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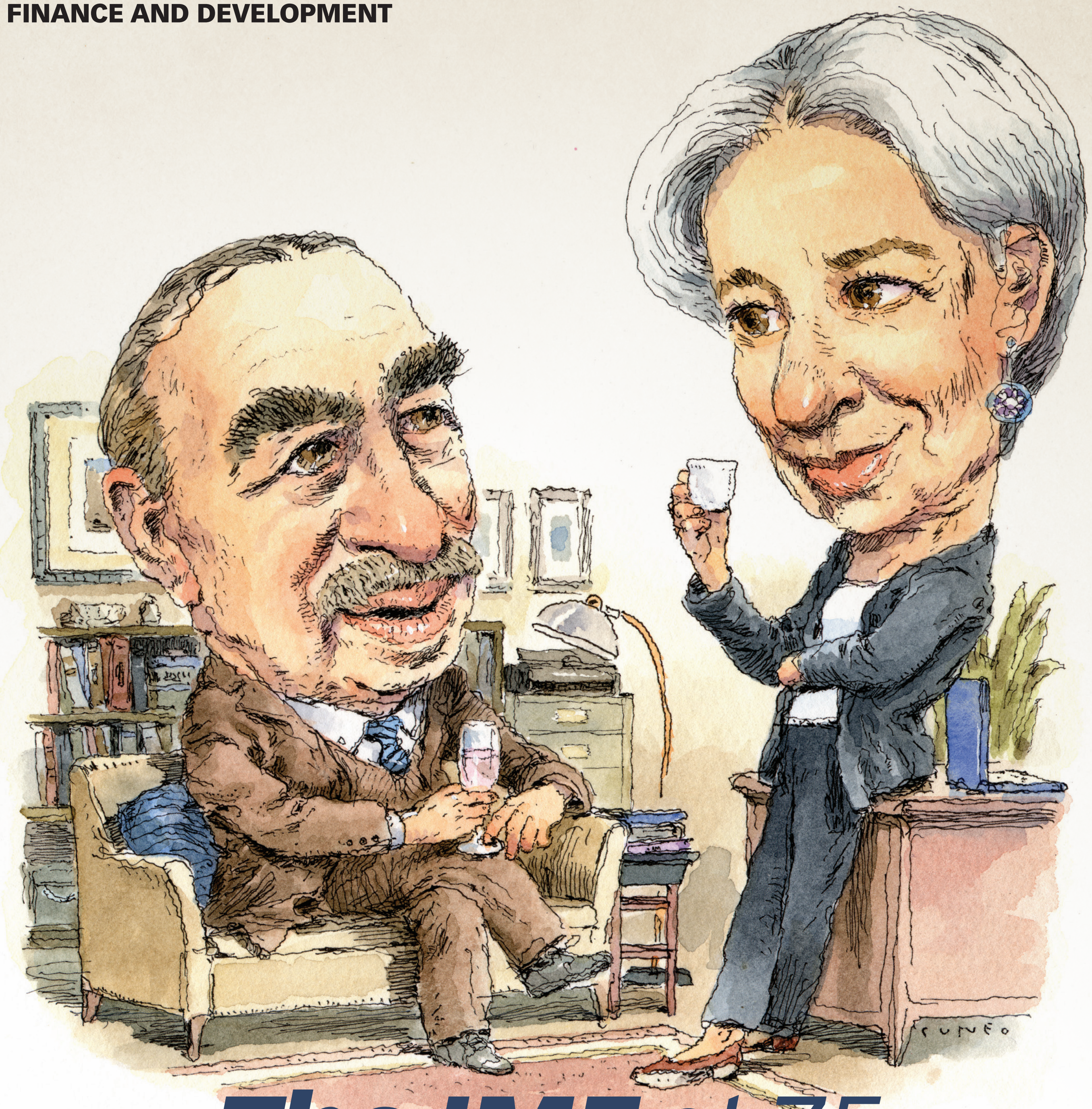

The IMF at 75

INTERNATIONAL MONETARY FUND

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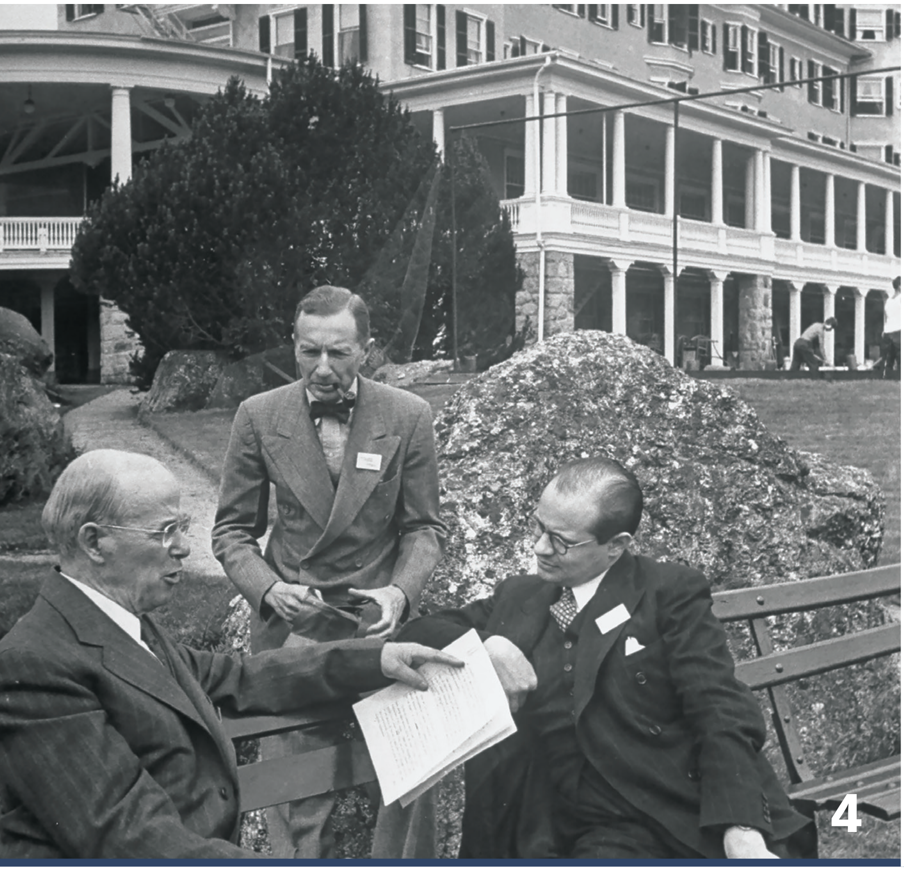

The IMF's most durable characteristic has been **its ability to adapt** to successive changes in the world.

