving in Asia, there is much scope to further improve outcomes and spread good policies to all parts of Asia. Recent successes have been partly the result of strong economic conditions, which may not be able to support female labor force participation once the economic cycle turns. Recent gains may also be reversed as the forces of aging and digitization gather speed.

Digging below the headline participation numbers, there is a need to improve gender equality across other dimensions, such as pay gaps, high-level representation, and access to wage employment, including in better-performing Asian countries such as Vietnam. The policy specifics may vary across countries, depending on their level of development, institutional capacity, and cultural and societal norms. Access to high-quality education, and the effective implementation of family-friendly laws, are likely to be crucial in all countries. Policies that sustain strong economic growth would also help support the steady improvements in female participation. FD

ANGANA BANERJI is a senior economist, **SANDILE HLATSHWAYO** is an economist, and **ALBE GJONBALAJ** and **ANH VAN LE** are both research assistants, all in the IMF's Asia and Pacific Department.

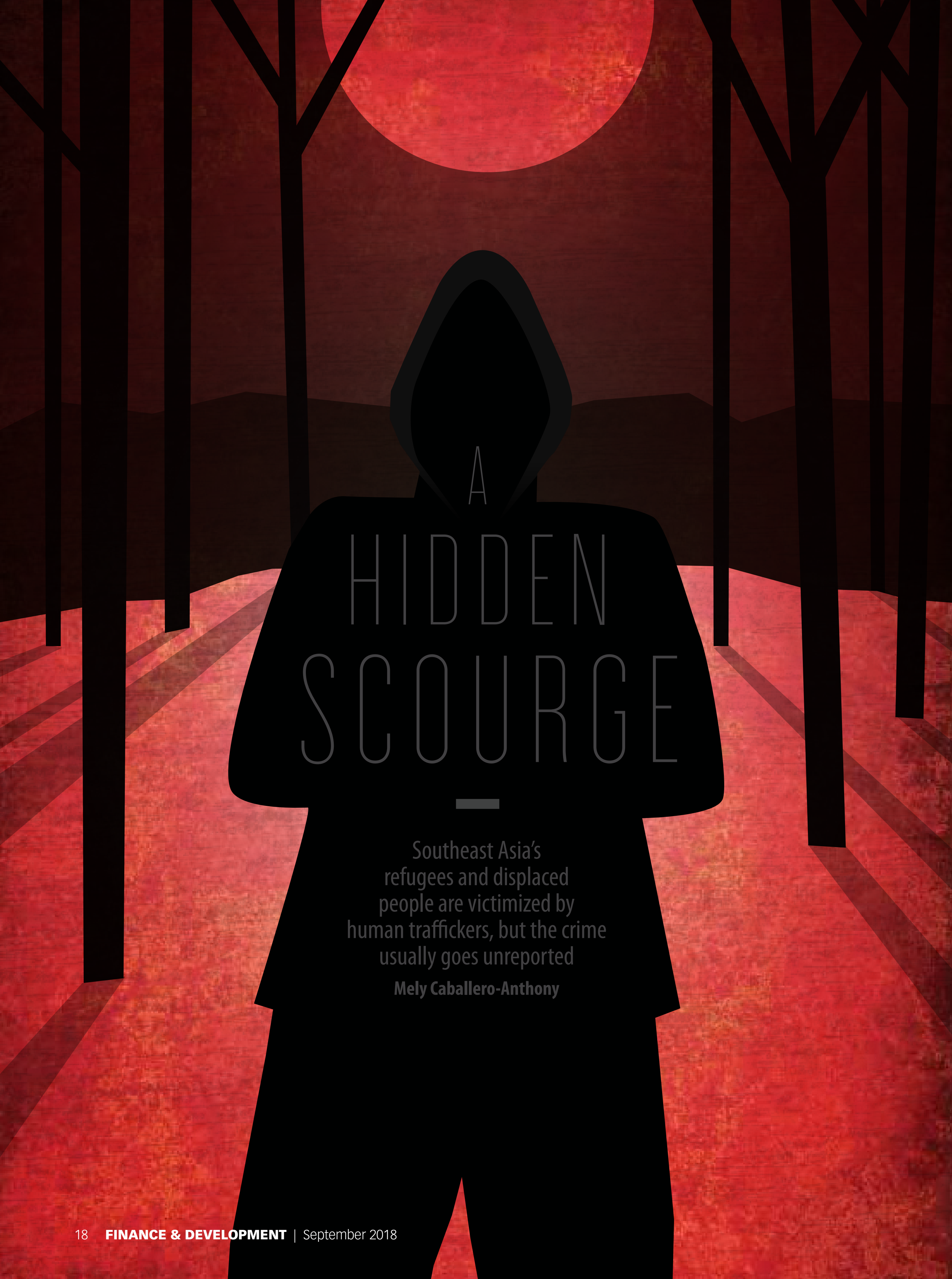
References:

Acemoglu D., D. Autor, and D. Lyle. 2004. "Women, War and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury." *Journal of Political Economy* 112 (3).

Anh, J., Z. An, J. Bluedorn, G. Ciminelli, Z. Koczan, D. Malacrino, D. Muhaj, and P. Neidlinger. Forthcoming. "Work in Progress: Youth Labor Markets in Emerging Market and Developing Economies."

Goldin, C., and C. Olivetti. 2012. "Shocking Labor Supply: A Reassessment of the Role of World War II on U.S. Women's Labor Supply." NBER Working Paper 18676, National Bureau of Economic Research, Cambridge, MA.

International Monetary Fund (IMF). 2018. "Labor Force Participation in Advanced Economies: Drivers and Prospects." *World Economic Outlook*, Washington DC, April.



A HIDDEN SCOURGE

Southeast Asia's refugees and displaced people are victimized by human traffickers, but the crime usually goes unreported

Mely Caballero-Anthony

Security threats are no longer just about military confrontation, territorial disputes, and nuclear proliferation. They also arise from nonmilitary dangers such as climate change, natural disasters, infectious diseases, and transnational crimes. Among these nontraditional security threats, human trafficking looms large, especially in Southeast Asia, where natural disasters and military conflicts lead to displaced people and refugees, who are particularly vulnerable to this heinous crime.

In Southeast Asia and elsewhere, nontraditional security threats have two defining features: they are transnational and complex. The scourge of human trafficking, sometimes called "modern slavery," affects some 40 million men, women, and children trapped in a horrendous web of forced labor, sexual exploitation, and coerced marriage (ILO and Walk Free Foundation 2017). According to some estimates, human trafficking is now one of the world's most lucrative organized crimes, generating more than $150 billion a year. Two-thirds of its victims, or 25 million people, are in East Asia and the Pacific, according to the Walk Free Foundation's *Global Slavery Index 2016*.

These shocking figures are only estimates, since accurate data are difficult to obtain, largely because human trafficking is underreported, underdetected, and thus underprosecuted. It remains largely a hidden crime, since victims are reluctant to seek help for fear of intimidation and reprisals. Victims, not perpetrators, are often the ones who suffer physical abuse and prosecution for illegal migration.

Leading destinations

Alarming trends in human trafficking in East Asia and the Pacific have raised the urgency of dealing with the menace. More than 85 percent of victims were trafficked from within the region, according to the *Global Report on Trafficking in Persons 2016*, published by the United Nations Office on Drugs and Crimes (UNODC). China, Japan, Malaysia, and Thailand are destinations from neighboring countries. Within Southeast Asia, Thailand is the leading destination for trafficking victims from Cambodia, Lao P.D.R., and Myanmar, according to the Walk Free Foundation's *Global Slavery Index 2016*. Malaysia has been a destination for victims from Indonesia, the Philippines, and Vietnam. Fifty-one percent of victims in East Asia were women, and children comprised nearly a third, according to the UNODC report.

During 2012–14, more than 60 percent of the 7,800 identified victims were trafficked for sexual exploitation. Females are also victims of domestic servitude and other forms of forced labor. In many cases, the women and children are from remote and impoverished communities. Forced marriages of young women and girls are rampant in the Mekong region of Cambodia, China, Myanmar, and Vietnam.

The rise in child trafficking in the region is linked to the alarming increase in online child pornography, including live streaming of sexual abuse of children. It is a lucrative business estimated to generate $3–$20 billion in profit a year. Countries such as Cambodia and Thailand have been identified as major suppliers of pornographic material.

Many Southeast Asian victims migrate in search of paid jobs but wind up forced to labor in fishing, agriculture, construction, and domestic work, according to the International Organization for Migration (IOM). Most of them are men who cannot repay exorbitant fees charged by unauthorized brokers and recruiters and so become vulnerable to debt bondage and other forms of exploitation, according to the US Department of State's *Trafficking in Persons Report 2018*. The Asia-Pacific region is the world's most lucrative when it comes to forced labor (see chart). Forced labor in the fishing industry has been widely reported in Cambodia, Indonesia, and Thailand. Victims are paid too little or not at all for working up to 20 hours a day.

Conflicts, disasters

Traffickers also choose their victims from among the massive numbers of people displaced by armed conflict and natural disasters, who in their desperate attempt to find safety and protection

ART TEXTURE: ISTOCK / PHONGPHAN5922; DESIFOTO are particularly vulnerable. Typhoons and other natural disasters are becoming more intense and frequent in Southeast Asia because of climate change, adding to the flow of potential victims, including children who are orphaned or separated from their families. According to the IOM's *World Migration Report 2018*, 227.6 million people have been displaced since 2008.

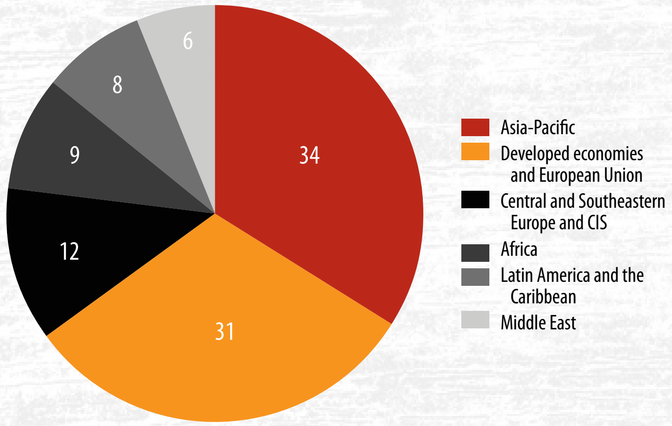
After Typhoon Haiyan, one of the strongest tropical storms ever recorded, struck the Philippines in 2013, survivors were reportedly forced to work as domestic servants, beggars, prostitutes, and laborers. Drought-affected migrants have been smuggled from Cambodia into Thailand (Calma 2017; Tesfay 2015). These migrants tend to take illicit and dangerous routes, making them easy prey for criminal networks. Yet despite growing evidence that climate change increasingly drives forced migration, the link with human trafficking remains relatively unexplored. The IOM notes that climate change and natural disasters are rarely regarded as contributing to human trafficking in global discussions or national-level policy frameworks.

Conflicts in Myanmar and the southern Philippines are another major source of vulnerable refugees, according to the US Department of State's *Trafficking in Persons Report 2017*. More than 5,000 Rohingya from Myanmar have been trafficked or smuggled into various parts of Bangladesh, rescued by police, and brought back to refugee camps. Traffickers have reportedly also preyed on ethnic minorities affected by internal conflicts in Myanmar. The country's Karen, Shan, Akha, and Lahu women are trafficked for sexual exploitation in Thailand, while Kachin women are sold as brides in China. Armed conflict makes children even more vulnerable. The United Nations has reported that armed groups in the Philippines, including Moro rebels and communists, recruit children, at times through force, for combat and noncombat roles.

Lucrative trade

Human trafficking is estimated to be one of the most profitable forms of organized crime, generating $150.3 billion a year in profit globally. The Asia-Pacific region is the most lucrative.

(estimated average annual profits generated from trafficked forced laborers, percent of global profits)



Source: International Labour Organization. 2015. *Profits and Poverty: The Economics of Forced Labor*. Geneva.
Note: CIS = Commonwealth of Independent States.

International protocols

What is being done to fight human trafficking? Two international agreements regard human trafficking as a transnational crime: the UN Convention against Transnational Organized Crime, and the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, also known as the Palermo Protocol. The Palermo Protocol divides the offense into three components: the act of recruitment, transportation, transfer, harboring, and receipt of persons; the means—the use of force and other forms of coercion, such as abduction and deception; and the purpose—for prostitution, forced labor and slavery, and the removal of organs.

The core of the anti-trafficking regimes is protection of borders by controlling the flow of illegal migration. Article 11 of the Palermo Protocol, for example, requires states to strengthen border controls to prevent and detect trafficking in persons, and to enact legislation to prevent commercial carriers from being used for trafficking. Protecting states' security against human trafficking is also about helping them fight other associated crimes, including smuggling, prostitution, organ trafficking, and money laundering.

Aside from these two international legal regimes, Southeast Asia in 2015 adopted the ASEAN Convention Against Trafficking in Persons, Especially Women and Children. This document complements the international anti-trafficking framework. At the subregional level, the Coordinated Mekong Ministerial Initiative Against Trafficking also closely follows the Palermo Protocol framework

Victims need access to legal protection, health care, and temporary shelter.

and has led to several bilateral agreements aimed at greater cooperation between states in the Greater Mekong region. Beyond Southeast Asia, the Bali Process was set up in 2002 as a platform for dialogue among countries in the Asia-Pacific. Its goal is to raise awareness and build capacity to combat human smuggling, trafficking, and transnational crime. With the transnational nature of human trafficking, both international and regional regimes encourage governments to share information, coordinate policies and efforts to criminalize trafficking offenses, provide mutual legal assistance, protect victims, and prosecute offenders.

Corrupt officials

Still, huge challenges remain, notably the serious lack of accurate and reliable information on the scale and scope of trafficking, which makes it difficult to measure the effectiveness of anti-trafficking policies. The gap between the legal framework and the enforcement of relevant laws at the national level poses problems as well. Despite political will, law enforcement agencies lack the skills, knowledge, and resources to understand and respond to the evolving complexities of human trafficking. Collusion between corrupt government officials and criminal networks is another severe problem. Traffickers are known to enlist the help of corrupt officials in recruiting victims and moving them across borders. The discovery of mass graves of trafficking victims along the border between Malaysia and Thailand in 2015 is gruesome evidence of such collusion; a Thai general and police officers were among 62 people convicted of human trafficking and other crimes connected with the case, according to news reports.

Finally, victims of trafficking receive inadequate protection and assistance. A common critique of anti-trafficking regimes is that most efforts have focused on criminalizing and prosecuting traffickers, as opposed to preventing the crime and protecting its victims. The focus on criminalization and prosecution may have increased awareness, but more should be done to prevent trafficking through effective law enforcement and efforts to educate vulnerable groups about its dangers.

Similarly, there must be greater effort to address the needs of victims. In addition to personal safety and security, victims need access to legal protection, health care, and temporary shelter, as well as assistance with repatriation and integration. The UNODC stresses the need to help victims overcome the trauma and stigma associated with trafficking and to build trust in law enforcement, so that victims seek help and cooperate in prosecuting traffickers.

The fight against human trafficking requires better national criminal justice systems to effectively enforce anti-trafficking laws, and these efforts must be part of a broader, multitrack approach that addresses the socioeconomic and political dynamics of trafficking. The complexity of the challenge means it cannot be tackled by any one actor, such as the state, or by focusing only on one aspect of the issue, such as sexual exploitation or forced labor. A comprehensive, more human-centered approach compels us to delve deeper into the other drivers of human trafficking, including poverty, severe exploitation, and political repression. This requires active participation and partnership between government and civil society groups, the private sector, and international foundations. FD

MELY CABALLERO-ANTHONY is associate professor and head of the Centre for Non-Traditional Security at the S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore.

References:

Calma, Justine. 2017. "Climate Change Has Created a New Generation of Sex-Trafficking Victims." *Quartz*, May 2.

International Labour Organization (ILO) and Walk Free Foundation. 2017. *Global Estimates of Modern Slavery: Forced Labour and Forced Marriage*. Geneva.

Tesfay, Netsanet. 2015. *Impact of Livelihood Recovery Initiatives on Reducing Vulnerability to Human Trafficking and Illegal Recruitment: Lessons from Typhoon Haiyan*. Geneva: International Organization for Migration and International Labour Organization.

Boiling Point

One of the most vulnerable regions to climate change is witnessing the world's biggest jump in greenhouse gas emissions

Amit Prakash

The Blue Dragon, a small riverfront eatery in Hoi An, Vietnam, serves morsels of local trivia to tourists along with $2 plates of crisp spring rolls and succulent noodles. On its damp-stained walls, the Blue Dragon's owner, Nam, marks the level of annual floods that submerge this popular UNESCO World Heritage town renowned for its bright-yellow-painted buildings.

Last November, days before presidents and prime ministers arrived in nearby Da Nang for a meeting of the Asia Pacific Economic Cooperation forum, the water level at the Blue Dragon rose to 1.6 meters (5.25 feet) when typhoon-driven rains lashed the city. Patrons scurried to safety as pots and pans floated by.

"Every time we get big rains or typhoons, it floods and everything shuts down for three to four days," says Nam, 65, who goes by one name. "Last year people had to escape in boats because the water was too high."

Typhoons and floods are becoming more intense and frequent as Vietnam and the rest of Southeast Asia bear the brunt of climate change. Long coastlines and heavily populated low-lying areas make the region of more than 640 million people one of the world's most vulnerable to weather extremes and rising sea levels associated with global warming. Governments are under pressure to act quickly or risk giving up improvements in living standards achieved through decades of export-driven growth.

Southeast Asia faces a dual challenge. It not only must adapt to climate change caused largely by greenhouse gases emitted over decades by advanced economies—and more recently by developing economies such as China and India—it also must alter development strategies that are increasingly contributing to global warming. The region's growing reliance on coal and oil, along with deforestation, are undermining national pledges to curb emissions and embrace cleaner energy sources.