THE IMF AT 75

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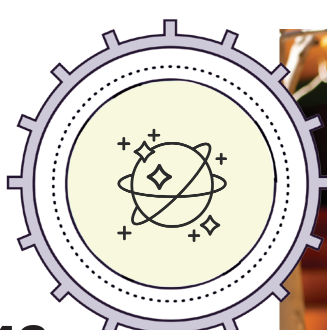

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DEPARTMENTS

Changing with the Times

IF LORD KEYNES, who helped usher in the post–World War II economic order at the Bretton Woods conference, visited the IMF today, he would be astonished at the institution's evolution. He would find a modern IMF able to help countries with new tools for analyzing financial risks and external imbalances and take on income inequality, corruption, and climate change. He would marvel at our universal membership, diverse staff, and female head. He would also find a world transformed by new emerging powers and technologies that link countries and markets at light speed.

Keynes would understand today's reality too. He saw it all before: growing economic and political nationalism, fraying of alliances, and sharply declining support for multilateralism. Yet he wouldn't despair. With his characteristic energy, Keynes would call for a renewed commitment to global economic cooperation.

In this issue marking the IMF's 75th anniversary, we heed his call by turning to the sharpest minds to assess the challenges to come and how best to confront them. Martin Wolf and Mohamed El-Erian consider how the IMF must continue to change to face new realities and better serve its member countries. We also look at key global trends. Keyu Jin foresees volatility as China integrates fully into global financial markets. Pinelopi Goldberg focuses on the uncertainties around trade, and Raghuram Rajan discusses how best to manage growing flows of capital across borders.

For IMF Managing Director Christine Lagarde, the answer lies in a "new" multilateralism—one that puts people at the center of all our efforts. It means ensuring that governments and institutions work to attain common goals for a prosperous, inclusive, and sustainable future.

Just as the IMF has adapted to change since 1944, it will continue to evolve and innovate to serve the needs of global economic harmony. Keynes and the 44 delegates that created the institution would be proud. FD

GITA BHATT, editor-in-chief

ON THE COVER

For our 75th anniversary cover, illustrator John Cuneo depicts a fictional conversation between current IMF head Christine Lagarde and founder John Maynard Keynes, who travels through time to visit the IMF of today.

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INTERNATIONAL MONETARY FUND

Member country delegates confer at the Bretton Woods Conference in 1944.

PHOTO: ALFRED EISENSTAEDT/THE LIFE PICTURE COLLECTION/GETTY IMAGES

THE IMF

Today and Tomorrow

To meet future challenges, the IMF must have strong backing from its members

Martin Wolf

"Protection will lead to great prosperity and strength."

—US President Donald Trump, inaugural address, January 20, 2017

"We have come to recognize that the wisest and most effective way to protect our national interests is through international cooperation—that is to say, through united effort for the attainment of common goals."

—US Treasury Secretary Henry Morgenthau, Jr., closing address at Bretton Woods Conference, July 22, 1944

"For everything to stay the same, everything must change."

—Giuseppe Tomasi di Lampedusa, *The Leopard*

The world is changing. The IMF is changing with it. The question, however, is not only how it needs to change if it is to remain relevant. It is also whether the political environment will allow it to remain relevant. The IMF is built on a commitment to cooperation among member countries. That commitment is on the wane. But the countries of the world might rediscover its importance. If so, they will find the Fund an invaluable instrument. The IMF cannot ensure that outcome. But it can, and must, prepare for it. To its credit, it is doing so.

The world that surrounds the Fund has changed, or is changing, in several crucial respects.

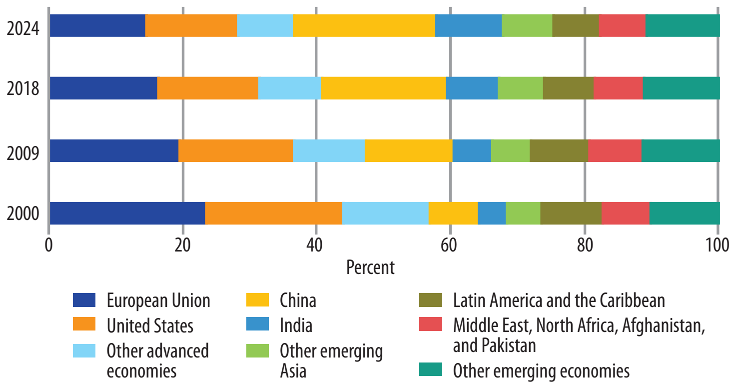
The first and most important change is a shift in global economic, and therefore political, power. In 2000, advanced economies generated 57 percent of global output, measured by purchasing power parity. By 2024, according to IMF forecasts, that share will fall to 37 percent. Meanwhile, China's share will jump to 21 percent from 7 percent, and the rest of emerging Asia will account for 39 percent of global output, compared with 14 percent for the United States and 15 percent for the European Union (see Chart 1).

The second transformation is an increase in great-power rivalry as relations deteriorate between Western

Chart 1

Asia rising

Emerging Asia and China account for a growing share of global GDP, while the share produced by advanced economies is dwindling.



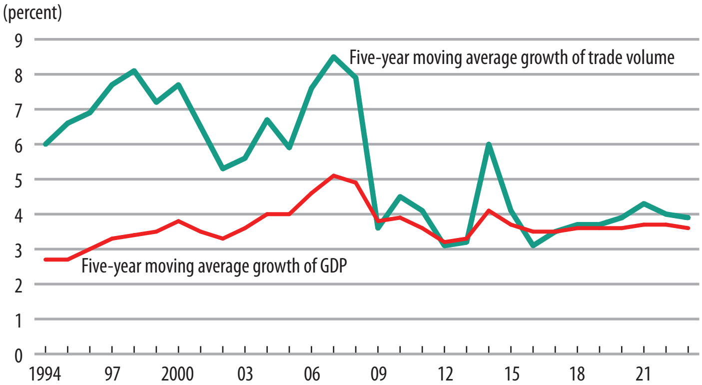
Source: IMF, *World Economic Outlook*.
Note: Shares are calculated based on purchasing power parity.

Chart 2

Convergence

Before the global financial crisis, global trade was expanding at almost twice the pace of GDP. Today, the growth rates are about the same.

(percent)



Source: IMF, *World Economic Outlook*.
Note: Figures are based on moving averages at the end of each period.

powers and a rising China. The United States has labeled China a "strategic competitor." The European Union, more narrowly, has called it an "economic competitor in the pursuit of technological leadership." Either way, cooperation seems certain to become more difficult.

The third change is a turn toward populist politics, not least within advanced economies. One feature of this populism is suspicion toward technocratic expertise. This affects not just the credibility of domestic technocratic institutions, including independent central banks and finance ministries, but also of international technocratic institutions, among which the IMF is arguably the most significant.

The fourth change consists of the slowdown, or even reversal, of globalization. This is markedly true in some areas of finance, such as a dramatic decline in the foreign claims of euro area banks (Lund and others 2017). But it is also true in trade: prior to the transatlantic financial crisis, the volume of world trade grew almost twice as fast as world output. Now trade and output are growing at about the same rate. Recently we have even seen the emergence of outright protectionism in the United States (see Chart 2).