Economic impact

Average temperatures in Southeast Asia have risen every decade since 1960. Vietnam, Myanmar, the Philippines, and Thailand are among 10 countries in the world most affected by climate change in the past 20 years, according to the Global Climate Risk Index compiled by Germanwatch, an environmental group. The World Bank counts Vietnam among five countries most likely to be affected by global warming in the future.

The economic impact could be devastating. The Asian Development Bank (ADB) estimates Southeast Asia could suffer bigger losses than most regions in the world. Unchecked, climate change could shave 11 percent off the region's GDP by the end of the century as it takes a toll on key sectors such as agriculture, tourism, and fishing—along with human health and labor productivity—the ADB estimated in a 2015 report. That's far more than its 2009 estimate of a 6.7 percent reduction.


PHOTO: ISTOCK/HARVEPINO

Hoi An flood in Vietnam

Bulldozers clean up a recently constructed road deep in the vast interior of the central Kalimantan jungle, Indonesia.

The region could shift to a "new climate regime" by the end of the century, when the coolest summer months would be warmer than the hottest summer months in the period from 1951 to 1980, says a 2017 study by the ADB and the Potsdam Institute for Climate Impact Research. In the absence of technical breakthroughs, rice yields in Indonesia, the Philippines, Thailand, and Vietnam could drop by as much as 50 percent by 2100 from 1990 levels. Hotter weather is also pushing tropical diseases such as malaria and dengue fever northward to countries like Lao P.D.R., where they were formerly less prevalent.

While the region's greenhouse gas emissions have been low relative to those of advanced economies in per capita terms, that is starting to change, largely because of its increasing reliance on coal and other fossil fuels. Between 1990 and 2010, emissions of carbon dioxide increased faster in Southeast Asia than anywhere else.

Energy mix

Energy demand will grow as much as 66 percent by 2040, predicts the Paris-based International Energy Agency (IEA). Coal alone will account for almost 40 percent of the increase as it overtakes cleaner-burning natural gas in the energy mix. That poses a risk to the Paris Climate Agreement's goal of limiting the average global temperature gain to 2 degrees Celsius above preindustrial levels. All 10 countries that make up the Association of Southeast Asian Nations (ASEAN) signed the Paris Agreement.

"At the present rate, Southeast Asia, coupled with India and China, could wipe out gains from energy efficiency and emissions reductions elsewhere in the world," says Srinivasan Ancha, the ADB's principal climate change specialist.

Demand for coal is partly driven by the fuel's relative abundance and its low cost compared with oil, gas, and renewable energy. Coal-fired power plants are also easier to finance than renewable energy projects. Indonesia is the world's fifth-largest coal producer and its second-largest net exporter, while Malaysia and Thailand are the eighth- and ninth-largest net importers, IEA data show.

PHOTOS: GETTY IMAGES/ MANGIWAU; ISTOCK/ BEYONDIMAGES

Reliance on coal is projected to grow: Vietnam's coal-power capacity under active development is the third largest in the world after China's and India's, according to a March 2018 report by environmental groups, including the Sierra Club and Greenpeace. Indonesia and the Philippines rank fifth and tenth, respectively.

Vanishing forests

Deforestation is another major source of greenhouse gases. In Indonesia and Malaysia, home to the world's largest forestlands, trees are cut down to make way for farms to feed growing populations and for the production of pulp and paper and palm oil, which are big sources of export revenue. Deforestation accounts for almost half of Indonesia's emissions—more than fossil fuels, though these are fast catching up.

Clearing forests in peatlands and peat swamps poses additional problems. Draining peat swamps releases thousands of tons of carbon dioxide trapped in each hectare of soil. The problem is compounded when farmers burn the dry peat, releasing the gas more quickly. Smoke from such fires has repeatedly choked neighboring Singapore and Malaysia since 1997; emissions from the most recent incident in 2015 exceeded those of the entire European Union, according to Reuters.

Rapid economic growth and urbanization are contributing to climate change while also magnifying its impact. Migrants from rural areas flock to cities, which emit more heat. New construction in floodplains blocks waterways, leaving cities more vulnerable to floods. And the more cities grow, the greater the damage from increasingly frequent floods and storms.

"You have to unravel the impact of climate change, which is certainly there, and economic development and population growth," says Marcel Marchand, a Hanoi-based expert in flood risk management. "The impact of a flood or storm is now generally more than in the past. That is not only because there are more hazards, or because hazards are more severe, but also because there are more people, and cities are becoming bigger."

Marchand is advising on a $70 million internationally funded project that will provide more timely warning of floods to the residents of Hoi An. He attributes flooding, in part, to the construction of reservoirs in catchment areas upstream, which has changed river flows. The reservoirs become overwhelmed by extreme rainfall events, and excess water released downstream floods Hoi An and nearby Da Nang.

Both cities are growing fast as a tourism boom attracts migrants seeking work. A decade ago, Da Nang, Vietnam's fourth-largest city, had just one luxury resort. Now it boasts almost 90 four- and five-star hotels, many of them dotting the 30-kilometer coastal road to Hoi An. The flow of workers is swelling Da Nang's population, which is forecast to surge to 1.65 million by 2020 from 1 million today, according to World Bank estimates.

The more cities grow, the greater the damage from increasingly frequent floods and storms.

While tourism creates jobs, related infrastructure development also indirectly contributes to coastal erosion that makes the area more vulnerable to storm surges and rising sea levels. The shoreline along Hoi An's popular Cua Dai Beach receded by 150 meters in the years from 2004 to 2012, according to a report prepared by the Quang Nam provincial People's Committee. Floodwalls and sandbags have become eyesores for vacationers.

"In the last two decades the rainfall pattern has changed and increased significantly," says Phong Tran, a technical expert at the Institute for Social and Environmental Transition-International (ISET-International), which works with several Vietnamese cities to develop climate resilience.

Dry spells

Phong worries that rising sea levels, along with prolonged dry spells, will cause salinity intrusion and hurt agriculture in the fertile Mekong Delta, one of the world's most densely populated areas. The delta is Vietnam's food bowl, producing more than half of its rice and other staples and over 60 percent of its shrimp, according to the Manila-based ADB.

Some 70 percent of Vietnam's population lives along its 3,200-kilometer coastline and in the low-lying delta. Other Southeast Asian nations are similarly vulnerable.

Indonesia has one of the world's longest coastlines at 54,700 kilometers. In the Philippines, which has 36,300 kilometers of coastline, 20 typhoons on average make landfall yearly, with increasing destructiveness. Cambodia, Lao P.D.R., and Thailand are also affected by storms and excessive rain, as well as by heat extremes that take a toll on agriculture and human health.

Southeast Asian governments, acutely aware of the magnitude of the threat, have pledged to reduce emissions. They also recognize the need to move toward low-carbon developmental strategies. ASEAN leaders approved a plan that targets a 23 percent share of renewables in the region's energy mix by 2025, up from 10 percent in 2015. The need to curb deforestation also figures prominently in national and regional policy agendas.

Yet, promised emission cuts are partly or wholly conditional on international funding. Indonesia has pledged to reduce emissions by 29 percent by 2030 and said it could increase that to 41 percent with outside support. Vietnam's analogous targets are 8 percent and 25 percent. The Philippines has made only a conditional pledge, of a 70 percent reduction. Even these conditional pledges will result in higher global warming than envisaged under the Paris Agreement, highlighting the need for more ambitious goals.

While the region has seen increases in renewable energy sources, particularly solar and wind, their limited generation capacity means countries remain reliant on fossil fuels. Consumption of all types of fuels is rising as governments strive to provide universal access to electricity and petroleum-based fuels for cooking and transport. The IEA estimates that 65 million Southeast Asians lack electricity and 250 million use biomass, such as firewood and animal manure, for cooking fuel.

National goals for reducing fossil fuel use often conflict with policies to subsidize the cost of petroleum products.

Policy conflicts

National goals for reducing fossil fuel use often conflict with policies to subsidize the cost of petroleum products and electricity for the benefit of the poorest sections of society. Such subsidies not only boost fuel demand and render cleaner-burning fuels and renewable energy less competitive, they are also estimated to cost governments more than what it would take to meet the region's Paris Agreement goals, according to the ADB-Potsdam Institute study.

Given the political and practical difficulties of cutting subsidies and encouraging the adoption of low-carbon technology, preventing deforestation may be the most effective way to cut emissions. Indonesia and Malaysia stand to earn billions of dollars in carbon credits; preserving forests would also cost less than radically cutting fossil fuel emissions and buying carbon credits.

According to analysts at the World Resources Institute, just enforcing Indonesia's 2011 moratorium, which prohibits clearing certain primary forests and peatlands, could eliminate 188 million tons of carbon dioxide emissions each year, or about 60 percent of France's total output in 2016. Increasing agricultural productivity could eliminate the need to clear forests, the institute said in a 2017 working paper.

Global players

The IEA sees the emergence of affordable low-carbon technologies as a path toward greater energy efficiency as declining costs of solar and wind energy boost investment in local manufacturing. Malaysia and Thailand, for example, are fast becoming global players in the manufacture of solar panels, with the help of Chinese investors seeking to circumvent antidumping duties imposed by the European Union and the United States.

Both countries may need to seek new markets after the United States this year announced plans for new tariffs on solar-panel imports as part of its crackdown on alleged unfair trade practices by Chinese companies. But with a significant increase in investment in renewable energy generation witnessed in Southeast Asia since the start of this century, the region is potentially a huge market for such products. Even so, incentives such as tax breaks, duty-free imports, and preferential loans, along with easier access to financing, will be needed to increase investment in renewables and encourage adoption of more energy-efficient technologies.

"Policies and recommendations alone are not enough," says Phong, from ISET-International in Vietnam. "Businesses need incentives to embrace renewable energy or environmentally friendly technologies, as well as for encouraging reforestation." FD

AMIT PRAKASH is a Singapore-based journalist and founder of FINAL WORD, a content and communications consultancy.

Sreynith Hak (left) and her mother on a visit back to her village.

Passing the Baton

With brighter prospects than their parents had, Southeast Asian youth get ready to take on the world

Jeremiah Overman, Vina Salazar, and Gembong Nusantara

More than half of the population of Southeast Asia is under 30. Technology shapes the way youth in the region live and work, even as they adapt it to their own unique circumstances. In some ways, these young people will inherit a better world than their parents knew, with higher income potential, increased access to education, and vast technological possibilities. They'll also face serious issues, such as the problem of climate change and challenges to openness and human rights. The following profiles offer a glimpse at the lives of three young Southeast Asians as they pursue their dreams of the future.

Bright lights, big city

Sreynith Hak is something of an oddball. Her friends from the village where she grew up have mostly all coupled up, some in arranged marriages. "I don't judge them, because they are happy." But that is not the life for her.

Hak, 25, moved to Phnom Penh eight years ago to pursue a bachelor's degree in media management. "I like to hear people's stories," the freelance editor and film producer says. Cambodia's capital offered her much more opportunity than the small town where her parents and siblings still live. "I can see more of the world; I can do what I want," she says.

Hak is well educated, which sets her apart from many Cambodian women in the labor force. In 2014, 84 percent of employed women 15 and older had a primary school education or less, compared with 76 percent of employed men, according to the Asian Development Bank's Promoting Women's Economic Empowerment in Cambodia.

As a freelancer, Hak ekes out a living, taking care to set money aside from month to month in case her

PHOTO: ISTOCK/JAMIELAWTON

Above, Sreynith Hak and colleagues work on a video project; at right, Hak enjoys a quiet moment at her parents' home in the countryside.

PHOTO: SAM JAM

pipeline of projects runs dry. "You have to be flexible in how much you spend each month," she says. Her modest income allows for simple pleasures—going to exhibitions, doing yoga, ordering dinner through an app, saving up for travel.

Hak is not alone in seeking a better life in the big city. Nearly 60 percent of rural migrant women move to Phnom Penh, says the Asian Development Bank. But even though poverty rates have fallen, Cambodian girls and women experience greater vulnerability as a result of prevailing social norms and have less access to resources and job opportunities than boys and men.

Strong and independent, Hak too has felt vulnerable. Women and men are not yet equal in Cambodia, she says. Sometimes when working on the set of a video shoot, she returns home late at night and faces harassment from men on the street. She says her parents would rather see her in a salaried position, leading a more conventional life.

But Hak's mother, a teacher whose parents were killed by the Khmer Rouge, accepts her choice. Aware that her daughter's prospects are far more promising than hers at the same age, she doesn't pressure her to move back home. She is content to see her daughter on the occasional visit to her hometown, which has become easier now that the roads are better.

Hak is patient, relishing life in the capital but driven by the desire to achieve career success one day. "I have my own timeline, my own clock," Hak says. "I want to prove to people that I can do it—maybe even better than some guy."

Reported by **JEREMIAH OVERMAN**, Phnom Penh, Cambodia

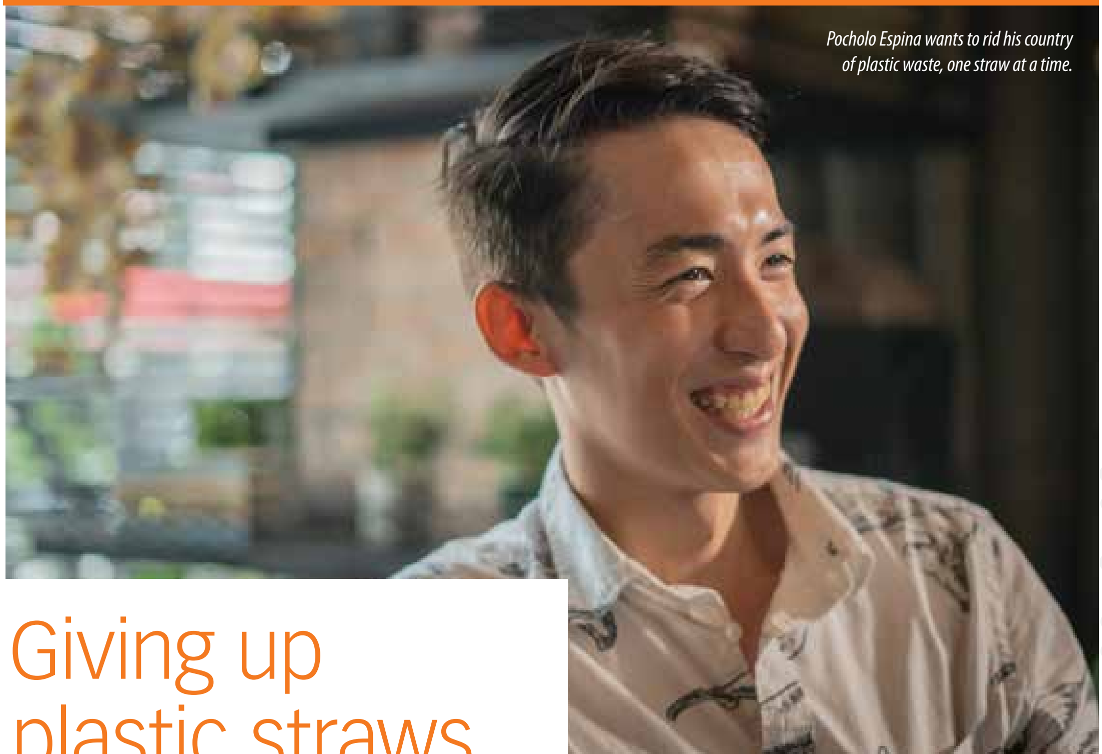
The last straw

Pocholo Espina, 22, always thought he would grow up to be a doctor or lawyer. Instead, the young Manila resident is the founder and CEO of Sip PH, a company that makes and distributes stainless steel straws.

It all started when Espina was a student at Ateneo de Manila University. He got interested in the zero-waste movement, which promotes a lifestyle that minimizes the amount of waste sent to landfills by encouraging the reuse of products. Espina had difficulty finding a metal straw for his own use. So he purchased some in bulk and sold the rest, discovering that there was strong demand for the product. Investing 40,000 pesos of his savings, he started a company to produce reusable metal straws for environmentally conscious consumers.

Sip is still a small-scale business, but Espina has gone from a tiny customer base built by word of mouth to thousands of orders through social media and via a few shops in Manila. Earlier this year, he was interviewed on CNN Philippines.

Espina practices skin diving and sees it as a personal mission to keep his country's oceans and waterways clean. "The Philippines is at the



Pocholo Espina wants to rid his country of plastic waste, one straw at a time.

PHOTO: VINA SALAZAR

Giving up plastic straws, he reckons, is a small sacrifice ordinary people can make every day.

very center of marine biodiversity in the world," he says. Composed of 7,641 islands, the country is located in the "Coral Triangle," an area recognized as the global center of marine biodiversity. It includes portions of the waters of the Philippines, Malaysia, Indonesia, Timor-Leste, Papua New Guinea, and the Solomon Islands.

The area's marine life comprises not just coral reefs but also seagrass beds, mangrove and beach forests, fisheries, other invertebrates, seaweed, and marine mammals. "Once you see its beauty firsthand, you'd understand why you have a pretty good reason for protecting it," Espina says.

The Philippines bans incineration of trash, and the disposal of solid waste poses a major challenge. (Sip PH's website says that the Philippines is the third largest disposer of ocean plastic in the world.) Increasingly, the plastic waste problem is attracting the world's attention—global coffeehouse chain Starbucks just announced its plan to phase out plastic straws, which are difficult to recycle, and others are following suit.

Espina's concern for the environment is typical of his generation. According to the World Economic Forum's 2017 Global Shapers survey, nearly half of all young people rank climate change and the destruction of nature as the most serious issues affecting the world today. And the IMF finds that, in addition to its harmful effects on health, climate change has potentially sizable economic costs.

Rather than trying to tackle the broader problem of plastic waste, Espina decided to focus on a smaller, more manageable issue. Giving up plastic straws, he reckons, is a small sacrifice ordinary people can make every day.

Over the long term, Espina would like to get more involved in advocacy for the environment. For now, he's had to focus on the bottom line. "People often ask, in a social enterprise, which is more important—the social aspect or the enterprise aspect? Well, it has to be the enterprise, because without that there wouldn't be a social impact."

Reported by **VINA SALAZAR** in Manila, Philippines

Above, Shofyan Cahyono takes a break and checks his messages. At right, he proudly displays his farm's broccoli.

PHOTO: GEMBONG NUSANTARA

The future of farming

While many young Indonesians abandon rural areas for city life, Shofyan Adi Cahyono, 22, has decided to modernize his father's farm in the highlands of central Java by embracing new technology and progressive farming methods.

Cahyono's family has been farming for generations. Among the agricultural Javanese, land is something important to be passed down, a legacy for the next generation. "The soil here is very fertile because it is volcanic," Cahyono says, displaying its crumbly texture.

"Farming is considered a low job," he says, "but I am trying to change that."

He initially resisted pressure to join the family business. But after studying agrotechnology at Satya Wacana Christian University, he has come around. His challenges are similar to those faced by the previous generation, he says, but now there are many more solutions. He and his family can use information technology to sell their products, eliminating the middleman. That way, "we can set competitive prices and make a higher profit," Cahyono says. Their farm sells produce to restaurants, cafes, hotels, and supermarkets.

In the past, his father planted vegetables without calculating precisely the cost and profit. Today, Cahyono has access to produce distributors in every major city, using a preorder system that helps them manage production. "If customers want to buy our product, they leave a message for us through WhatsApp. Then we harvest it, pack it up, and send it off, and our produce remains in a fresh state until it gets to its destination," he says.

Across Asia, farmers like Cahyono are starting to take advantage of the efficiencies to be gained from digital technology that provides more precise and timely information about markets, inventories, and crops. Some even use drones to capture images that can be analyzed to forecast yields, identify crop diseases, and assess fertilizer needs.

At the same time, organic farming is booming as Asia's rising middle class grows wary of the health dangers posed by pesticides. A growing number of cafes and restaurants in Indonesia offer organic fruit and vegetables on their menus, creating an opportunity for farmers like Cahyono.

He also enjoys the creativity involved in planting a variety of organic vegetables. "My friends in the city get bored with going to work, coming home, and doing it over and over, with nothing creative in their day," he says.

Cahyono wants to spread the word, educating other young people about progressive farming methods.

"I share my knowledge so that more people will know that the agricultural sector is promising," he says. "Hopefully more young men will also be inspired to become farmers." FD

Reported by **GEMBONG NUSANTARA** in Merbabu, Central Java, Indonesia

WATCH VIDEOS ABOUT THESE YOUTH ON WWW.IMF.ORG/FANDD

ASIA’S DIGITAL REVOLUTION

A new wave of digital innovation is reshaping Asia, raising the region’s growth potential

Tahsin Saadi Sedik

Asia is embracing the digital revolution. Companies such as Alibaba, Tencent, and Baidu are providing a wide range of services from e-commerce to fintech and cloud computing for customers in China and elsewhere. In Indonesia, GO-JEK offers services including ride-hailing, logistics and digital payments.

These and other Asian companies are exploiting recent advances in artificial intelligence, robotics, cryptography, and big data that promise to reshape the global economy and fundamentally alter the way we live and work in the same way that the steam engine and electricity did in centuries past. In Asia as elsewhere, the digital revolution is rippling across industries from retailing and banking to manufacturing and transportation.

Southeast Asia will face distinct challenges as the new technologies disrupt global value chains—the network of interlinked stages of production for the manufacture of goods and services—and undermine the model of labor-intensive, export-led manufacturing that has powered the region’s growth. But the new technologies will also open opportunities for small businesses and offer the potential of enhanced productivity, something that Southeast Asia will need in order to move beyond middle-income status. For frontier economies like Cambodia, Lao P.D.R., and Myanmar, digital technologies can be powerful new tools in the struggle to end poverty.

Asia at the forefront

Asian players are in the lead in nearly every aspect of digitalization, but some economies lag significantly behind. Asian economies lie all along the income spectrum, and correspondingly, the region has the highest dispersion in terms of the adoption of digital technologies, with Japan, Korea, Hong Kong SAR, and Singapore being global trendsetters. But at any given income level, Asian economies are at the frontier relative to their global peers. Moreover, even for relatively poor Asian economies, such as Cambodia and Nepal, digitalization is accelerating.

E-commerce and fintech are other areas in which Asia leads. For instance, China accounted for less than 1 percent of global e-commerce retail transaction value about a decade ago, but today, that share has grown to more than 40 percent. The penetration of e-commerce, as a percentage of total retail sales, now stands at 15 percent in China, compared with 10 percent in the United States. E-commerce

PHOTO: ISTOCK / THOMAS-SOELLNER

E-commerce has the potential not only to support growth, but also to make it more sustainable.

penetration is lower in the rest of Asia but is growing fast, particularly in India, Indonesia and Vietnam. In Indonesia, e-commerce platforms such as Bukalapak, Lazada, and Tokopedia are competing for the largest e-commerce market in Southeast Asia.

In fintech, too, Asian economies have made significant progress, in many cases leapfrogging into new types of technology. For example, in 2016, mobile payments by individuals for goods and services totaled $790 billion in China, 11 times more than in the United States.

Technological progress can bring enormous benefits by boosting productivity and growth and creating new jobs. In most of Asia, the share of information and communications technology (ICT) in GDP has increased substantially faster than economic growth. During 2005-15, ICT growth averaged 15.9 percent in India, 13.7 percent in China and 7.1 percent in Thailand, far above their economic growth rates of 7.7, 9.7 and 3.5 percent. In Japan, ICT growth was almost quadruple GDP growth.

And digitalization is becoming a larger component of GDP in many Asian economies. Among the world's top 10 economies with the largest ICT to GDP ratio, 7 are in Asia, including Malaysia, Thailand, and Singapore. Digitalization can also boost the productivity of other sectors. Our empirical work shows that a 1 percentage point increase in the digitalization of China's economy is associated with 0.3 percentage point of GDP growth. Importantly, innovation in Asia is tilted toward the digital sector: if we rank countries according to the ICT share of total patents, Asian economies take up the top five slots—further highlighting the potential of digitalization to boost future growth.

E-commerce has the potential not only to support growth, but also to make it more sustainable. For consumers, e-commerce may translate into better access to a wider range of products and services at lower prices, ultimately boosting consumption. A study by McKinsey & Company shows that while 60 percent of internet spending in China is diverted from traditional retail, close to 40 percent represents new consumption.

For firms, e-commerce provides new business opportunities and access to larger markets, and thus supports investment. Our analysis shows that, at the firm level in Asia, participation in online commerce is associated with a more than 30 percent increase in total factor productivity, or the portion of output not explained by traditionally measured production inputs of labor and capital. Innovation, human capital, and to some extent access to finance seem to support online firms' better performance. Finally, we find that firms engaged in e-commerce also export 50 percent more.

Financial technologies can also support potential growth and poverty reduction by strengthening financial development, inclusion, and efficiency. Fintech can help millions of individuals and small- and medium-sized enterprises leapfrog access to financial services at an affordable cost, particularly in poor countries. These technologies may also drive substantial efficiency gains in the financial sector. For example, they can provide cross-border payments that reduce both risk and cost for participants. If all Asian economies with low financial inclusion were to move to the level of Asia's emerging-market frontier, Thailand, 20 million people could be brought out of poverty, our analysis suggests.

Finally, digitalization presents opportunities for improving public finance. Adoption of digitalization by governments can, through better reporting of transactions, increase revenue from value-added taxes (VAT), tariffs, and other sources. If Asian economies were to move halfway to the global frontier, our analysis shows, VAT revenue could rise by 0.6 percent of GDP. For countries that belong to the Association of Southeast Asian Nations, the gains are estimated at 1.2 percent of GDP, and for small Asian states, which are typically further from that frontier, they are on the order of 2.5 percent of GDP.

These new technologies are automating increasingly complex activities that could previously be performed only by people. Major transitions lie ahead that could match the scale of historical shifts out of agriculture and manufacturing, creating new challenges for policymakers. This new wave of creative destruction will transform jobs and skills, with old jobs and firms disappearing and new ones emerging. Historically, adjustment to change has been difficult, and gains have been spread unevenly. The new wave of automation also risks raising structural unemployment, especially for older and unskilled workers, if there are no new alternative opportunities for displaced labor with the potential to increase inequality.

Automation via industrial robots is one area in which Asia is clearly at the forefront, with fully two-thirds of the world's industrial robots employed in the region. In our study, we analyze the impact of robot usage on employment across a large sample of countries in Asia, Europe, and the Americas. Contrary to some observers' worst fears, we find that the productivity-enhancing (and thus job-creating) effects may have offset the destruction of old jobs.

Focusing only on Asia, however, there is a slight negative impact on overall employment, particularly in heavily automated sectors like electronics and automobiles. Furthermore, like others, we find that workers with medium-level education are more vulnerable to displacement than those with either low or high education levels, since jobs that are most susceptible to automation tend to involve routine tasks performed by workers with mid-level skills. In Japan, with its shrinking labor force, increased robot density in manufacturing is associated not only with greater productivity but also with local gains in employment and wages (see "Land of the Rising Robots," in the June 2018 *F&D*). Japan's experience suggests that countries such as China, Korea, and Thailand that will face similar demographic trends in the future may also benefit from automation.

Looking ahead, some of the latest digital technologies could reshape global value chains, in which Asian economies have been key players. Traditionally, Asian manufacturing has been based on the supply of relatively low-cost and low-skilled labor. But artificial intelligence, robotics, and 3D printing are expected to decrease competitiveness based on wages, transforming the nature of manufacturing and leading possibly to the reshoring of production to advanced economies. Anecdotal evidence suggests that reshoring is already happening, and economies with large pools of low-skilled labor may face pressure to devise radically new growth models.

Fintech also poses risks to the financial sector if it undermines competition, monetary policy, financial stability and integrity, and consumer and investor protection. These technologies may disrupt the business models of established financial institutions and lead to a migration of activities outside the regulated sector. We find that countries with a greater propensity for technological leapfrogging have also tended to see falling levels of traditional financial infrastructure, particularly bank branches. Unlike their US counterparts, Asian tech giants, especially in China, have become key providers of financial services, putting competitive pressures on traditional financial institutions. Crypto-assets, an area in which Asia has been a leader, may pose risks related to money laundering, tax evasion, circumvention of capital controls and other forms of illicit activity.

And while digital platforms may magnify the benefits of e-commerce, they raise competition issues. Economies of scale may lead to winner-take-all dynamics and pose anti-competition concerns, particularly when e-commerce platforms become large. Network effects also make it challenging for retailers and vendors to switch platforms, reinforcing their market power. Digital platforms can also pose risks of tax base erosion. For example, peer-to-peer platforms such as Airbnb and Uber (or Asian competitors such as GO-JEK, Grab and Tujia) allow transactions normally carried out in highly taxed and regulated sectors, like taxi service or hotels, to avoid or evade taxes.

Striking the right balance

While the digital revolution is inevitable, the outcome—utopian or dystopian—will depend on policies. Policy responses should strike the right balance between enabling digital progress and addressing risks. Policies to harness digital dividends include: revamping education to meet the demand for more flexible skill sets and lifelong learning, as well as new training, especially for the most adversely affected workers; reducing skill mismatches between workers and jobs; investing in physical and regulatory infrastructure that spurs competition and innovation; and addressing labor-market and social challenges, including income redistribution and safety nets.

Considering the inherent global reach of these technologies, regional and international cooperation will be key to developing effective policy responses. The more willing society is to support those who are left behind, the faster the pace of innovation that it can accommodate and still ensure that everyone ends up better off. With the right policies, the digital revolution could be a new engine of growth and prosperity for Asia and the world. FD

TAHSIN SAADI SEDIK is a senior economist in the IMF's Asia and Pacific Department.

This article is based on a chapter in the IMF's forthcoming Regional Economic Outlook: Asia Pacific.

ON THE CUSP

Poised to become digital-first economies, ASEAN countries still face core challenges

HOMEGROWN RIDE-HAILING APPS, intelligent traffic systems, advanced construction techniques, automated energy-consumption management all propel the innovation wave washing over the Association of Southeast Asian Nations (ASEAN).

Indonesia's vibrant digital ecosystem, for example, boasts more than 1,700 start-ups—among the world's largest clusters of new firms. GO-JEK, to name one, evolved from a ride-hailing app to a platform for mobile payments and other digital services. In Singapore, Sea, the most valuable start-up in the region—worth several billion dollars—began as an online gaming company and branched out into mobile money and shopping.

ASEAN is young (more than half of its 643 million people are under 30) and has an economy of $2.8 trillion. Its 10 members are moving toward greater economic integration. The region should be at the tip of the digital spear. But it's not that simple.

The Internet has reached most people in Brunei Darussalam, Malaysia, and Singapore, but more than 70 percent of Cambodia, Indonesia, Lao P.D.R., and Myanmar remains offline and can't fully participate in the digital economy. High-speed broadband is even more scarce. ASEAN trails China, Japan, and Korea, largely due to high costs. Singapore is the sole exception.

Growing the digital economy depend on five key priorities: (1) Internet connectivity must be universal and affordable. (2) The business climate must encourage competition, which spurs innovation. (3) Education systems must adapt workers' skills to new demands for a digital future. (4) Stronger safety nets are needed to protect those displaced by automation. (5) ASEAN nations should seek to improve financial inclusion through technology and adapt their regulatory frameworks to manage the risks associated with fintech.

As a regional bloc, ASEAN is the fifth largest economy in the world, and with hundreds of millions of young people eager to join the digital revolution, there's no better time to close the digital divide. The future of the region depends on it. FD

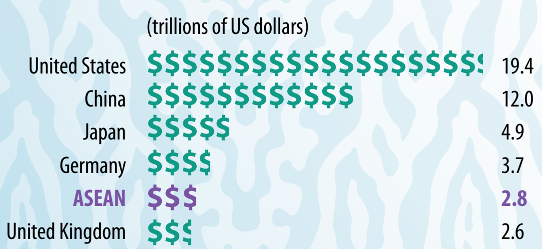
Prepared by ***JIA FENG****, communications officer, IMF Communications Department*

The Digital Potential

ASEAN has great potential to go digital, with its sizable economies, demographic dividend, and continuous regional integration

Economy

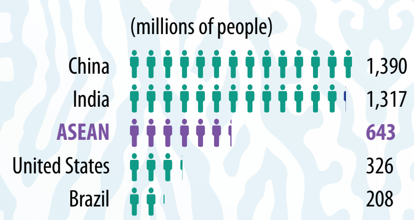
If ASEAN were a single economy, its GDP would be the **5th** largest in the world.



Source: IMF, *World Economic Outlook* (April 2018).

Population

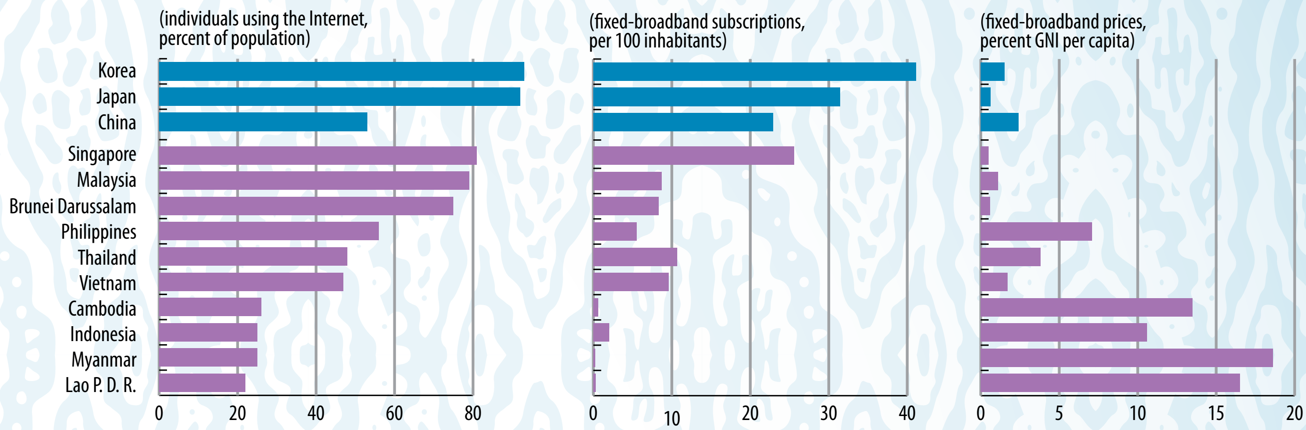
ASEAN has the **3rd** largest population in the world.
More than 50% of its people are under 30 years old.



Source: IMF, *World Economic Outlook* (April 2018).

The Digital Divide

ASEAN has a large digital divide in Internet and broadband penetration. Fixed broadband is prohibitively expensive in many countries



Source: *Measuring the Information Society Report 2017*, International Telecommunication Union. **NOTE:** GNI=gross national income.

How Can ASEAN Seize the Opportunity?