The fifth change involves technology. Technological progress has been the driving force of economic growth. But the role of the internet and recent advances in artificial intelligence have brought new vulnerabilities and upheavals, including cyberattacks and massive shifts in labor markets.

The sixth change is an increase in financial fragility. This has been gathering over decades. Substantial efforts have been made to reduce this fragility, not least by the IMF. But the ratio of debt to gross output has increased, and debt has shifted from the private to the public sector and to some degree from advanced to emerging market economies. Further financial disruptions are quite possible (see Chart 3).

The seventh change is the phenomenon dubbed "secular stagnation" by Harvard University's Lawrence Summers at an IMF conference in 2013. Weak demand, indicated by a combination of low inflation and ultralow real and nominal interest rates, appears to be structural and so is likely to persist. Room for an effective conventional—or even conventionally unconventional—policy response to a downturn might be very limited.

The final change is the rising salience of climate change as a policy issue. This is likely to have important effects on development strategies and macroeconomic policies in all countries, particularly in poorer and more vulnerable ones.

All this creates a highly challenging environment for the IMF, which has also been changing. Indeed, its most durable characteristic has been its ability to adapt to successive changes in the world. This partly reflects the high quality of its staff and its usually competent management.

Yet the IMF is also handicapped by a limited capacity to influence the actions either of countries with robust balance of payments positions or of the United States, the issuer of the world's reserve currency, the dollar. This is not a new issue: it was recognized—and remained unresolved—at the Bretton Woods conference in 1944 (Steil 2013). The Fund also makes mistakes, not least because it is heavily influenced by the conventional wisdom of professional economists and powerful countries. It seriously underestimated the perils of financial liberalization, both domestic and external. This was true despite the prescient warnings of Raghuram Rajan, the IMF's economic counsellor from 2003 to 2006.

Learning from mistakes

It is, however, reasonable to expect the Fund to learn from mistakes. It has done so. After the transatlantic crisis, it reevaluated the impact of government spending cuts and tax increases on growth. The quality of its surveillance of financial risks has also vastly improved in its flagship *Global Financial Stability Report* and *World Economic Outlook* and in work on member countries. An important step has been its recognition that liberalizing flows of capital across borders carries risks as well as benefits.

No crisis has been more troublesome than the one in the euro area. It put the IMF in the difficult position of dealing with a central bank and countries it could not control. The Fund worked with euro area institutions on country programs that had some successes but also significant shortcomings, notably in the case of Greece. One result was to reform the IMF's lending framework for countries with high sovereign debt and, above all, to end exemptions—in the case of systemic crises—from mandatory debt sustainability as a condition for Fund support.

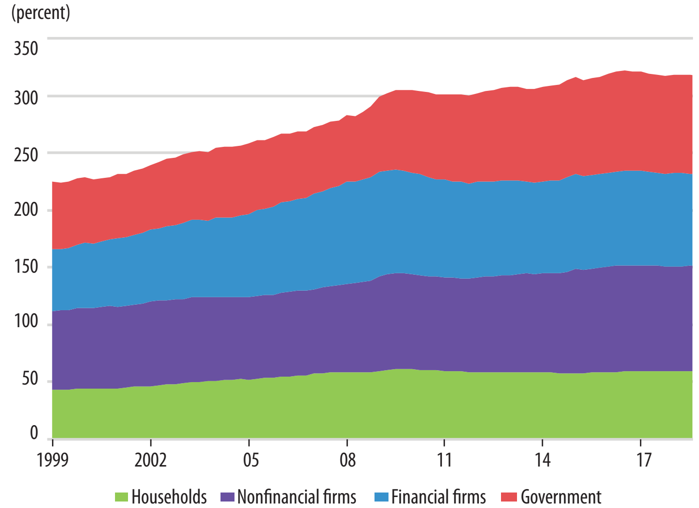
The IMF's stepped-up engagement with fragile states is significant as well. It requires new and imaginative approaches to securing necessary political and institutional transformation.

With these steps, the Fund has updated its old agenda of maintaining macroeconomic stability. But it has also taken up several new challenges, including income and wealth inequality, gender inequality, corruption, and climate change. These challenges are outside the Fund's historical areas of competence. But they are vital in themselves and to important constituencies in member countries, and they have important macroeconomic implications. Softening the IMF's image can be helpful, especially in a political environment that has become difficult for international financial institutions. And, in some respects, the Fund's work has been vital, especially on fossil fuel subsidies and the cost of corruption.

Chart 3

Deeper in debt

Gross debt as a percentage of global GDP has increased, as has the share of public debt.



Source: Institute for International Finance.

The IMF's financial firepower must be increased substantially, particularly in a world of relatively free capital flows.

Challenges to come

If the world of cooperative globalization is to survive and the IMF is to maintain its role within it, a great deal must change. Some of these changes are within the Fund's control. Others call for a new global consensus.

A big internal task is to take on the intellectual challenges of our unstable world economy. Particularly significant is the need to reconsider monetary, fiscal, and structural policies, globally and within influential countries, in the context of ultralow interest rates, low inflation, large debt overhangs, and secular stagnation. What are policymakers to do when the next downturn comes? How—if at all—might mass restructuring of private or sovereign debt be managed? Is there any validity in unorthodox perspectives such as "modern

It is the marriage of professionalism with this will to cooperate that has made the IMF a cornerstone institution.

monetary theory"? The Fund needs to become even more deeply engaged in these topics if it is to prepare for what lies ahead. But it must also get more closely engaged in other difficult areas. The political economy of protectionism is one example. The impact of artificial intelligence is another.

Above all, the IMF must remain relevant to all its members. The only plausible way to do that is to produce work of the highest intellectual quality and integrity, especially in surveillance. This may irritate the subjects of the Fund's judgments from time to time. But it will sustain the reputation and influence of the IMF among its members. A question in this context is whether it needs more staff expertise in the *politics* of change: it is all very well to preach the ending of subsidies, but how is that to be accepted? Another question is whether more staff should reside permanently in member countries. A detailed review of the IMF's way of working would make good sense.

The most important challenges for the IMF of tomorrow are, however, those created by our changing world. Three stand out.

First, voting shares should be aligned with each member's economic importance. EU members (including the United Kingdom) currently have 29.6 percent of votes; the United States, 16.5 percent; Japan, 6.2 percent; and Canada, 2.2 percent. By contrast, China has a mere 6.1 percent and India 2.6 percent. These figures are wildly out of keeping with the relative weight of these economies. True, advanced economies still dominate global finance and issue all the significant reserve currencies. But this will probably not last. If institutions such as the IMF are to remain globally relevant, voting shares must be reweighted, especially toward Asia, as Edwin Truman (2018) of the Peterson Institute for International Economics has persuasively argued. Otherwise, China will surely establish its own version of the IMF, just as it has already launched the Asian Infrastructure Investment Bank and the New Development Bank.

Second, the IMF's financial firepower must be increased substantially, particularly in a world of relatively free capital flows. Its lending capacity is currently just $1 trillion. Compare that with global foreign exchange reserves of $11.4 trillion. The disparity demonstrates the inadequacy of IMF resources and the perceived costliness of gaining access to them. Of course, there is moral hazard associated with expanding the safety net. But moral hazard does not eliminate the case for insurance, fire brigades, or central banks. The same applies to the Fund.

Finally, if the institution is to be credibly global, its top job cannot be permanently left in the hands of a European, however admirable some of those Europeans have been. Global institutions need the best global leaders. Those leaders should be chosen not by a process of lowest-common-denominator horse trading, but openly and transparently, with candidates required to submit their platforms for the future development of the institution.

Will to cooperate

As IMF Managing Director Christine Lagarde has said, "The 44 nations gathering at Bretton Woods were determined to set a new course—based on mutual trust and cooperation, on the principle that peace and prosperity flow from the font of cooperation, on the belief that the broad global interest trumps narrow self-interest." It is the marriage of professionalism with this will to cooperate that has made the IMF a cornerstone institution.

Perhaps the Fund's most striking quality is its adaptability. It will surely need that adaptability in the years to come. But even more, it will need a world where the dominant powers believe in what the IMF embodies: professionalism, multilateralism, and above all, cooperation. If this is not the world in which it operates, it will struggle. In the end, the Fund is the world's servant. It can guide, but it cannot shape the world. As the world goes, so will the IMF. FD

MARTIN WOLF is associate editor and chief economics commentator at the *Financial Times*.

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LORD KEYNES PAYS A VISIT

A distinguished figure from the past appears at the IMF on its 75th anniversary

Atish R. Ghosh

ART: JOHN CUNEO; ISTOCK/ MOLLYPIX

"ID. I gotta see some ID."

The elderly gentleman, attired elegantly in a three-piece suit and striped tie, stared back blankly. The guard gave an exaggerated sigh. "Who are you? What's your name?"

"Keynes. John Maynard Keynes. Lord Keynes."

"Look, buddy, I don't care if you're Lord of the Rings. I still need to see some ID before I let you into the building."

A nameless bureaucrat, scurrying past, late for work, stopped dead in his tracks and whirled around. It was Keynes! He recognized the face from the bronze bust in the executive boardroom. "Excuse me," he said, flashing his pass at the guard, "I'll take care of this gentleman."

"Make sure he gets a visitor pass," the guard called after them.

They entered IMF Headquarters. "Please, Lord Keynes, won't you have a seat, while I…"

"Weren't you expecting me? Didn't you receive my telegram?"

"Um…I'm afraid not. Let me call the Managing Director's office. I'm sure they will sort it out."

"Well, I am a bit late. American trains, you know, never punctual…" muttered Keynes, as he sat on the hard leather bench, appearing a bit dazed by the wide array of flags that adorned the lobby.

It was almost 20 minutes before the bureaucrat reappeared. "The Managing Director will be pleased to meet you now," he announced.

"That's most kind of him…um, what's his name?"

"Lagarde. Christine Lagarde."

"A *lady*? A *French* lady?"

The bureaucrat nodded.

"Oh, well, I suppose we have the No. 2 slot?"

"The First Deputy Managing Director is an American, David Lipton."

"Ah, of course, the Americans. But surely, we have the No. 3 position? I mean, Great Britain has the second largest quota.[1] I should know: I negotiated it myself."

The bureaucrat coughed apologetically. "Actually, Japan has the second largest IMF quota now. Followed by China and Germany. But the United Kingdom has the fifth largest quota—tied with France," he added consolingly.

Keynes was just digesting this piece of information when he was ushered into the Managing Director's office.

"Lord Keynes, what an honor to meet you."

"Enchanté, Madame."

"I am so sorry that we haven't arranged a better reception for you. To be honest, we weren't really expecting…"

Keynes smiled thinly. "I know. I've been 'in the long run' for some time now.[2] But I couldn't resist visiting the Fund today, on its 75th birthday."

Lagarde motioned him to the sofa, strode over to her Nespresso machine, and began to prepare two cups of coffee.

"So, tell me," said Keynes, "Has the IMF been a success? What's been happening? I understand there've been some changes since the Conference."

"I scarcely know where to begin," replied Lagarde. "So much has changed."

"Well, the Articles. We labored so hard to negotiate every word. I trust *they* haven't changed."

"On the whole, no. But there've been a few amendments."

"Such as?"

"The first amendment was for the creation of the SDR—the special drawing right. It's a sort of … well, it's complicated. But think of it as a virtual currency among central banks. It's to provide liquidity to the international monetary system when it's needed. We did a massive allocation in 2009."

"Sounds like my bancor!"

"Yes, exactly," Lagarde laughed. "I forgot. I need hardly explain how the SDR works to you. Let's see, what else? I suppose that the other big change was the second amendment, which legitimized floating exchange rates."

"Floating rates! But we established the IMF precisely to get stability in the foreign exchanges after the utter chaos between the wars."

"The Bretton Woods system of fixed exchange rates collapsed in the early 1970s."

"Then why wasn't the IMF shut down?"

"Oh, the world soon discovered it still needed us. Besides, even with floating rates, we exercise firm surveillance over members' exchange rate policies to make sure they do not manipulate their currencies and gain unfair trade advantage."

"Indeed. And do they listen to you?"

Lagarde gave a little laugh. "Well, not always, perhaps," she conceded. "The United States is always complaining about surplus countries not allowing their currencies to appreciate—it used to be Germany and Japan that were the main culprits. Until recently it's been China. A few years

ago, we were even accused of being 'asleep at the wheel' on our most fundamental responsibility of surveillance.' "[3]

"Ah, I told Harry Dexter White at the time: You're hobbling the IMF's ability to force surplus countries to adjust—I wanted symmetric penalties for surplus and deficit countries, you know. But White and the US Treasury gang resisted strongly. I warned White, You won't always be a surplus country, and then you'll be sorry. He used to say, 'That doesn't matter—the United States will always champion free trade.' Presumably that's still the case?"

"Oh, quite," Lagarde replied dryly.

"So central banks no longer intervene in the foreign exchange markets?"

"Not if they have floating rates. They're not supposed to, except under disorderly market conditions."

"Aren't markets always disorderly?"

Lagarde stood up to retrieve the espressos from the machine, when she suddenly changed her mind. She instead went to a small refrigerator hidden in the wood paneling of the wall and took out a bottle of La Grande Dame.

"How very appropriate," Keynes laughed. "You must have heard, the one thing I regret in life…"[4] He stood up and walked toward Lagarde.

"I found this in the fridge when I first arrived. I was saving it for a very special occasion. I think today qualifies," Lagarde smiled, handing him a glass.

They toasted. "Tell me," said Keynes, settling back in his chair. "How well did my bancor idea work? What did you call it? Special drawing right? You mentioned you made a large distribution a few years ago. Why was that?"