Universal and affordable Internet access

Vibrant business climate to encourage competition

New education systems to adapt workers' skills to new demands

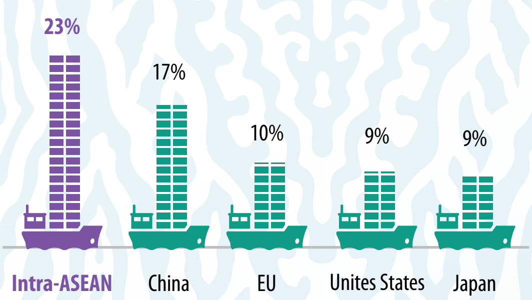
Stronger safety nets to protect workers displaced by automation

Financial regulatory framework to manage the risks from fintech

Accelerating Economic Integration

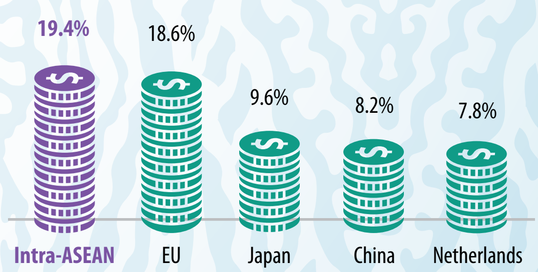
Economic integration provides a platform for ASEAN's digital economy to proliferate and realize greater economies of scale

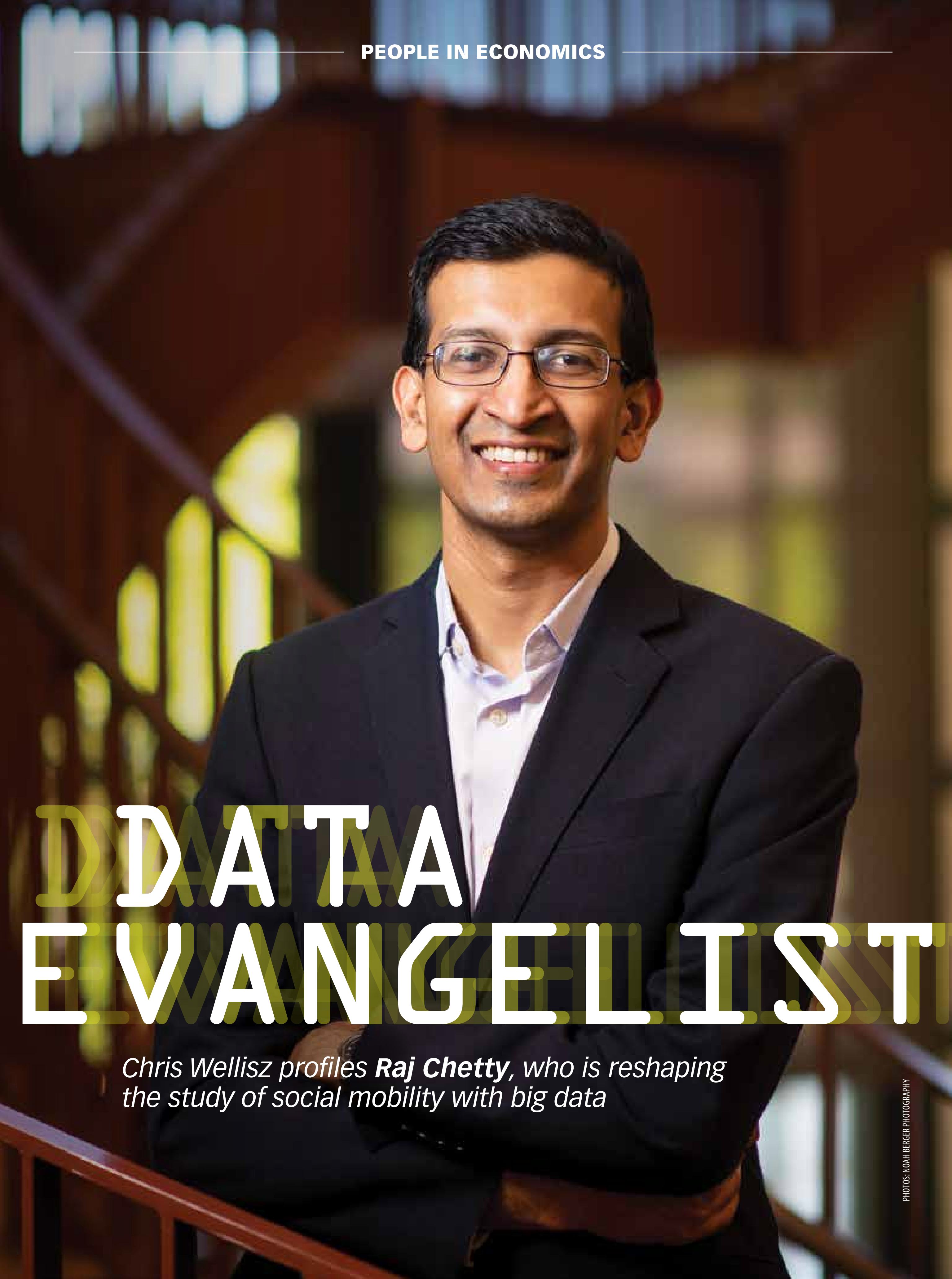
ASEAN's top merchandise trading partners, by share, 2017



Source: ASEANstats.

ASEAN's top sources of foreign direct investment inflows, by share, 2017





DATA EVANGELIST

Chris Wellisz profiles ***Raj Chetty****, who is reshaping the study of social mobility with big data*

PHOTOS: NOAH BERGER PHOTOGRAPHY

Archimedes, the ancient Greek mathematician, had his eureka moment after stepping into his bathtub. Raj Chetty's came while he was taking a shower.

"I imagined this map, and I was thinking it would be really interesting to draw this map of what opportunities for upward mobility look like based on where you grow up," recalls Chetty, a professor of economics who recently moved from Stanford University to Harvard.

The colorful map that eventually emerged was based on income records of 40 million children and their parents. In shades of red and yellow, it shows huge geographic disparities in social mobility across the country. If you grew up in Charlotte, North Carolina, to parents in the bottom fifth of the income distribution, your chances of reaching the top fifth are just 4.4 percent. In San Jose, California, the odds are almost three times greater.

The map illustrated a 2014 paper titled "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." It was the starting point for a series of studies that have shaped the public conversation about inequal-ity, opportunity, and race. In one, Chetty and his coauthors showed that moving to a lower-poverty neighborhood in childhood significantly improves earnings and college attendance rates in adulthood. In another, they explained why income disparities between blacks and whites persist for generations. And in a widely cited study that casts doubt on the American dream, they found that rates of upward mobility have declined dramatically since 1940.

Cutting edge

In some cases, Chetty's work strikes out in new and unexpected directions. In others, it confirms earlier studies by sociologists or specialists in early-childhood education. Either way, what gives it such impact is his innovative use of massive data sets, which has put him on the cutting edge of a trend that's transforming the field.

"Big data has been revolutionary in applied microeconomics," says Emmanuel Saez, a frequent collaborator who teaches at the University of California at Berkeley. "Raj has been in the vanguard of this movement."

For Chetty, big data promises to bring economics closer to the certainties of the natural sciences. The hope is that economists will have a greater impact on public policy by presenting evidence that's convincing enough to bridge the ideological divide, especially at the local government level, where partisan rancor is less intense.

"He zealously preserves his ideologically neutral stand," says David Grusky, a Stanford sociology professor who has worked with Chetty. "He wants the data to speak, and let the chips fall where they may."

Grusky describes Chetty as a relentless investigator who roams widely through relevant literature, regardless of the discipline, and tests every conceivable hypothesis as he works toward a conclusion. "He considers it an abject failure if there's ever a question coming from an audience that entails an analysis he hasn't already undertaken."

Speaking to audiences, on campus and off, is something Chetty does frequently in his role as evangelist for big data. He cultivates contacts with journalists and makes his articles available online, along with easy-to-understand summaries, which has helped attract widespread coverage of his work in publications including the *Atlantic*, the *Economist*, and the *New York Times*.

"If what we're doing is important for the world, we should make it accessible to the world," Chetty explains.

Spreading the gospel

Analyzing huge data sets is labor-intensive and costly. So together with two collaborators, Harvard University's Nathaniel Hendren and Brown University's John Friedman, Chetty formed the Equality of Opportunity Project, a mini think tank that rustles up grant money and employs more than a dozen college graduates as research assistants. The pre-docs, as they are called, spend two years working full-time before moving on to PhD programs at places like Berkeley and Harvard, where they spread the Chetty gospel.

Among them is Sarah Merchant, a Yale University graduate who worked on a 2018 study on the impact of race on economic opportunity, based on tax records covering almost the entire US population from 1989 to 2015. The study showed that the income gap between blacks and whites is sizable and persists for generations, and that it is driven entirely by differences in wages and employment between black and white men, rather than women. It found that the black-white gap is much smaller for black boys who grow up in neighborhoods with lower poverty rates, low levels of racial bias among whites, and high rates of father presence among low-income blacks.

> "It was evident to me growing up how different our opportunities and experiences were, just by pure chance."

"Racial disparities have been a large part of the American conversation since forever," says Merchant, who spent a month diving into the vast sociology literature on the subject. "But we haven't had a narrative validated by such a large data set. That was really exciting."

Cousins less fortunate

At 39, Chetty has a boyish appearance and earnest demeanor that belie achievements including a MacArthur Foundation fellowship (also known as a "genius grant") and the John Bates Clark Medal, awarded each year by the American Economic Association to the economist under the age of 40 deemed to have made the biggest contribution to the field.

His interest in social mobility stems from his country of birth, India, where poor but ambitious families could afford to send only one child to college. His parents were the lucky ones: his father became a PhD economist and his mother, a doctor. Raj attended an elite private school. His cousins weren't as fortunate.

"It was evident to me growing up how different our opportunities and experiences were, just by pure chance," Chetty says.

Chetty's family left India for the United States when he was 9, and he was struck by the stark contrast in the standard of living between the two countries. At 17, he was valedictorian of his graduating class at the University School of Milwaukee.

While initially drawn to the sciences—his two sisters are biomedical researchers—Chetty couldn't imagine life in a laboratory, so he opted for economics. "I always liked math and statistics," he says. "I wanted to do something that would have an impact on the world."

He was admitted to Harvard College and—unusually for an undergraduate—worked as a research assistant to Martin Feldstein, also a winner of the John Bates Clark Medal. Chetty graduated in just three years and earned his PhD in another three.

After a teaching stint at the University of California, Berkeley, he returned to Harvard where, at age 29, he became one of the youngest-ever tenured professors of economics. He moved to Stanford in 2015. He and his wife, Sundari, a stem-cell biologist, have a young daughter.

Friedman, a Harvard classmate and now a collaborator, remembers Chetty as "somebody who was focused on the big, important questions."

But Chetty was frustrated by the sparsity of data available for empirical, as opposed to theoretical, work. Small sets of data, he felt, were overly amenable to varying interpretations, depending on assumptions and the methodology. "It all felt a little fragile," he says.

"I had the sense that I wanted to do things graphically," he continues. That way, "you're not imposing the assumption that there is linear relationship or a quadratic relationship. You're just saying, 'Let's plot the data and see what we get.'"

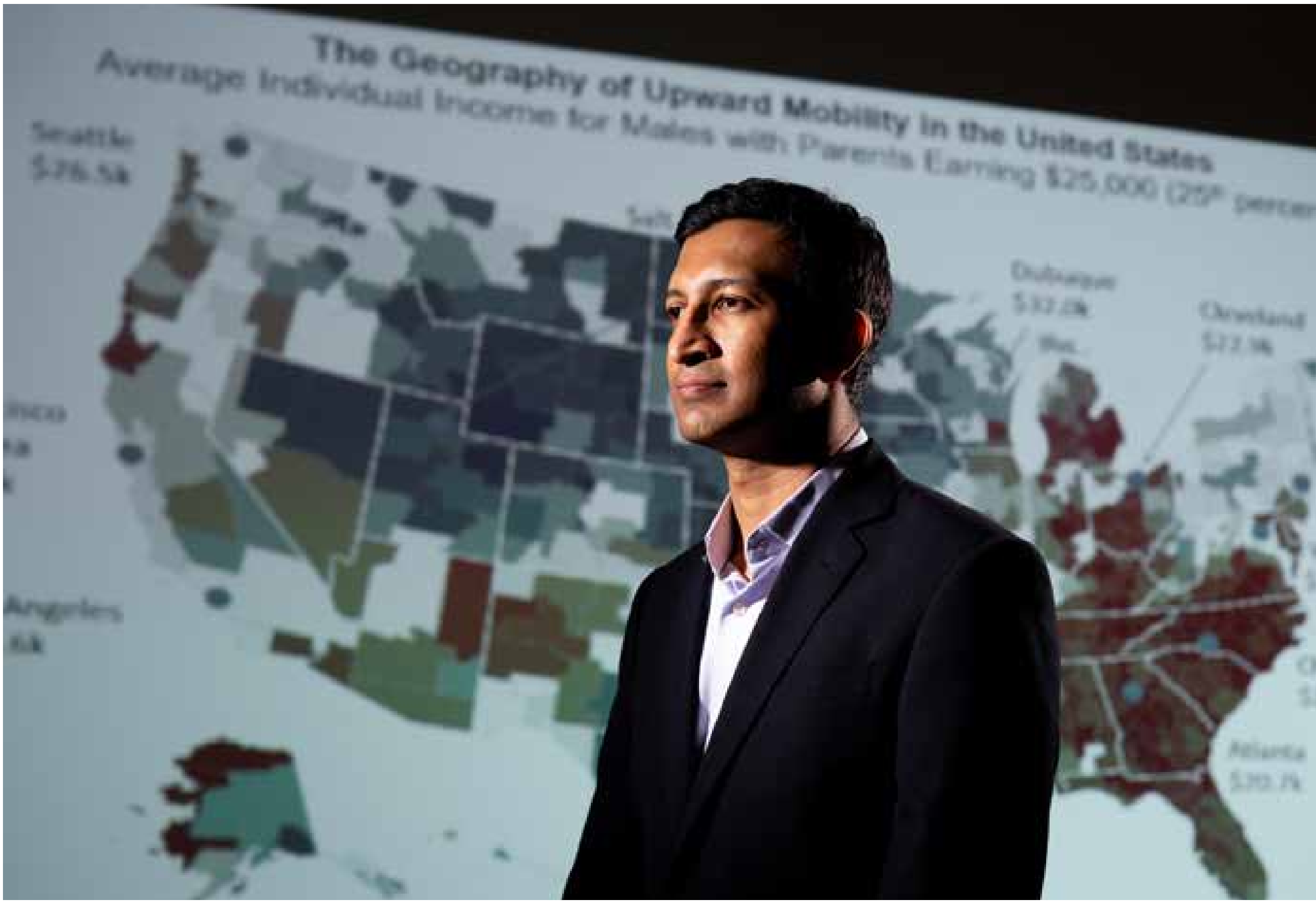
To do that, Chetty needed data—lots of it. Not thousands of observations, but millions. US government data sets that large weren't available to his team, but he found them in Austria and Denmark and wrote a series of papers he felt were more conclusive than his previous work. Then, in 2009, the US Internal Revenue Service agreed to give them access to tax data stripped of information identifying individuals.

Systematic differences

It was the mother lode, and it gave birth to the paper on the geography of intergenerational mobility, which Chetty cowrote with Hendren, Saez, and Berkeley's Patrick Kline, and that showed markedly different rates of upward mobility across the country. The next step was to figure out why.

One possibility was that there are systematic differences, say in race or income, between the types of people who live in Charlotte as opposed to San Jose. But another, more intriguing, hypothesis was that there's something special about San Jose that causes upward mobility, so that moving there

PHOTO: ISTOCK/REPUBLICA



Economist Raj Chetty and his map showing the geography of upward mobility.

as a child would improve your chances of success as an adult.

The way to check was to look at what happens when kids move from one place to another. But Chetty and Hendren couldn't conduct a randomized experiment with actual children. Instead they constructed what economists call a "quasi experiment." By sorting millions of tax records just the right way, they found people who moved between the same two places at different ages and compared their outcomes.

That meant scrutinizing tax records for 5 million children whose families moved across counties between 1996 and 2012. Their finding: every year a child spends in a better environment—as measured by incomes of children already living there—means better earnings as an adult.

"The power of these large data sets is that you can essentially find experiments when you have adequate data if you're creative," Chetty says.

Amassing the data is daunting enough, but analyzing it presents additional challenges. "One also needs to know how to find the counterfactual to isolate the causal effect," Hendren says. "This combination of big data and knowing how to slice it finely enough to find convincing causal patterns—that's Raj's big strength."

Moving to opportunity

Their conclusion, that there are places that spark opportunity, contradicted an influential study conducted by the US Department of Housing and Urban Development in the 1990s, known as the Moving to Opportunity experiment.

The study of 4,600 families living in high-poverty public housing projects in five big cities was a large-scale, randomized experiment involving real people—a rarity in the social sciences. One-third of the families were picked at random and received vouchers to move to lower-poverty areas; another third got vouchers to move wherever they chose; and the rest, the control group, stayed in public housing. The result was disappointing: among families who moved to lower-poverty areas, earnings and employment of older children and adults didn't improve.

Chetty, working with Hendren and Harvard's Lawrence Katz, revisited the study but focused on children under the age of 13. Linking the data with federal tax data, they confirmed the result of the earlier quasi experiment. Children who moved to lower-poverty areas ended up earning 31 percent more than those who didn't. What's more, they were more likely to attend college and live in better neighborhoods and less likely to be single parents.

Greg Russ, who was then head of the Cambridge Housing Authority, in Massachusetts, was bowled over by the study. "It was kind of like being in a dark room with a little bit of light, and then someone turned on all of the lights," says Russ.

Until then, housing administrators like Russ had no conclusive evidence that giving families vouchers to move to lower-poverty areas changed economic outcomes. Most vouchers were being used simply to move from one high-poverty area to another.

Russ went to see Chetty at his Harvard office, bearing a copy of the article, copiously annotated in red ink. Their meeting led to Creating Moves to Opportunity, a nationwide alliance of housing authorities that is giving Chetty and his colleagues access to its data and in turn using their research to test model voucher programs.