Lagarde stared at him blankly and then said, "Of course. You haven't heard of the global financial crisis."

"Indeed not! We had *another* Great Depression?"

"No. A decade ago, we had a major financial crisis that might have turned into a Great Depression. But luckily, we had learned your theories. The IMF advocated an immediate fiscal stimulus by all major economies as well as massive monetary easing."

"And the slump passed?"

"More or less. The global economy has been a bit shaky ever since."

"But the fiscal stimulus worked?"

"Yes, very well. Though some governments spent too much, and debt levels have soared."

"And what of the monetary easing?"

"It was crucial."

"But didn't it result in hot money flows? Or, I suppose nowadays you have much better capital flow management?"

Lagarde shrugged. "There were large flows to developing and emerging market economies. And companies in those countries have increased their dollar exposure to dangerously high levels."

"Productive capital should be allowed to go where it can be put to best use. But fully unfettered hot money flows…" Keynes shook his head in dismay. "White and I were in full agreement on that point when we were drafting the Articles, but then the New York bankers got hold of our draft and that was the end of it.[5] Anyway, all this was a few years ago. What is the Fund dealing with nowadays?"

"So many problems," Lagarde replied. "As I mentioned, even 10 years after the crisis, the world economy is still shaky. Plus, we're dealing with a host of new issues: income inequality, achieving greater gender equity, global climate change."

"*Climate* change? You mean the weather? How can the climate change?"

"The world produces thousands of tons of carbon dioxide every year, as well as other pollutants, and this has led to higher average temperatures, melting ice caps, rising sea levels…"

"My goodness," said Keynes. "That sounds dreadful. But what does it have to do with the Fund?"

Lagarde explained. She was just finishing when there was a discreet knock and her assistant popped her head around the door. "Mme. Lagarde, you're due to chair the Board in a few minutes."

"Again?" Lagarde sighed. "OK. Thank you. I'll be there in a moment."

Keynes stood up. His moustache twitched into a smile. "I always said the Fund should have a nonresident Board."

"Look, why don't you spend the rest of the day at the Fund?" asked Lagarde, preparing to head out. "My assistant will show you around, and you can see for yourself how the Fund is doing. Come by and see me before you leave."

* * *

Dusk was falling on what promised to be a beautiful Washington summer evening when Keynes returned to the Managing Director's office.

"So, what do you think?" asked Lagarde.

"It seems to me that everything has changed. In my day, there were three constants: the weather; labor's share of national income;[6] and—I am sorry to say—women's place in society.[7] It's all in flux now. Yet, at the same time, nothing has changed. The Fund still needs to help countries adjust to balance of payments problems without 'resorting to measures destructive to national or international prosperity.' It still needs to help achieve an equitable burden of adjustment between surplus and deficit countries and to manage volatile capital flows between source and recipient countries. And, on occasion, it still needs to regulate global liquidity. The only thing that's changed is the nature of the shocks and problems that countries confront. But the fundamental mission of the Fund—helping its member countries cope with these problems—remains the same. Our real achievement at Bretton Woods was not in setting up the system of par values and fixed parities. It was in setting up an institution that could—and would—adapt to serve its membership."

"Quite so," replied Lagarde. "Come, I will walk you out."

They rode the elevator in silence, lost in thought.

"Any other observations?" asked Lagarde, as she shepherded Keynes through the door.

"Yes," replied Keynes. "When I see men—and women—of every race, of every nationality, and of every creed working together for the common good, I know that the IMF is in good hands.[8] And," he smiled, "when the IMF is in good hands, the world is in good hands."

With a slight bow, Keynes turned and walked away, disappearing down 19th Street, NW. FD

ATISH R. GHOSH is the IMF's historian.

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Notes:

[1] Keynes's surprise is understandable: until the ninth quota review (1990), the United Kingdom had the second largest quota, after the United States. In 1947, the five countries with the largest quotas were the United States (31.68 percent), the United Kingdom (15.12 percent), China (6.56 percent), France (6.28 percent), and India (4.85 percent).

[2] As Keynes (1924, 80) famously said, "In the long run, we are all dead."

[3] Adams (2005).

[4] Keynes reportedly once said that his only regret in life was that he had not drunk more champagne (Council of Kings College 1949, 37).

[5] See Helleiner (1994); and Ghosh, Ostry, and Qureshi (2019), Chapter 2.

[6] Keynes (1939) called the stability of labor's share of national income "one of the most surprising, yet best-established facts in the whole range of economic statistics." Since the 1980s, however, labor's share has been declining in most advanced economies.

[7] Keynes was a strong supporter of women's rights, becoming vice chair of the Marie Stopes Society in 1932.

[8] On September 25, 1946, long before its member governments had adopted similar legislation, the IMF Executive Board adopted Rule N1: *The employment, classification, promotion and assignment of personnel in the Fund shall be made without discriminating against any person because of sex, race, or creed.*

PHOTO: IMF

Updating Bretton Woods

In a letter to the next generation, Christine Lagarde calls for a renewed commitment to global economic cooperation

Christine Lagarde

DEAR FRIENDS: I want to share with you a bit of our history and some thoughts about the future—your future! Seventy-five years ago, delegates from more than 40 countries met to agree on new rules for the global economy. It was a hot summer, so they gathered in the cool mountains of New Hampshire at the Bretton Woods resort. Most came from countries that were still engulfed in the flames of World War II.

They vowed to avoid the mistakes that led to that terrible conflict. In the prewar period, instead of working together, countries pursued protectionist economic policies that only made the Great Depression worse. The result was mass unemployment and mass anger. The seeds were sown for authoritarianism, aggression, and war.

Bretton Woods launched a new era of global economic cooperation, in which countries helped themselves by helping each other. They set out to prove that solidarity was self-interest. The delegates established the International Monetary Fund and charged it with three critical missions: promoting international monetary cooperation, supporting the expansion of trade and economic growth, and discouraging policies that would harm prosperity.

Since then, the world economy has changed in fundamental ways. Throughout its 75-year history, the IMF has adapted to these changes while staying true to its mandate. Today, it continues to serve its members—who now number 189—with "wallet, brain, and heart": by providing high-caliber policy advice, technical assistance, and training to strengthen institutions and capacity; giving financial support and breathing space to countries in crisis while they undertake needed policy steps; and designing better policies to improve people's lives.

Did the delegates succeed in their goals? Emphatically, yes. Today, most people live longer, healthier, better lives. Countries trade more with each other, which helps them grow faster, creates more jobs, and lifts incomes. In low-income countries, trade has reduced the cost of living for a typical family by two-thirds, and in advanced economies, by a quarter. And globally, more than 1 billion people have climbed out of poverty.

At the same time, far too many still suffer from poverty and lack of opportunity. Young people are among the most disadvantaged. Many low-income countries will struggle to meet their Sustainable

Development Goals by 2030, depriving new generations of the opportunity to succeed on their own terms. Poverty, rising inequality, and new technologies have sparked anger and resentment. Corruption has led to a loss of trust in institutions.