Broad appeal

The study is an example of how Chetty's policy recommendations have appeal across the ideological spectrum. Giving families vouchers to move to "areas of opportunity" will generate positive returns for taxpayers in the long run, he argues, because kids who grow up earning more will pay more in taxes.

"From a social point of view, there is kind of a free lunch on the table that you might try to exploit," Chetty says. "We spend a ton of money in the federal government, $45 billion a year, on affordable housing. But that money is being used in ways that are not as effective as possible in terms of achieving good outcomes for children."

Chetty's team has identified neighborhoods in Seattle that he calls "opportunity bargains"—places that produced good outcomes for kids and are affordable for low-income families. Now they are working on identifying such areas across the entire country.

For Russ, who now heads the Minneapolis Public Housing Authority, that is a breakthrough. "We've been handing out vouchers since 1976," he says. "But we never handed them out with a map that says, 'Hey, do you know what? If you got them to move just two miles away, you might break the generational cycle of poverty.'"

Chetty's emphasis on equality of opportunity also has broad appeal—unlike redistributive policies intended to make up for unequal outcomes, such as wealth taxes proposed by some economists.

"Things like opportunity bring people together," he says. While inequality is an important issue, it can be divisive, he adds. "But everybody is, in general, in favor of greater equality of opportunity for kids."

California case

Yet Chetty hasn't shied away from controversy. In 2014 he testified as an expert witness in support of a lawsuit brought by a group of minority students against the state. In *Vergara v. California*, the students said their education had suffered because state laws made it difficult to dismiss incompetent teachers, and that minority students were more likely to be assigned to those teachers.

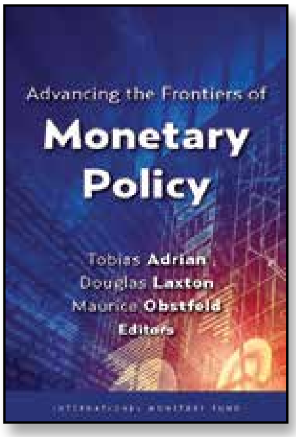
Chetty, drawing on a study he conducted with two fellow economists of 2.5 million New York City students, testified that dismissing the least effective teachers can vastly improve students' earnings in adulthood. He argued in favor of a method of evaluating teachers known as "value added," which measures their impact on student test scores.

The metric aroused fierce opposition from teachers' unions, which argued that scores are affected by a host of nonacademic factors, such as home environment and innate abilities. Chetty said it was possible to strip out the influence of those factors. Jesse Rothstein, a Berkeley economist who testified on behalf of the state, disputed Chetty's methodology. The judge ruled for the plaintiffs, but his decision was reversed on appeal. And while the disagreement persists, Rothstein says, "I definitely think it's been a fruitful debate."

These days, Chetty remains focused on studying how to improve opportunities for children. "We know that environment matters, but what exactly is the recipe for how we generate better outcomes?" he asks. "If we can figure that out, then that has tremendous social value." FD

CHRIS WELLISZ is on the staff of *Finance & Development*.

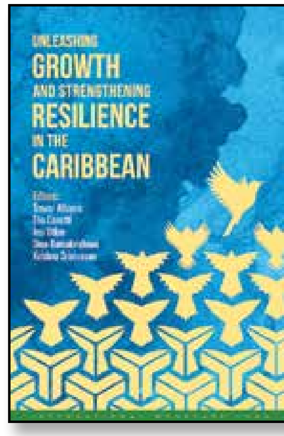
Fall 2018 Highlights from IMF Publications



Advancing the Frontiers of Monetary Policy

edited by Tobias Adrian, Douglas Laxton, and Maurice Obstfeld

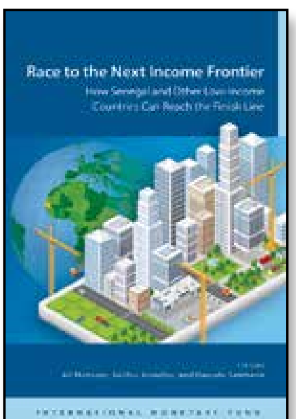
$30. English. 260pp. Paperback
ISBN 978-1-48432-594-0



Unleashing Growth and Strengthening Resilience in the Caribbean

by Trevor Alleyne, Elie Canetti, Inci Otker, Uma Ramakrishnan, and Krishna Srinivasa

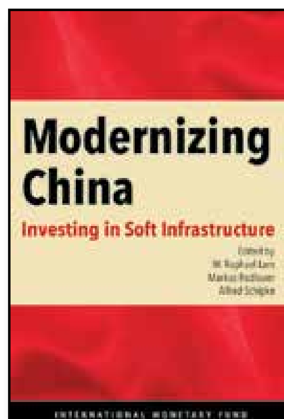
$25. English. 378pp. Paperback
ISBN 978-1-48431-519-4



Race to the Next Income Frontier

edited by Ali Mansoor, Salifou Issoufou, and Daouda Sembene

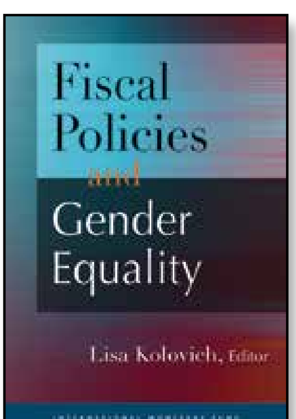
$40. English. 418pp. Paperback
ISBN 978-14843-0313-9



Modernizing China

edited by W. Raphael Lam, Markus Rodlauer, and Alfred Schipke

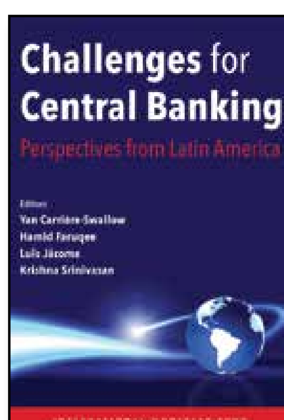
$38. English. 392pp. Paperback
ISBN 978-1-51353-994-2



Fiscal Policies and Gender Equality

edited by Lisa Kolovich

$35. English. 250pp. Paperback
ISBN 978-15135-903-6



Challenges for Central Banking

edited by Yan Carrière-Swallow, Hamid Faruqee, Luis Jácome, and Krishna Srinivasan

$30. English. 272pp. Paperback
ISBN 978-1-51359-176-6

For more information, visit Bookstore.imf.org/fd918b

PHOTO; COURTESY OF THE ARGENTINE ANTI-CORRUPTION OFFICE

The Poverty-Corruption Nexus

Laura Alonso *explains why the battle against corruption must be waged on many fronts*

David Pedroza

LAURA ALONSO was appointed head of Argentina's anti-corruption office by President Mauricio Macri in 2015 after serving in the Chamber of Deputies and as executive director of the Argentine chapter of Transparency International. She is a graduate of the University of Buenos Aires and holds a master's degree in public administration and public policy from the London School of Economics and Political Science. In this interview with *F&D*'s David Pedroza on June 22, Alonso explains why addressing corruption is crucial in the fight against poverty, how various actors from the public and private sectors must be involved, and how technology can be deployed to improve transparency.

F&D: Which areas of government are most affected by corruption?
LA: At a level of what could be called "big corruption," the highest levels historically seen in Argentina—the risk zones—are the usual ones: big infrastructure works, extractive industries, and customs. That is why we are attacking it with different measures, to try to lower the risk, increase control and transparency of the procurement and contracting processes—the behavior and assets of public officials and the strengthening of the internal audit system of each area.

F&D: You have said that the Argentine government sees the fight against corruption as part of the fight against poverty. What is the relationship?
LA: People living in poverty are victims of corruption because it generates, along with inefficiency and poor administration of the state, low-quality public services and infrastructure investment, which directly affects the quality of life of these people. The first victims of corruption are always those most in need. They are also deprived of new employment opportunities, because we all know that corruption is, sadly, a factor that deters quality private investment.

F&D: How should the private sector get involved?
LA: It is vital to involve the private sector in the prevention of corruption through good business practices and also by encouraging companies to report when irregularities arise in public procurement or contract negotiations. In the case of public-private alliances, the anti-corruption office launched a high-level reporting mechanism, which received technical advice from the OECD [Organisation for Economic Co-operation and Development] and the Basel Institute on Governance. During the first public-private partnership project of the National Directorate of Roads, eight contracts have already been signed, and no reports of corruption were recorded for this process, which shows that both the process design as well as the incorporation of integrity clauses—and this high-level reporting mechanism—contributed to generate trust among investors who came in massively to bid, including foreign investors who had never done so in Argentina.

F&D: How has the government used technology to fight corruption?

LA: In Argentina, the administration was far behind in matters of technology. Since the creation of the Modernization Ministry, there has been significant progress on administrative modernization, starting with the incorporation of electronic files that allow electronic management of most internal administrative procedures, providing greater transparency and oversight of each procedure. It has also generated the incorporation of remote procedures that has accelerated the customs-clearing process and allowed for better oversight. President Macri has signed a decree that launched the reform of electronic files, as well as the implementation of an important, broad, open-data and open-government policy. We are working very hard on the interoperability of databases owned by the state, which has allowed—in the case of the anti-corruption office—along with the electronic files, more control and a broad overview per area of critical processes within the administration, allowing us to generate statistics and cross-check data.

F&D: It sounds like a multipronged effort.
LA: It is the desire of the presidency to go forward with all aspects—administrative, operational, executive, and legislative—that guarantees the sustainability of these small and big reforms that have improved the administrative process exponentially. And it hasn't been gradual. There have been changes that were truly a shock, such as the incorporation of electronic files, which involved training tens of thousands of administration public servants who were used to processing their files on paper. The National Modernization Council has worked so that provincial administrations also incorporate electronic files, and great efforts are being made so that the judicial authorities also go this way. When we arrived at the anti-corruption office, we didn't have access to any state database. Now we have access to over 15 databases. In the last year of our administration there will be massive database cross-checks, which will allow us to check on the financial interests and assets and cultural and social backgrounds of public servants.

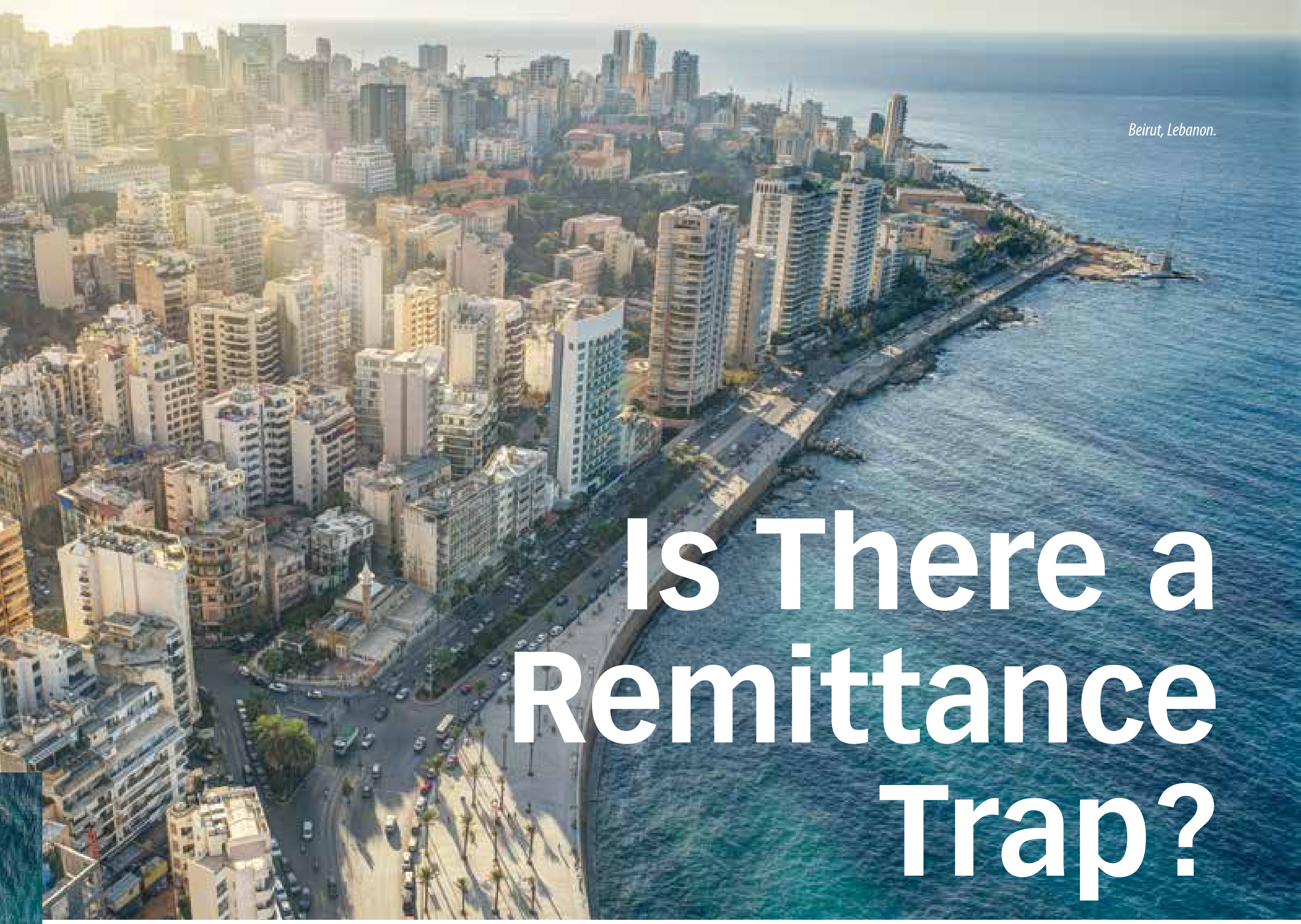
F&D: What has been done to make data more widely available to the public?
LA: All databases can be found on the website www.datos.gob.ar. Data catalogs are posted there regarding the affidavits of the 45,000 executive branch civil servants who declare their assets and financial interests to the anti-corruption office. It's the only country that publishes a big part of that information openly, updated annually. There's also information on mining, the exploitation of gas and petroleum in Argentina, population and education data, and data linked to public health and the economy. Argentina has restored and increased its historical levels of budgetary transparency, something that had taken an unfortunate step back in past years. Also, Argentina has restored the quality of its public statistical system, which is not minor data when it comes to reporting to international agencies.

F&D: What is the next milestone?
LA: In the coming months we are preparing a national anti-corruption plan for the next five years, which will not only be based on the responsibilities of the anti-corruption office, but which will also involve all government areas and ministries, so that each one can collaborate with specific sectoral policies within their areas of competency, including key decentralized agencies such as the Social Security Administration, Tax and Customs agencies, or, for example, the agency that regulates food and medicine quality in Argentina.

F&D: How do you measure success?
LA: No country in the world can recover from the disease called corruption, because those countries with high levels of transparency and internal control usually have poor practices abroad. Therefore, it seems to me that multilateral work to prevent and fight corruption is essential. Argentina participates in the OECD public integrity officers group and is chairing the Group of 20 anti-corruption group. Though no country can escape it entirely, what differentiates countries is the treatment applied institutionally to this disease. I believe success can be measured, in the case of Argentina, in reforms, big and small, that are continuous and sustainable, that are not only implemented at federal or administration levels, but that also involve the judicial branch, the provinces, the municipalities. If this agenda of big and small reforms is kept throughout the coming 10 years, that would be the measure of success for this phase. FD

DAVID PEDROZA is a communications officer in the IMF's Communications Department.

This interview has been edited for length and clarity.



Beirut, Lebanon.

Is There a Remittance Trap?

High levels of remittances can spark a vicious cycle of economic stagnation and dependence

Ralph Chami, Ekkehard Ernst, Connel Fullenkamp, and Anne Oeking

Workers' remittances—the money migrants send home to their families—command the attention of economists and policymakers because of their potential to improve the lives of millions of people. Amounting to over $400 billion in 2017, remittances rank between official development assistance and foreign direct investment in terms of size. Such massive financial flows have important consequences for the economies that receive them, especially when many countries receive flows that are large relative to the size of their exports or even their economies.

Many argue that remittances help economies in two ways. First, because remittances are person-to-person transfers motivated by family ties, these transfers from outside the country help relatives back home afford the necessities of life. But remittances also have the potential to fuel economic growth, by funding investment in human or physical capital or by financing new businesses.

Economists have worked to measure both of these effects. Many studies confirm that remittances are essential in the battle against poverty, lifting millions of families out of deprivation or bare subsistence. But at the same time, economic research has failed to find that remittances make a significant contribution to a country's economic growth (see Chart 1).

The latter result is puzzling, especially given the finding that remittance income helps families consume more. Consumption spending is a driver of short-term economic growth, which in turn should also lead to longer-term growth as industries expand to meet the increased demand. But research that digs deeper into the remittance-growth nexus increasingly suggests that remittances change economies in ways that reduce growth and increase dependence on these funds from abroad. In other words, there is increasing evidence of

PHOTO: ISTOCK/ RAMZIHACHICHO

a remittance trap that causes economies to get stuck on a lower-growth, higher-emigration treadmill.

Engine, shock absorber, or brake?

Consider the case of Lebanon. For many years, this country has been one of the leading recipients of remittances, in both absolute and relative terms. During the past decade, inflows have averaged over $6 billion a year, equal to 16 percent of GDP. Lebanon received $1,500 a person in 2016, more than any other nation, according to IMF data.

Given the size of these inflows, it should not be surprising that remittances play a key if not leading role in Lebanon's economy. They constitute an essential part of the country's social safety net, accounting on average for over 40 percent of the income of the families that receive them. They have undoubtedly played a vital stabilizing role in a country that has endured civil war, invasions, and refugee crises in the past several decades. In addition, remittances are a valuable source of foreign exchange, amounting to 50 percent more than the country's merchandise exports. This has helped Lebanon maintain a stable exchange rate despite high government debt.