All these changes have been feeding into sentiments that give rise to unilateral, go-it-alone approaches. History teaches us this is a ruinous path. It can lead to an "Age of Anger," when international trust and cooperation could break down—as happened after the Great Depression.

Creating opportunity

I do not believe, however, that this dystopian scenario is inevitable. On the contrary, I believe that we have a responsibility to bring about an "Age of Ingenuity," and we need to have *the courage to build it*. Cars, homes, and factories can be powered by renewable sources of energy. Women can have the same opportunities and the same salaries as men. Innovation—your inventions—can create better opportunities for all.

How do we turn this vision into reality?

In part, the answer lies in what I call a "new multilateralism." You might also call it common sense. It means ensuring that economic opportunity is shared more widely, so that young people everywhere have a chance to succeed and contribute to society. It means ensuring that governments and institutions work for the common good. It is about countries collaborating to tackle global challenges.

What needs to change?

First and foremost, policymakers must provide the conditions at home for people to succeed. Here, fiscal policy is crucial to create broader opportunities through access to quality education, health care, and infrastructure—especially for those who have been left behind. In many countries, this means paying special attention to young people and to women.

It also involves addressing excessive inequality. Here again, fiscal policy can play a key role, including through progressive tax measures that are country-specific and stronger social safety nets that can help address dislocations caused by technological change and globalization. Central banks need to guard against inflation—the worst tax on the poor. And regulators should protect the public against the kind of financial excess that led to the debilitating global financial crisis 10 years ago.

This kind of policy action can help build confidence and trust—and overcome perceptions of unfair sharing of economic benefits.

At the international level, we need to provide a more level playing field across borders. Here, trade looms large. We know that, for many decades, opening borders to trade has spread new technologies, boosted productivity, and created millions of new jobs with higher wages. At the same time, we know that not everyone has benefited—that there are distortions in the trade system and that it needs to be reformed.

International taxation is another challenge. We must make sure that international companies pay their fair share of taxes. Without reform of international corporate taxation, countries will be deprived of tax revenue they need to fund essential investment in people and infrastructure.

These are some of the challenges I see. And there are two more that you, the next generation, have brought to the world's attention.

Here, I am thinking of climate change, which threatens the very future of our planet. You may have experienced the growing impact firsthand, from wildfires in California to tropical storms in Mozambique. And you certainly know that greener economic policies could help address this existential threat. To put it differently, if you do not have a plan for the environment, you do not have a plan for the economy.

The other issue on the minds of young people is corruption. You see it as unjust, and rightly so. The annual global cost of bribery alone amounts to $1.5 to $2 trillion. And that does not take into account the corrosive effect of corruption on society. We must cure the cancer of corruption if we are to build a fairer and stronger economy.

Speaking at the original Bretton Woods conference, US Treasury Secretary Henry Morgenthau Jr. said:

> "Prosperity has no fixed limits… Prosperity, like peace, is indivisible. We cannot afford to have it scattered here or there among the fortunate or to enjoy it at the expense of others."

Seventy-five years on, the list of challenges seems daunting. But no more so than the list confronted by the delegates when they met in New Hampshire. I believe it is time once again to renew our commitment to global economic cooperation, so that we can achieve greater prosperity—not just for the fortunate few, but for *all*. FD

SINCERELY,
CHRISTINE LAGARDE

CHRISTINE LAGARDE is managing director of the IMF.

PHOTO: ISTOCK / BIHAIBO

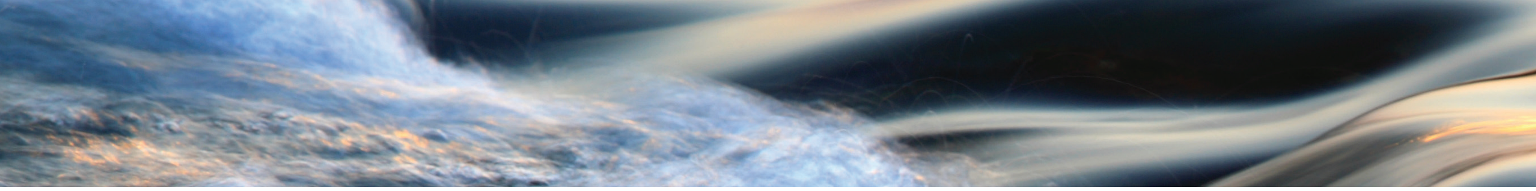
Rising Tide

Global cooperation is needed to reap the benefits and avoid the pitfalls of cross-border capital flows

Raghuram Rajan

Cross-border capital flows are neither an unmitigated blessing nor an undoubted curse. Used judiciously, they can be beneficial to recipient countries, making up deficiencies in the availability of long-term risk capital and reducing gaps in local corporate governance. They can also be beneficial to sending countries, offering investment avenues for savings generated by aging populations.

Of course, capital flows can also be problematic. They can come at the wrong time, adding further credit to a raging investment boom and fueling asset-price bubbles. They can come in the wrong form—held as short-term claims on corporations or the government, with the option to leave at a moment's notice. And they can leave at the wrong time, when the lure of higher interest



rates in sending countries summons them back, instead of when projects in the receiving countries are completed. As with dynamite, whether cross-border capital flows are good or bad depends on how they are used. Unfortunately, there are no obvious policy remedies to tame capital inflows. Even if there were, receiving-country institutions are often not up to the task—easy money is hard to turn down for even the most sensible policymakers.

Recipient countries are, of course, not the only relevant players. A particularly important factor in "pushing" and "pulling" cross-border capital flows is the stance of monetary policy in advanced economies. Easy monetary policy is transmitted to receiving countries via capital flows, currency appreciation, a rise in borrowing, and an increase in prices of financial and real assets. All this is reversed when monetary policy tightens, albeit with a critical difference. The buildup of receiving-country corporate and government borrowing in the easing phase leads to financial fragility during the tightening phase.

What can emerging market economies do to reduce the risks associated with large, sustained capital flows? What responsibility should central banks in advanced economies bear for the impact of their monetary policies abroad, and what steps can they take to limit the impact? Is there a role for international financial institutions such as the IMF?

Domestic credit boom

To answer these questions, we need to understand what happens when an emerging market economy experiences a sustained inflow of capital from overseas. An individual firm's experience in a domestic credit boom provides a useful parallel. Sustained expectations of high future liquidity (in the sense that potential asset buyers are wealthy and can pay high prices for corporate assets) can incentivize companies to load up on debt; from the borrower's side, debt financing is always welcome because it allows the borrower to run an enterprise with less of its own money at stake. From the lender's side, high anticipated liquidity makes it easier to recover debt—if the borrower fails to pay, the lender can seize the firm's assets and sell them to someone else at a high price. The combination of high leverage and high expected liquidity, however, also reduces managerial incentives to put in place structures to constrain managerial misbehavior. The reason: if financing is expected to be plentiful, why put in place costly and constraining structures (such as good accounting rules and an unimpeachable auditor) that will make yet more financing available?