While remittances have helped the Lebanese economy absorb shocks, there is no evidence that they have served as an engine of growth. Real per capita GDP in Lebanon grew only 0.32 percent on average annually between 1995 and 2015. Even during 2005–15, it grew at an average annual rate of only 0.79 percent.

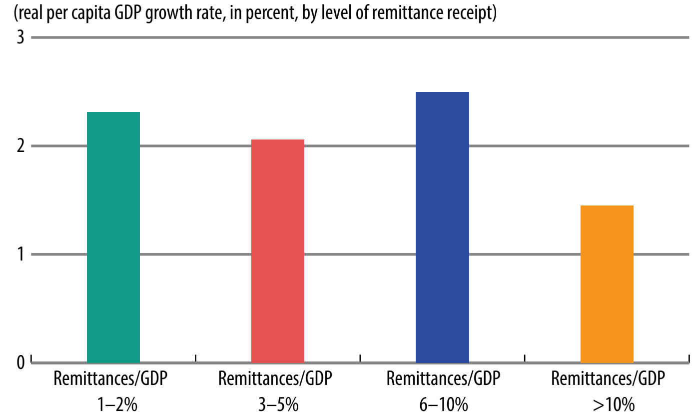
Lebanon is not an isolated example. Of the 10 countries that receive the largest remittance inflows relative to their GDP—such as Honduras, Jamaica, the Kyrgyz Republic, Nepal, and Tonga—none has per capita GDP growth higher than its regional peers. And for most of these countries, growth rates are well below their peers. It is important to recognize that each of these countries is dealing with other issues that may also interfere with growth. But remittances appear to be an additional determining factor rather than just a consequence of slow growth. And remittances may even amplify some of the other problems that restrict growth and development.

Chart 1

No clear link

There is no evidence that remittances add significantly to a country's economic growth.

(real per capita GDP growth rate, in percent, by level of remittance receipt)



Sources: IMF, *Balance of Payments Statistics*; IMF, *World Economic Outlook*; and authors' calculations.
Note: Chart shows the 1990–2017 real per capita GDP growth rate for countries receiving various levels of remittances.

Stifling effect

Returning to the case of Lebanon, the country's well-educated population could be expected to point to robust growth. Lebanese families, including those who receive remittances, spend much of their income on educating their young people, who score much higher on standardized mathematics tests than their peers in the region. Lebanon is also home to three of the top 20 universities in the Middle East, and researchers at these universities produce more research than their regional peers. Lebanon's abundant remittance inflows could provide seed capital to fund business start-ups led by its well-educated citizens.

But statistics show that Lebanon has much less entrepreneurial activity than it should, especially in the high-tech information and communication technology sector. The size of this sector is less than 1 percent of GDP, and Lebanon scores very low on international gauges of this sector's development. Studies of the overall spending habits of remittance-receiving households in Lebanon show that less than 2 percent of inflows goes toward starting businesses. Instead, these funds are typically spent on nontraded goods such as restaurant meals and services, and on imports.

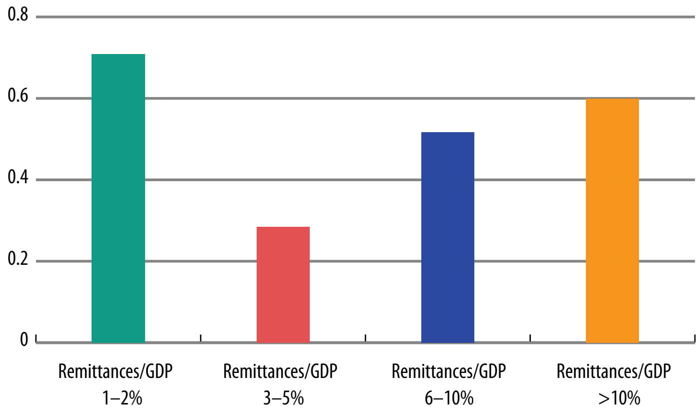
Instead of starting new businesses—or even working in established ones—many young Lebanese choose to emigrate. The statistics are stark: up to two-thirds of male and nearly half of female university graduates leave the country. Employers complain of an emigration brain drain that has caused a dearth of highly skilled workers. This shortage

Chart 2

Dutch disease sets in

Over time, large levels of remittances cause the exchange rate to appreciate, making the country's exports less competitive.

(real effective exchange rate appreciation, in percent, by level of remittance receipt)



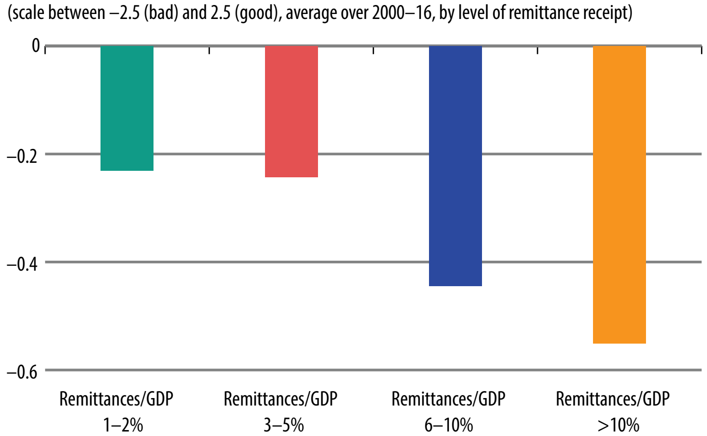
Sources: IMF, *Balance of Payments Statistics*; IMF, *International Financial Statistics* and authors' calculations.
Note: Chart shows the 1990–2017 real e ective exchange rate for countries receiving various levels of remittances.

Chart 3

Impact on government effectiveness

An economy's dependence on remittances has been shown to make governments less responsive to the needs of their citizens.

(scale between –2.5 (bad) and 2.5 (good), average over 2000–16, by level of remittance receipt)



Sources: IMF, *Balance of Payments Statistics*; World Bank, World Governance Indicators; and authors' calculations.

has been identified as a leading obstacle to diversifying Lebanon's economy away from tourism, construction, and real estate, its traditional sources of growth. For their part, young people who choose to seek their fortune elsewhere cite a lack of attractive employment opportunities at home.

Part of the remittance trap thus appears to be the use of this source of income to prepare young people to emigrate rather than to invest in businesses at home. In other words, countries that receive remittances may come to rely on exporting labor, rather than commodities produced with this labor. In some countries, governments even encourage the development of institutions that specialize in producing skilled labor for export.

But why would this situation develop and persist? Research into both the household-level and economy-wide effects of remittances on their recipients provides an answer to this question. The impact on individual countries that receive significant remittances—such as Egypt, Mexico, and Pakistan—has been studied, and cross-country analysis of a variety of countries that receive various amounts of remittances (and of those that send rather than receive remittances) has been performed as well. The insights from the academic literature can be combined into a consistent explanation of how and why economies that receive significant remittance inflows may become stuck at low levels of growth.

To begin with, remittances are spent mostly on household consumption, and the demand for all products (nontraded and traded) in an economy increases as remittances grow. This places upward pressure on prices. The flood of foreign exchange, along with higher prices, makes exports less competitive, with the result that their production declines. Some have referred to this syndrome as Dutch disease (see Chart 2).

Vicious circle

The effect of remittances on work incentives makes this problem worse, by increasing the so-called reservation wage—that is, the lowest wage at which a worker would be willing to accept a particular type of job. As remittances increase, workers drop out of the labor force, and the resulting increase in wages puts more upward pressure on prices, further reducing the competitiveness of exports.

Resources then flow away from industries producing tradable products that face international competition toward those that serve the domestic market. The result: a decline in the number of better-paid, high-skill jobs, which are typical in the traded sector, and an increase in low-skill, poorly paid jobs in the nontraded sector.

This shift in the labor market encourages higher-skilled workers to emigrate in search of better-paying jobs. Meanwhile, the cost of living for most families rises along with domestic prices, and the loss in competitiveness means that more products must be imported, hurting economic growth. This in turn increases the incentive for family members to emigrate so that they can send money home to help relatives shoulder the burden of the higher cost of living.

To make matters worse, remittances are often spent on real estate, causing home prices to rise and in some cases stoking property bubbles. This provides a motive to emigrate for young people seeking to earn enough to buy a home. The result of all this is a vicious circle of emigration, economic stagnation, rising cost of living, and more emigration.

Little incentive to change

Governments could potentially mitigate or break this cycle by taking steps to keep domestic industries competitive. But policies that can accomplish this, such as improving the education system and physical infrastructure, are expensive and take years to implement. And they require strong political will to succeed.

As research has shown, however, remittances have important political economy side effects (see Chart 3). In particular, large inflows allow governments to be less responsive to the needs of society. The reasoning is simple: families that receive remittances are better insulated from economic shocks and are less motivated to demand change from their governments; government in turn feels less obligated to be accountable to its citizens.

Many politicians welcome the reduced public scrutiny and political pressure that come with remittance inflows. But politicians have other reasons to encourage remittances. To the extent that governments tax consumption—say through value-added taxes—remittances enlarge the tax base. This enables governments to continue spending on things that will win them popular support, which in turn helps politicians win reelection.

Given these benefits, it is little wonder that many governments actively encourage their citizens to emigrate and send money home, even establishing official offices or agencies to promote emigration in some cases. Remittances make politicians' job easier, by improving the economic conditions of individual families and making them less likely to complain to the government or scrutinize its activities. Official encouragement of migration and remittances then makes the remittance trap even more difficult to escape.

The absence of clear evidence linking remittances to increased economic growth—and the lack of examples of countries that experienced remittance-led growth—suggests that remittances do indeed interfere with economic growth. The example of Lebanon, moreover, gives a concrete example of how the remittance trap may operate.

And if a remittances trap does exist, then what?

Clearly, given their importance to the well-being of millions of families, remittances should not be discouraged. Is the remittance trap simply the cost societies must bear in exchange for a reduction in poverty? Not necessarily.

Preventing the two downsides of remittances—Dutch disease and weaker governance—could help countries avoid or escape the remittance trap. Improving the competitiveness of industries that face foreign competition is the general prescription for mitigating Dutch disease. Specific measures include upgrading a country's physical infrastructure, improving the education system, and reducing the cost of doing business. Governments could also play a more active role in stimulating new business formation, including seed funding or other financial assistance for start-ups. At the same time, remittance-receiving countries must also push for stronger institutions and better governance.

Given their importance to the well-being of millions of families, remittances should not be discouraged.

Enhancing economic competitiveness and strengthening governance and social institutions are already considered essential to the inclusive growth agenda. But the remittance trap lends urgency to these goals. Avoiding this potentially serious pitfall of remittances may actually be the key to unlocking their development potential by removing a previously unrecognized obstacle to inclusive development. FD

RALPH CHAMI is an assistant director in the IMF's Institute for Capacity Development, **EKKEHARD ERNST** is chief of the macroeconomic policy and jobs unit at the International Labour Organization, **CONNEL FULLENKAMP** is professor of the practice of economics at Duke University, and **ANNE OEKING** is an economist in the IMF's Asia and Pacific Department.

A market in downtown Lagos, Nigeria.

PHOTO: ISTOCK/PEETERV

AFRICA COMES TOGETHER

Sub-Saharan Africa is becoming more integrated—which will aid growth but is not without risk

Francisco Arizala, Matthieu Bellon, and Margaux MacDonald

International conversations on trade are currently dominated by threats of trade wars, but the African continent is moving in the opposite direction. After two years of negotiations, representatives of a large number of African countries signed the African Continental Free Trade Agreement in Kigali on March 21, 2018, at an extraordinary African Union Summit. Is this agreement an attempt to address dire and stagnant economic integration, or is it part of rapid and steady regional integration?

Looking at a wealth of growing linkages across sub-Saharan Africa and drawing on the IMF's bilateral trade statistics, our recent work suggests it is the latter. We document that the subcontinent is much more integrated today than in the past. It may come as a surprise to some, but the level of integration in sub-Saharan Africa is actually comparable to that in the world's other developing and emerging market economies (see Chart 1).

While closer economic relationships among countries are a welcome sign of development and a promising driver of future growth, they also present challenges. Greater interconnection can expose countries to each other's good or bad fortune.

On the positive side, closer economic links between countries make for growth spillovers when fast-growing large economies pull others along with them. On the negative side, greater interconnection can expose small economies to their partners' recessions. This is borne out by the facts: after close to two decades of strong economic activity, sub-Saharan Africa experienced the downside of integration in 2015. The collapse in commodity prices and the slowdown in economic activity in Nigeria and South Africa, the largest economies in the region, contributed to the deceleration of sub-Saharan African growth to a more than 20-year low.

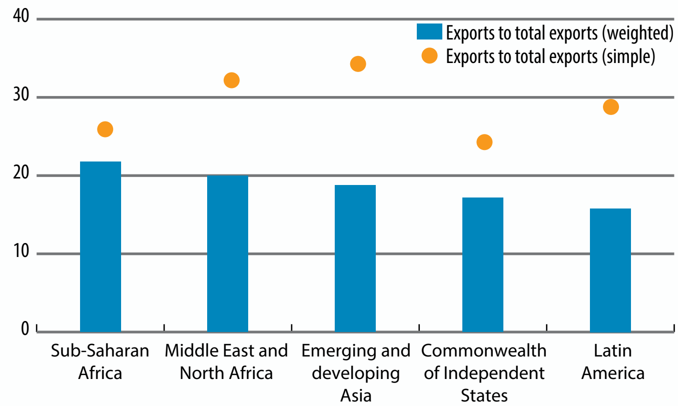
But circumstances change, and since 2017 growth has begun to recover, benefiting from a more favorable external environment. The recovery is mixed, though, and it is unclear to what extent the sluggish recovery of the larger economies is still affecting the rest of sub-Saharan Africa. Beyond the current recovery, sub-Saharan African countries can capitalize on the benefits of regional linkages while minimizing the risks.

Chart 1

Intraregional integration

The level of integration in sub-Saharan Africa is similar to that of other emerging market and developing economies of the world.

(regional exports as percent of total exports)



Sources: IMF, Direction of Trade Statistics database; IMF, World Economic Outlook database; and IMF staff calculations.

Greater interconnection can expose countries to each other's good or bad fortune.

Role of trade

Integration across sub-Saharan Africa has been most notable through trade, steadily increasing in intensity over time: since the 1980s the share of regional exports in total exports has more than tripled (see Chart 2). Sub-Saharan Africa now has the highest share of intraregional trade integration among the world's emerging market and developing economies, followed by the Middle East and North Africa and emerging and developing Asia.

This rising integration in recent decades is the result of the region's higher economic growth relative to that of the world, its tariff reductions, and the strengthening of its institutions and policies. Although the direction has been favorable over time, compared with advanced economies, intraregional trade nonetheless remains relatively low, and the business environment continues to be challenging.

Growth has supported sub-Saharan Africa's increasing integration, but the integration itself has also translated into important growth spillovers: our work finds that on average a 5 percentage point increase in the export-weighted growth rate of intraregional partners is associated with about a 0.5 percent increase in the growth of a typical sub-Saharan African country. Interestingly, and consistent with the region's comparable shares of intraregional trade, trade channel spillovers seem to be similar to those of other emerging market and developing economies.

There are important caveats when it comes to optimism about sub-Saharan African integration, though—most of which indicate that the continent still has a long way to go to reach full integration.

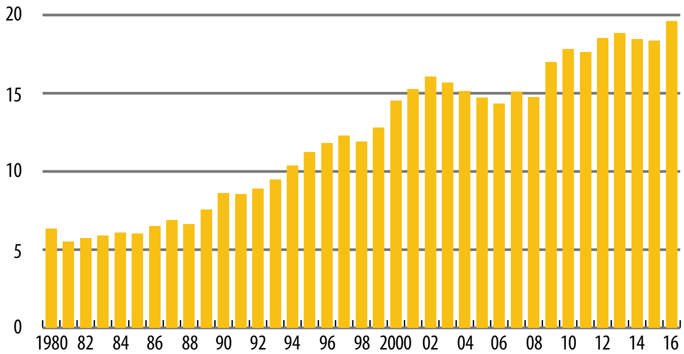
Today, the bulk of intraregional trade is highly concentrated. Ten sub-Saharan countries represent 65 percent of total regional demand for intraregional exports, and as the destination market

Chart 2

On the rise

The share of regional exports in sub-Saharan Africa's total exports has more than tripled in recent decades.

(regional trade as percent of total trade)



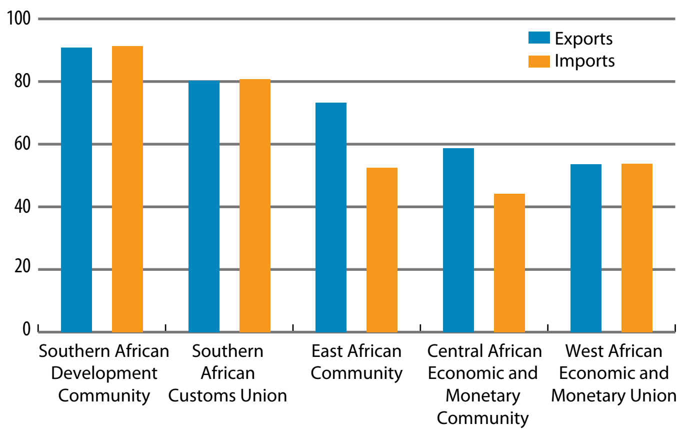
Sources: IMF, Direction of Trade Statistics database; IMF, World Economic Outlook database; and IMF staff calculations.
Note: Calculations based on weighted averages in each year.

Chart 3

Subregional trade

Trade within currency blocs and other regional groupings accounts for the lion's share of the trade within sub-Saharan Africa.