An analogy from housing booms helps explain the dynamic. If a mortgage lender knows a house can easily be repossessed and sold profitably because houses are selling like hotcakes for high prices, what need is there to investigate the mortgage applicant further to determine whether she has a job or income? Normal safeguards and due diligence on loans are dispensed with in times of high prospective liquidity. One result during the US housing bubble was the infamous NINJA loan extended to borrowers with no income, no job, and no assets.

Sudden stop

The deterioration in governance is not a problem when high liquidity is sustained, but it does become problematic when liquidity dries up, since there is then very little supporting the ability of corporations to borrow. Put differently, expectations of high liquidity create the conditions where corporations become dependent on continued future liquidity to roll over their debt. When it does not materialize, they experience a sudden stop. This can occur even if economic prospects for corporations are still bright.

What I have described so far is a model of corporate behavior that is developed more fully in a paper I wrote with two colleagues, Douglas Diamond and Yunzhi Hu. Now let's shift our perspective and situate this firm in an emerging market economy. We add three more assumptions based on the vast emerging evidence. First, domestic companies in the emerging market economy have a substantial amount of outstanding borrowing from source countries or denominated in the currency of those countries. Typically, the source country is the United States and the currency the dollar, though our point is more general. (Gopinath and Stein [2018] explain why domestic companies take on foreign currency debt, and there is vast literature documenting this phenomenon empirically.)

Second, easier monetary policy in the source country pushes capital, looking for higher returns, into higher-interest-rate environments like emerging market economies. These inflows raise the value of the emerging market's currency in dollar terms. Since a number of emerging market firms have already borrowed in dollars, the result is that their net worth, and hence their liquidity, will be expected to increase as the amount of domestic currency it takes to repay foreign borrowing diminishes. To the extent that monetary policy in source countries reacts aggressively to low domestic growth but normalizes only after extended periods (especially in an era of low inflation), capital flows to the emerging market could be substantial. Anticipating that the future buying power of domestic firms that have borrowed in dollars will increase as the currency appreciates, lenders will be willing to expand credit significantly to other domestic firms today. This leads to higher up-front borrowing and higher asset prices.

At some point, source country monetary policy will normalize—the third ingredient. Tighter policy will lead to a depreciating emerging market currency, higher repayments on foreign borrowing in local currency terms, and thus lower corporate liquidity. Moreover, leverage is much higher at the onset of tightening, because lenders have been anticipating a high probability of continued liquidity. Debt repayment and the capacity to roll over debt will fall, not just because liquidity is lower, but because corporate governance has been neglected. The combination of high leverage and a plunge in debt capacity will mean domestic and foreign lenders will be reluctant to renew loans. If the firm has substantial, preexisting short-term borrowing, the decline in debt capacity can precipitate a run, and thus force the firm immediately into distress.

While the collapse in prospective liquidity may originate with a change in the source country monetary stance, it need have nothing to do with macroeconomic policies in the emerging market, and their credibility or lack thereof. Put differently, the boom and bust in the emerging market could be a genuine spillover from the source country policy.

The so-called taper tantrum provides a good example of how a change in advanced economy monetary policy—or even the expectation of a change—creates fallout for emerging markets. In 2013, then-Chairman Ben Bernanke signaled that the Federal Reserve might soon begin "tapering" its purchases of bonds after a long period of exceptionally easy monetary policy. The result was an outflow of capital from emerging markets and a sharp decline in emerging market assets and currencies.

The great moderation

Before the recent financial crisis, there was a sense among policymakers that the world had arrived at a policy optimum, which had contributed to a "great moderation" in economic volatility. In this world, the sole objective for monetary policy was domestic price stability, and it was achieved by flexible inflation targeting. By allowing the exchange rate to respond as needed, the system eliminated the need to intervene in currency markets or accumulate reserves. For instance, if capital flows came into a country, and the exchange rate was allowed to appreciate, eventually capital would stop flowing in as the prospect of future depreciation reduced expected returns.

A vast body of research since the global financial crisis of 2007–08 suggests that this view is too complacent—the spillovers from capital inflows cannot be offset by allowing exchange rates to appreciate. Instead, many countries that did just that found yet more capital flowing in, chasing the returns that earlier investors had realized (Bruno and Shin 2015).

Many emerging market economies have understood that they should build foreign exchange reserves.

Indeed, our model suggests that fluctuations in the exchange rate are the main reason for fluctuations in corporate liquidity in receiving countries. Emerging market economies have often been accused of manipulating their currencies to make their exports more competitive. But worries about trade competitiveness need not be the reason receiving-country authorities have a fear of allowing their currency to float or move freely against the dollar. Their attempts to smooth exchange rate movements may be an effort to avoid large swings in the availability of credit and the resulting macroeconomic volatility. Emerging market authorities have seen that movie many times and know how it ends.

Certainly, many emerging market economies have understood that they should build foreign exchange reserves in the face of a sustained domestic currency appreciation. Purchases of assets such

as US Treasury securities by a number of emerging markets may be seen as a widespread demand for assets considered safe. In reality, they may be an attempt to put sand in the wheels of currency appreciation, even while building a war chest to combat the inevitable depreciation (Hofmann, Shin, and Villamizar-Villegas 2019). Of course, such intervention exacerbates moral hazard because corporations may overborrow in foreign currency, seeing a lower risk once the central bank smooths volatility. That is why some emerging market economies, like China and India, also try to control foreign borrowing by corporations.

Few tools

Unfortunately, receiving-country authorities have few other tools to manage capital flows that will not also significantly disrupt the domestic economy. Importantly, tighter monetary policy in the receiving country risks shifting the currency composition of corporate borrowing yet further into relatively cheaper dollars and so risks exacerbating appreciation of the domestic currency. On the other hand, more accommodative domestic monetary policy could encourage excessive credit expansion.

The tendency for boom and bust in receiving countries is more pronounced as quiescent inflation makes source country monetary policy accommodative over long periods, as has been the case in recent decades. From the receiving country's perspective, a commitment to "low for long" in the source country is a commitment to sustained easy liquidity in the receiving country—until it reverses. This implies a substantial buildup in leverage and financial fragility. No wonder emerging market policymakers have expressed concern about both sustained easy policy in source countries, as well as the possibility that it will be reversed abruptly. These concerns are not in contradiction; one follows from the other.

Scope for multilateral action

What responsibility do source countries have for these spillovers? The view that spillovers resulted primarily from insufficient exchange rate adjustment in recipient countries suggested there was none. This is indeed the view that some advanced economy central bankers, focused on their domestic mandates, espouse. It is hard to know whether they would have the same view if their mandates also included some element of international responsibility. Others recognize there may be spillovers but do not see any possibility of altering the behavior of sending countries. Instead, they focus on so-called macroprudential policies and capital flow measures in recipient countries, as does the IMF.