(subregional exports in percent of exports to sub-Saharan Africa)



Sources: IMF, Direction of Trade Statistics database; and IMF staff calculations.

for most of the intraregional trade they have the potential to generate the largest regional spillovers. These include large economies such as South Africa and its neighboring countries, Côte d'Ivoire and the Democratic Republic of the Congo, but surprisingly exclude others, such as Angola and Nigeria, which mostly import from the rest of the world.

Throughout the continent there are other small pockets of intensive intraregional integration, though the import shares are relatively small compared with those of the big players and with total sub-Saharan African intraregional exports. Countries with intensive intraregional integration tend to be smaller and to import significant shares of their neighbors' GDP, and can thus be a substantial source of spillovers at the subregional level. This is particularly true in the case of west African countries such as Burkina Faso, Ghana, and Mali, which are large destination markets for exports worth more than 1 percent of GDP for some of their trading partners.

A closer look at the geographic distribution of trade in sub-Saharan Africa reveals significant subregional concentration. Trade within the Southern African Customs Union (SACU) alone represents half of total sub-Saharan African intraregional trade. Moreover, for the Southern African Development Community (SADC), the East African Community (EAC), and the SACU, trade within these regions represents more than 70 percent of their member countries' intraregional trade. In the Central African Economic and Monetary Community (CEMAC) and the West African Economic and Monetary Union (WAEMU) regions, trade within the regions represents around 50 percent of their intraregional trade (see Chart 3). In absolute terms, the SADC and SACU account for more than 70 percent and 50 percent of total sub-Saharan African trade, respectively (see Chart 4).

The prevalence of trade among neighbors in sub-Saharan Africa is explained by the fact that bilateral trade is hindered by distance and sociocultural differences—that is, trade becomes increasingly difficult the greater the distance from a country's subregion. In fact, although this is a global phenomenon, these barriers are even more pervasive in sub-Saharan Africa than in the rest of the world. Not surprisingly, then, the rise in trade among neighbors has been a significant driver of trade growth in the region. About half of the 1980–2016 growth in regional trade stems from this type of trade integration—a result that is particularly strong in the EAC and SADC.

The overall pattern of integration reflects not only geographic proximity, but also infrastructure constraints and the impact of regional trade agreements and lower nontariff barriers within subregions. Given that it is underdeveloped, trade between subregions holds the greatest potential for further integration. In this regard, the African Continental Free Trade

Agreement, signed by countries from across the continent, could kickstart a new wave of even deeper integration.

There is another significant reason for the intraregional integration in sub-Saharan Africa: natural resource endowment. It turns out that the weight of a country's exhaustible natural resources in the economy strongly affects its trading patterns.

Non-resource-intensive countries are highly exposed to regional demand: intraregional exports account for 7 percent of GDP, or 30 percent of total exports, on average. Non-oil-resource-intensive countries exhibit similar patterns, but to a slightly lesser degree.

Oil exporters, on the other hand, are different. And the difference is dramatic—exports from oil-producing countries to the rest of the world average 25 percent of GDP, while intraregional exports represent only 1.5 percent. These countries are thus sheltered from regional spillovers but are more exposed to global spillovers.

Complex factors at play

Trade integration does not develop in a vacuum. Drivers similar to those that support and reinforce intraregional trade also strengthen intraregional financial links. Banks headquartered in sub-Saharan Africa have been increasing their regional financial linkages since 2007 as European and American banks left the region following the global financial crisis. Ongoing financial and technological development also means that it costs less to send remittances throughout the region and has led to rising regional remittance flows. In some countries, this can be a significant share of GDP.

Fiscal policy decisions can have cross-border impacts on prices and investment in countries with free trade or in the presence of porous borders. These additional spillover channels are deepening, just as trade is, but they still play out primarily at the subregional level today.

Over the medium term, greater integration across these various sectors means a bigger market for businesses, financial institutions, and exporters to build new client relationships across borders. It also means greater opportunities for financial institutions to bring services to the financially underserved and excluded, and for expatriate workers to provide for their relatives at home through remittance flows.

Sub-Saharan Africa is still a continent of enormous potential. Given that much of its integration has so far been subregional, there is potential for even deeper integration. The recent African Continental Free Trade Agreement, if implemented vigorously, should accelerate this trend further.

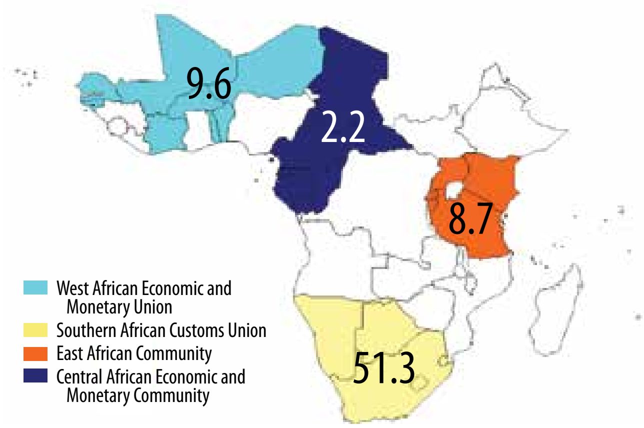
However, the prospect of economic shocks should prompt policymakers to redouble efforts to address spillover risks. Structural transformation strategies are needed to promote diversification and guard against spillovers from overreliance on too few products and partners. Deeper trade networks, as promoted by the African Continental Free Trade Agreement, are a welcome development, because they can help countries trade more products with more diverse partners. Governments should build precautionary cushions and monitor and regulate cross-border links—for example, in banking and the financial sector—to set the stage for growth and stability. FD

Chart 4

Trade among neighbors

Proximity as well as cultural and linguistic similarities explain the prevalence of intraregional trade in Africa.

(regional exports in percent of total exports to sub-Saharan Africa)



Sources: IMF, Direction of Trade Statistics database; IMF, World Economic Outlook database; and IMF staff calculations.

The African Continental Free Trade Agreement could kickstart a new wave of even deeper integration.

FRANCISCO ARIZALA is an economist in the IMF's African Department, **MATTHIEU BELLON** is an economist in the IMF's Fiscal Affairs Department, and **MARGAUX MACDONALD** is an economist in the IMF's Research Department.

This article draws on the IMF Spillover Note "Regional Spillovers in Sub-Saharan Africa—Exploring Different Channels," by Francisco Arizala, Matthieu Bellon, Margaux MacDonald, Montfort Mlachila, and Mustafa Yenice.

How Knowledge *Spreads*

More rapid diffusion of know-how is an important benefit of globalization

Johannes Eugster, Giang Ho, Florence Jaumotte, and Roberto Piazza

A Chinese company built a 10-house village with a 3-D printer in less than one day in 2014. A stretch of solar-power highway that converts sunlight into electricity and transfers it directly to the power grid opened in Jinan, eastern China, just last year. And a few years back, Korea switched on a road that wirelessly recharges online electric vehicles as they drive over it. These are just a few examples of the impressive technological advances that countries like Korea and—more recently—China have made in recent decades.

Until recently, production of the global stock of knowledge and technology was concentrated in a few large industrialized economies. From 1995 to 2014, three-quarters of the world's patented innovations originated in the Group of 5 (G5) technology leaders—namely the United States, Japan, Germany, France, and the United Kingdom. With globalization and advances in information technology, however, the potential for knowledge to travel faster and further has increased dramatically, opening up greater opportunities for emerging

PHOTO: ISTOCK/WANGANQI

market economies to learn from other, technologically advanced, countries and build their own innovation capacity.

In our research, which builds on the work of Giovanni Peri (2005), we examine the strength of technology diffusion and its evolution over the past two decades and the implications of these developments for the innovation landscape. Understanding exactly how this diffusion takes place is essential: technology transfer is the key to spreading knowledge and lifting incomes and living standards across the world.

New innovators emerging

When inventors file a patent application to protect their intellectual property, they must cite related prior knowledge on which their innovation builds, such as patents from other inventors. The number of cross-patent citations is therefore a direct measure of knowledge flows. Our research examined citations obtained from the worldwide patent database PATSTAT covering more than 100 million patent documents. This measure is not without drawbacks and does not capture all knowledge flows—for example, it excludes hard-to-measure informal knowledge flows and patent infringement. However, it is a good starting point for gauging the spread of know-how across countries, as it is measurable and recorded systematically (see Chart 1).

In 1995, the United States, Europe, and Japan dominated global patent citations, but in more recent years, Korea and China have made increasingly large use of the global stock of knowledge as measured by their patent citations.

A more formal analysis of these cross-patent citations—to estimate the intensity of knowledge diffusion—also shows that the share of knowledge spreading from the G5 technology leaders to emerging market economies (beyond China and, formerly, Korea) has increased over the past two decades. In contrast, the share of knowledge that radiates from the G5 to other advanced economies has been broadly flat—even declining somewhat since the global financial crisis.

Emerging market economies have been able to capitalize on this greater access to global knowledge to enhance their innovation capacity and productivity. Knowledge flows from the G5 are found to give a significant boost to domestic innovation (as proxied by patenting) and productivity in both advanced and emerging market economies. For example, a 1 percent increase in knowledge flows from the G5 is associated on average with about a 1/3 percent increase in patenting activity by the recipient country-sector if the amount of domestic research and development (R&D) is held constant. And the strength of this effect has increased over time, especially for emerging market economies.

R&D's role

As a result of this catch-up, new global innovators have emerged. Although our results apply broadly to emerging market economies, Korea—an advanced economy since 1997—and China stand out, in part because they are large economies. Both have joined the top-five innovating countries, whether measured by their patenting activity or their amount of spending on R&D (see Chart 2). This success in part reflects learning through knowledge and technology transfer, but it was also made possible by substantial investment in domestic R&D and more generally by education that increased people's ability to understand and apply that technology.

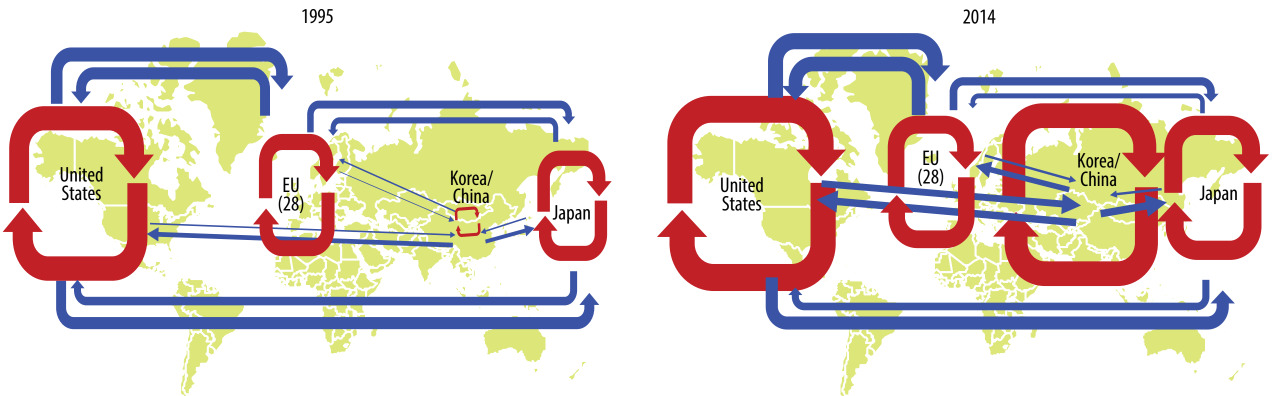
Domestic R&D serves a dual purpose—it can spur the development of new technologies and also help countries absorb existing foreign technologies. According to the Organisation for Economic Co-operation and Development—the main source for these data—China has increased its spending on R&D ninefold since the early 2000s, to $375 billion a year (in constant and purchasing-power-parity-adjusted terms). Its R&D spending is now second only to that of the United States ($460 billion) and is much larger than Japan's ($150 billion). Korea, at $70 billion a year, spends close to the average of large European countries such as France, Germany, and the United Kingdom.

Another measure of the rise of Korea and China is growth in their patenting activity. An examination of international patent families—using a patent-count measure that includes only applications to at least two distinct patent offices, in order to exclude low-value patents—shows that China and Korea each patent about 20,000 inventions a year. Although this is still substantially below patenting in Japan and the United States (about 60,000 each), patenting activity in China and Korea is comparable to the average of France, Germany, and the United Kingdom. A deeper investigation into the types of patents by economic sector reveals that the rise of patenting in China and Korea is particularly pronounced in the electrical and optical equipment sectors and, in Korea, for machinery equipment as well.

Chart 1

What a difference two decades make

In 1995, most patents originated in the United States, Europe, and Japan. Today, China and Korea have emerged as global innovators.



Sources: European Patent Office, PATSTAT database; and IMF staff calculations.
Note: Figure shows the evolution in citation flows between (blue) and within (red) key countries and regions. For a given year, the thickness of the arrows is proportional to the respective numbers of citations. For visibility, the increase in citations over time could not be reflected proportionally (approximate scaling factor 2014 vs. 1995 is 1.5 in the figure; actual is 2.5). EU (28) = AUT, BEL, BGR, CYP, CZE, DEU, DNK, ESP, EST, FIN, FRA, GBR, GRC, HRV, HUN, IRL, ITA, LTU, LUX, LVA, MLT, NLD, POL, PRT, ROU, SVK, SVN, SWE. Data labels in the figure use International Organization for Standardization (ISO) country codes.

Competition: good or bad?

The emergence of Korea and, more recently, China as global innovators is a striking development that promises to lift living standards for a large share of the global population. But do these developments discourage innovation in the traditional technology leaders, and could that have contributed to the global productivity slowdown? Our research does not address this question directly, but we do not believe that it has. Here's why.

First, technology leaders benefit both directly and indirectly from exporting their technology and knowledge. They benefit directly by selling their technologies (whether embodied in machinery or through the licensing of patents) to other countries. Of course, this assumes that intellectual property rights are respected so that the acquirer pays a fair price for the technology. But technology leaders can also benefit indirectly: higher productivity in other economies means higher incomes, which fosters demand for exports more generally, including from traditional technology leaders.

Second, and more subtly, an important characteristic of knowledge—unlike most goods—is that it is a "nonrival" good. The fact that one person knows something and uses that information does not prevent others from knowing and improving on it. Knowledge gained, then, from past research efforts—whether domestic or foreign—is expected to increase the productivity of future research efforts (Grossman and Helpman 1991). As inventors in China and Korea develop new ideas and add to the global stock of knowledge, innovators in the traditional technology leaders (and, of course, the world more generally) can also benefit from that new knowledge.

Cross-patent-citations data suggest that this knowledge snowballing may already be taking place: for example, inventors in G5 countries increasingly cite Chinese patents. These citations are today approaching the same order of magnitude as those from G5 to other advanced economies. In our analysis, we find that knowledge flows are not one-directional from technology leaders to other countries. Traditional technology leaders benefit from each other's innovations and reap even greater benefits than other (nonleader) countries do (Chen and Dauchy 2018).

Third, growing competition from China and other emerging market economies in global markets has been a stimulating force for innovation and technology diffusion. Although the relationship between competition and innovation is complex, our analysis shows that, for most countries and sectors, increased competition—measured either by import penetration from China or by the decline in global sales concentration associated with the rise of emerging market firms—has spurred innovation and adoption of foreign technologies. This evidence is based on the experience of advanced and emerging market economies outside the G5, but it nevertheless suggests that competition has been a positive force for innovation.

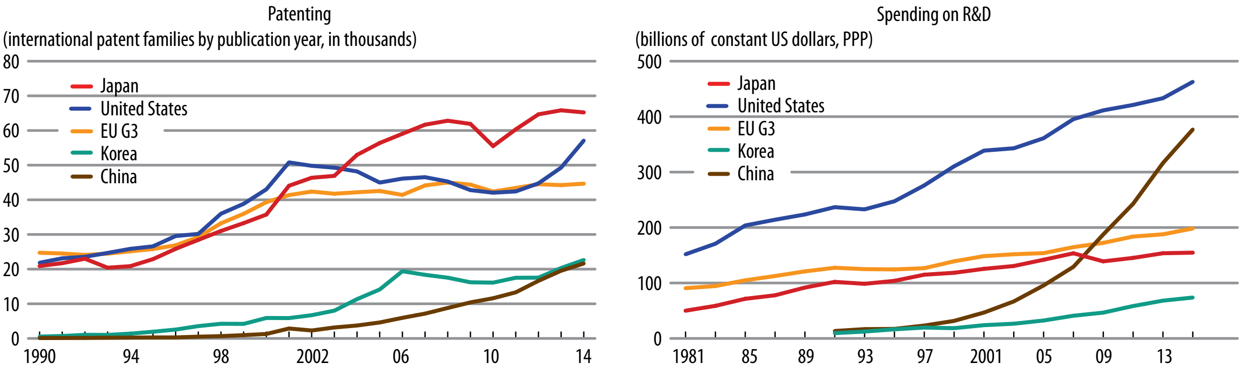
Level playing field

A look at trends in US innovation shows that aggregate R&D spending has continued its

Chart 2

Join the club

Korea and China have joined the top-five innovating countries, whether measured by their patenting activity or their amount of spending on R&D.



Sources: European Patent Office, PATSTAT database; Organisation for Economic Co-operation and Development; and IMF staff calculations.
Note: EU G3 = France, Germany, United Kingdom; PPP = purchasing power parity; R&D = research and development.

robust rise. Patenting activity and total factor productivity, however, show signs of leveling off. But this reduced productivity growth more likely reflects a temporary slowdown in innovation during the transition between two major innovation waves—the mid-1990s information and communication technology revolution and the much-anticipated automation and artificial intelligence revolution (Brynjolfsson, Rock, and Syverson 2017). Other structural and cyclical factors also likely contributed (Adler and others 2017).

In summary, technology diffusion and the emergence of new global innovators probably do not harm traditional innovating countries; competition has long been a key driver of ingenuity and innovation. But a fair and level playing field is essential: intellectual property rights must be well designed and enforced. Many G5 country concerns—especially with respect to China—revolve around forced transfer of technology at nonmarket, unfavorable terms in exchange for access to one of the largest and fastest-growing markets in the world.

Ultimately, innovation and technology diffusion are best served by respect for intellectual property rights. Without it, the world could see breakthroughs decline when innovators are unable to recoup their costs. Protection of intellectual property rights is no less important for emerging market economies if they want to benefit from multinationals' technology transfer and their own inventors' ingenuity. The explosion of Chinese patenting is perhaps an encouraging sign that, as the country develops valuable innovations of its own, it will come to recognize the value of intellectual property protection. FD

JOHANNES EUGSTER, GIANG HO, and **ROBERTO PIAZZA** are economists and **FLORENCE JAUMOTTE** is a deputy division chief, all in the IMF's Research Department.

This article is based on "Is Productivity Growth Shared in a Globalized Economy?," Chapter 4 in the April 2018 IMF World Economic Outlook.

References:

.Adler, G., R. Duval, D. Furceri, S. Kilic Celik, K. Koloskova, and M. Poplawski-Ribeiro. 2017. "Gone with the Headwinds: Global Productivity." IMF Staff Discussion Note 17/04, International Monetary Fund, Washington, DC.

Brynjolfsson, E., D. Rock, and C. Syverson. 2017. "Artificial Intelligence and the Modern Productivity Paradox: A Clash of Expectations and Statistics." In *Economics of Artificial Intelligence*. Chicago: University of Chicago Press.

Chen, Sophia, and Estelle Dauchy. 2018. "International Technology Sourcing and Knowledge Spillovers: Evidence from OECD Countries." IMF Working Paper 18/51, International Monetary Fund, Washington, DC.

Grossman G., and E. Helpman. 1991. *Innovation in the World Economy*. Cambridge, MA: MIT Press.

Peri, G. 2005. "Determinants of Knowledge Flows and Their Effect on Innovation." *Review of Economics and Statistics* 87 (2): 308–22.

IN MEMORIAM: GIANG HO

Ms. Giang Ho passed away unexpectedly as *F&D* was going to press. Ms. Ho, a Vietnamese national, joined the IMF in 2011. She was a talented economist with a sharp analytical mind matched only by her pragmatism and discipline. Her wit and smile will be sorely missed. The *F&D* team would like to extend our most sincere condolences to her family and friends.

Subsidies: Some Work, Others Don't

Some government subsidies make sense, but often there are downsides

Benedict J. Clements and Ian Parry

NORWAY EXEMPTS OWNERS of electric vehicles from paying highway tolls. In Australia, the government pays part of the wages when businesses hire young people, indigenous Australians, or older workers. Singapore offers tax breaks to companies that establish global or regional headquarters in the country. All these are examples of subsidies—fiscal tools governments use to encourage economic development, help disadvantaged groups, or advance other national objectives.

Subsidies take many forms. Governments sometimes keep prices artificially high, which is the case with subsidies intended to boost the incomes of farmers. They may offer services, such as a university education or a subway ride, at below cost. They may pay some of the interest on loans used to finance construction of a road or a power plant. Or they may grant relief from taxes on certain products or technologies.

When do subsidies make sense? They can be a good policy tool when used to correct so-called market imperfections; that is, when competitive, private markets fail to deliver socially desirable outcomes. For example, subsidies can encourage businesses to invest in research and development that benefits not only their firm, but the industry or society as well. They can also help start-ups survive an initial period of losses until they grow large enough to be profitable (although governments need enough information to determine whether firms will succeed when they grow larger).

Impact on inequality

But there are drawbacks. Consider energy subsidies, which are often intended to help low-income households. These can be a drain on government resources if they are available to everyone, including those who are relatively well-off. A targeted cash transfer aimed at poor households costs far less. Subsidies can also exacerbate inequality if they disproportionately benefit those producing or consuming the most. For example, across Africa, Asia, Latin America, and the Middle East, the top 20 percent of households capture on average *seven times* as many of the benefits of energy subsidies as do the bottom 20 percent (Coady, Flamini, and Sears 2015).

Another drawback: subsidies that do not address market imperfections can distort prices, causing a misallocation of scarce labor and capital that undermines growth. Propping up petroleum prices, for example, may artificially keep firms afloat in energy-intensive sectors and damp investment in alternative energy. Producer subsidies in agriculture, which increase prices received by farmers above prices for imported food products, also reduce incentives for improving efficiency. In the European Union, these subsidies averaged 20 percent of gross farm receipts in 2014–16, according to a 2017 report by the Organisation for Economic Co-operation and Development.

Some subsidies can be harmful, such as those for fossil fuels. They are not only expensive but also at odds with environmental objectives, such as reducing deaths caused by local air pollution or meeting commitments under the 2015 Paris Climate Change Agreement to

ART: THE NOUN PROJECT / MASSUPA KAEWGAHYA reduce emissions of carbon dioxide and other heat-trapping gases. In a broad sense, energy can be considered subsidized whenever its price does not fully reflect not just production costs, but also the full range of environmental costs. Using this more expansive measure, global subsidies in 2015 are estimated at a whopping $5.3 trillion, or 6.5 percent of global GDP (Coady and others 2017)—more than governments spend on health care throughout the world. These subsidies are pervasive across both advanced and developing economies. Subsidies were largest in China, at $2.3 trillion, followed by the United States, at $700 billion, and Russia and India, at about $300 billion each.

Reform strategies

Subsidy reform can be a tough sell because it often involves raising the prices of goods, such as gasoline or food, which immediately hits consumer pocketbooks. Many attempts to scale back harmful subsidies have been reversed under pressure from interest groups and the public.

Governments therefore need a comprehensive and detailed reform strategy that specifies clear long-term objectives for future price paths and the use of revenues (Clements and others, 2013).

Subsidies that do not address market imperfections can distort prices.

A far-reaching communications strategy is also needed to show how subsidies crowd out more efficient and equitable public spending. A gradual approach to reform, allowing consumers and firms time to adjust, can help. Measures such as cash transfers to protect vulnerable households and retraining for displaced workers are often essential to overcome opposition.

Reforming subsidies isn't easy, but many (mostly energy-producing) countries have nevertheless managed to raise domestic prices in recent years, including Angola, Egypt, India, Mexico, and Saudi Arabia. Reforms need to go a lot further, however, particularly in reflecting environmental costs in fuel prices, which should be a key component of countries' strategies to implement the pledges made in 2015 under the Paris Climate Change agreement to reduce carbon emissions. FD

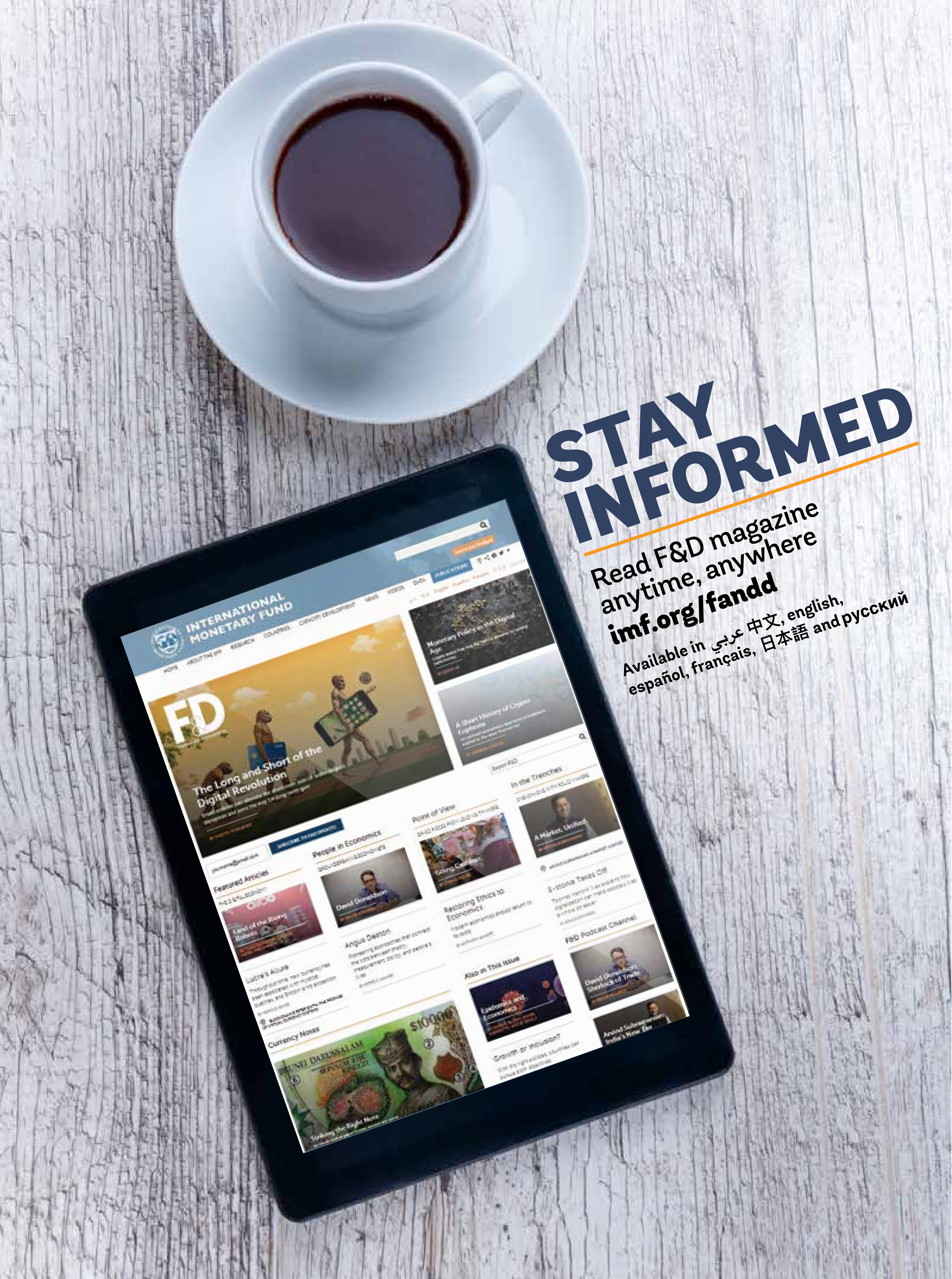
BENEDICT J. CLEMENTS is a division chief in the IMF's African Department, and **IAN PARRY** is principal environmental policy expert in the IMF's Fiscal Affairs Department.

References:

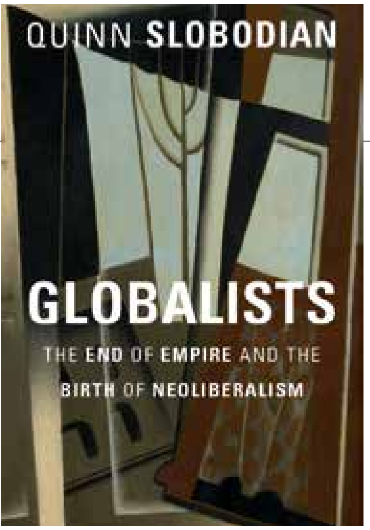
Clements, Benedict J., David Coady, Stefania Fabrizio, Sanjeev Gupta, Trevor Alleyne, and Carlo A. Sdralevich. 2013. *Energy Subsidy Reform: Lessons and Implications*, Washington: International Monetary Fund.

Coady, David, Valentina Flamini, and Louis Sears. 2015. "The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries." In *Inequality and Fiscal Policy*, edited by Benedict Clements, Ruud de Mooij, Sanjeev Gupta, and Michael Keen. Washington, DC: International Monetary Fund.

Coady, David, Ian Parry, Louis Sears, and Baoping Shang. 2017. "How Large Are Global Fossil Fuel Subsidies?" *World Development* 91:11–27.


STAY
INFORMED
Read F&D magazine
anytime, anywhere
imf.org/fandd
Available in عربي 中文, english,
español, français, 日本語 and русский
INTERNATIONAL MONETARY FUND
The Long and Short of the Digital Revolution

From Vienna to the WTO



Quinn Slobodian

Globalists: The End of Empire and the Birth of Neoliberalism

Harvard University Press, Cambridge, MA, 2018, 381 pp., $35

NEOLIBERALISM IS NOW the go-to moniker for everything that went wrong in the late 20th century and the new millennium. Often a term of abuse, it is a synonym for a crassly materialistic and superficial belief in the inherent superiority of markets. Its standard bearers were British Prime Minister Margaret Thatcher and US President Ronald Reagan.

Today many prominent figures, such as Charles Moore (Thatcher's official biographer), Oliver Letwin (a British Conservative intellectual), and the writer David Frum cry mea culpa and complain that greater home ownership has produced more debt than security and that flexible labor markets are a threat rather than an opportunity.

Slobodian aims in his latest book to trace an intellectual history from the Habsburg Empire and the glittering intellectual culture of Vienna to the World Trade Organization. He argues that the eventually dominant vision of economic order cared less about liberty and laissez faire and the legacy of Adam Smith than about protection of property against radical political demands that followed from both socialism and nationalism.

The book is less interested in the financial infrastructure of globalization than in the makings of today's trade regime. Some delightful insights show how many modern views of globalization—threatened by tariff walls, vulnerable to a spiral of declining trade—originated in Vienna. Clive Morrison-Bell, at the Vienna Chamber of Commerce, built a physical model of Europe with wooden tariff walls; Oskar Morgenstern, at the Vienna Institute for Business Cycle Research, graphically depicted the shrinking world trade of the Great Depression.

Slobodian places his genealogy above that of the Virginia (public choice) and Chicago (monetarism and deregulation) schools. The key players in the new story—Friedrich Hayek and Wilhelm Röpkes—were reacting to three shocks: World War I, the Great Depression, and decolonization. In response, these intellectual pioneers turned to international institutions to provide a regime that guaranteed property rights and international division of labor based on stability. The original candidate for the guarantor of a supranational non-territorial was the International Chamber of Commerce, then subsequently the League of Nations.

Slobodian's heroes of neoliberalism viewed this order as a necessary balancing of the political business of democratization. Without limits, democracy might make too many (unfulfillable) promises. Domestic constitutional order could be a constraint, but that order would be more secure if anchored in an international legal framework.

Slobodian has produced a deep and interesting book, though perhaps not deep enough. He proposes that his heroes are defending property just to protect the status quo. But that interpretation is not convincing: the interwar fathers of modern neoliberalism were responding to a 1930s world of arbitrary confiscation of property—often based on national, racial, or religious identity—that was an intrinsic part of marginalization, dehumanization, and ultimately destruction. Their analysis cannot be used to object to taxation, even high and progressive taxation, as long as it is equally and impartially applied. The defense of property was a part of, and emanated from, deeper concern with the protection of human dignity. FD

HAROLD JAMES, historian, Princeton University and IMF

Special Occasion Coins

Commemorative material highlights an annual global gathering

Sascha Djumena

COMMEMORATIVE COINS to mark special occasions or events have been around for centuries. In ancient Rome, commemorative coins were minted to celebrate victorious military campaigns. Today, such coins are issued to celebrate international cooperation and cultural diversity.

Since the creation of the International Monetary Fund and the World Bank Group in 1944, the leadership and member countries of both institutions have met every autumn to address critical issues facing the global economy. For the inaugural meeting of the governing body, held in the US city of Savannah, Georgia, in March 1946, a special brass medal was designed depicting US President Franklin Delano Roosevelt on one side and the outline of the state of Georgia on the other. The commemorative medal was placed at each delegate's dinner plate.

PHOTO: IMF

These Annual Meetings usually take place in Washington, DC, but every third year leaders congregate abroad in one of the institutions' 189 member countries. To commemorate and promote the global gathering, host countries take advantage of the limelight by issuing coins, stamps, currency notes, special medals, and other memorabilia, often drawing attention to their local culture, economic progress, and technological innovation.

Symbolically, each set of commemorative coins represents the progress and wonder of the host nation.

Coins and banknotes are particularly fitting given that the focus of the convening institutions includes safeguarding the global financial system. In most cases, commemorative coins can't be used to go shopping, but they do hold special value and are sought after by collectors. For example, a 1,500 piso gold coin—the first tribute of its kind—issued by the Philippines when it hosted the 1976 Annual Meetings can fetch more than $1,500 at auction. Its current face value is $28. Thailand, Spain, the Czech Republic, the United Arab Emirates, Singapore, Turkey, and Japan all followed suit by issuing their own unique coins.

Thailand went a step further in 1991, issuing a special commemorative folder containing banknotes of 10, 20, 50, 100, and 500 baht that were overprinted with "1991 World Bank Group/IMF Annual Meetings" in both Thai and English at the bottom and "Specimen" diagonally across each note.

Symbolically, each set of commemorative coins represents the progress and wonder of the host nation and is produced using the latest minting technology. In Dubai in 2003, the United Arab Emirates became the first country to use color in an Annual Meetings coin design. In 2006, when Singapore played host, coins were

issued featuring a bustling skyline and a map of the world, conveying the country's position as an international financial hub. In 2012, Japan used special iridescent technology and microfabrication to give a rainbow-like shine to its commemorative coin depicting Mt. Fuji.

In 2015, Peru designed a beautiful silver medal instead of a coin, because Peruvian law requires one face of all coins, including commemorative coins, to display the national coat of arms—limiting a historic design to one side only. Choosing the medal format allowed for more space to depict the Cathedral of Lima, centerpiece of a UNESCO World Heritage Site, on one side and the new Annual Meetings donut-shaped logo of flags on the other.

This year, the Annual Meetings are being held in Bali, and the host country of Indonesia will issue commemorative stamps. If you are attending the meetings, you may want to get your hands on more than one: they could become quite valuable someday. FD

SASCHA DJUMENA is the program coordinator for Central Asia at the World Bank and has been collecting stamps and coins for more than 40 years. Coins and medals shown are from the author's private collection.