Yet macroprudential policy is narrow in scope—often the macroprudential authorities have jurisdiction over only parts of the financial system while monetary policy, as Jeremy Stein has argued, gets "into all the cracks." Such policies also have yet to show their effectiveness—Spain's dynamic capital provisioning for banks may have smoothed the credit cycle, but certainly did not avert its excesses. The broader point is not to rule out the use of macroprudential tools but to emphasize that multiple tools may be needed.

Some economists have called for monetary policy rules that constrain the actions of sending-country central banks under some circumstances. For instance, Mishra and Rajan (2019) suggest that while ordinary monetary policy should be given a pass, certain kinds of unconventional monetary policy actions in specific environments could be ruled out of order because of the large adverse spillovers they create—much as sustained one-directional intervention in the exchange rate was frowned on till recently. Adhering to such rules would not be a matter of altruism. Countries that have signed the IMF Articles of Agreement already accept responsibility for the international consequences of their actions. Such rules would limit central bank behavior under extreme circumstances without changing their mandates or requiring international coordination. Central banks would then simply avoid policies that transgress the rules. Indeed, an Eminent Persons Group, tasked by the Group of Twenty with suggesting changes to the global financial architecture, has noted the need for a "rules-based international framework, drawing on a comprehensive and evolving evidence base… to provide policy advice through which countries seek to avoid policies with large spillovers, develop resilient markets, and benefit from capital flows while managing risks to financial stability." It adds that the IMF should develop a framework that enables sending countries "to meet their domestic objectives while avoiding large international spillovers."

There is another intriguing possibility. Our model suggests that a long period of easy monetary policy could enhance leverage, inflate asset prices, and increase risks to the source country's own financial stability. If central bank monetary policies in source countries included a domestic financial stability mandate, policy actions might well be altered in a way that also mitigates external spillovers.

Of course, we are still a long way from having the evidence and the understanding needed to create a rules-based international framework. Yet we have also come a long way. For the most part, we no longer scapegoat emerging market and developing economies for reacting improperly to capital inflows. If we are to find ways to use capital flows well—to meet the saving needs of rich aging countries while also fulfilling the financing needs of developing and emerging market economies, without precipitating periodic crises—countries will have to temper their sovereign policymaking with their international responsibilities to avoid major spillovers. Multiple tools used responsibly by all countries, with the IMF doing the necessary research, laying out a mutually agreed framework, and calling out habitual defaulters, may be the best way of tackling a multifaceted problem. FD

RAGHURAM RAJAN is a professor of finance at the University of Chicago's Booth School of Business and a former governor of the Reserve Bank of India. This article summarizes the 2018 Mundell Fleming Lecture he gave at the IMF, which was based on a paper by Diamond, Hu, and Rajan (forthcoming).

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THE FUTURE OF TRADE

Policy can play a role in shaping the future of the ailing multilateral trade system

Pinelopi Koujianou Goldberg

The 75th anniversary of the Bretton Woods multilateral institutions ironically comes at a time when the benefits of multilateralism are being challenged. Doubts about the functioning of our current trading system are particularly pronounced. What is the future of trade in this challenging environment? Does the recent rise of protectionism signify the end of the open, rules-based trading system that fostered globalization? Or can we rescue the system through judicious reform?

The postwar global economy saw unprecedented growth of global trade and income. Explanations for this growth abound: a sharp decline in information and communication costs, technological change allowing for increasing fragmentation of production, political developments such as the integration of eastern Europe and east Asia into world markets, and international cooperation. The nature of the beast is such that quantifying the relative contribution of each of these explanations to the growth of trade defies clean identification and robust econometric evidence. Yet based on first principles, strongly suggestive empirical evidence, and anecdotal accounts, there is little doubt that a rules-based, predictable trading system contributed significantly to trade and trade-induced growth in many parts of the world, especially in Europe and

ART: ISTOCK / MARIGOLD_88

east Asia. Unfortunately, not everyone participated. Several countries, particularly in Africa and Latin America, were left behind, and there is increasing evidence that the gains from globalization were not shared equally among those living in the countries that benefited from trade.

Still, trade has always been seen as an important driver of growth. The benefits of an open, rules-based, multilateral system go beyond lower tariffs and other trade barriers. Any country, small or large, that meets the requirements can participate. Rules reduce uncertainty and encourage much-needed investment in developing economies. They help countries discipline domestic protectionist lobbies. And they allow powerful countries to credibly commit not to abuse their bargaining power over smaller countries, thereby providing incentives for the smaller nations to participate in trade negotiations. Against this backdrop, recent trade tensions are of concern, particularly for developing economies that have not yet realized the benefits of globalization. Can such countries still count on a well-functioning multilateral trading system to help them integrate into world markets?

Structural factors

This concern is compounded by the slowdown in global trade growth, which was evident even before the onset of the current trade tensions. During the global financial crisis, trade collapsed. The world economy slowly recovered after 2008, but trade never regained its previous momentum. Several explanations have been suggested—among them cyclical factors, such as sluggish demand, especially for durable and investment goods, which are more trade-sensitive; low corporate investment; and limited trade financing in the aftermath of the crisis. But the two dominant explanations are structural in nature and thus more disconcerting as they point to long-term factors that may be harder to overcome. These explanations are (1) the rebalancing of the Chinese economy and associated increase in China's domestic value added and (2) the belief that the fragmentation of production has run its course, leaving only limited scope for further international specialization (Hoekman 2015; Constantinescu, Mattoo, and Ruta 2016). Here the term "fragmentation" refers to the process of breaking up production into separate stages that are carried out in different factories or firms, potentially located in different countries.

The data support the first hypothesis. Changes in domestic value added of exports are often used as a proxy for fragmentation. Higher fragmentation is typically associated with more imports of intermediate inputs and less domestic value added. China experienced a pronounced decline in its domestic value added—with a short interruption during the financial crisis—until 2011, consistent with the country's famed participation in global value chains. But since 2011, domestic value added in China has been steadily increasing.

This trend matters for the measured growth of trade for two reasons. First, given that trade is measured in gross and not value-added terms, higher fragmentation and global-value-chain participation imply more trade, because there is double-counting of inputs crossing borders. So any decline in fragmentation and global-value-chain transactions will translate to less trade in gross terms. Second, China commands a large share of the world export market (see Chart 1). Only Korea exhibits the same trend as China—an increase in domestic value added after 2011. For all other countries, the domestic value added has either remained constant or declined slightly, consistent with further integration into global value chains. But China dominates export markets, so it has a large effect on the aggregate trend.

The evidence for the second hypothesis—that fragmentation has run its course—is more mixed (Gaulier, Sztulman, and Ünal 2019). One proxy for production fragmentation used in the literature is trade in intermediate products. Intermediate goods are the sum of semifinished products and so-called parts and components. Chart 2 displays the exports of intermediate products (green line) for 1990–2017.

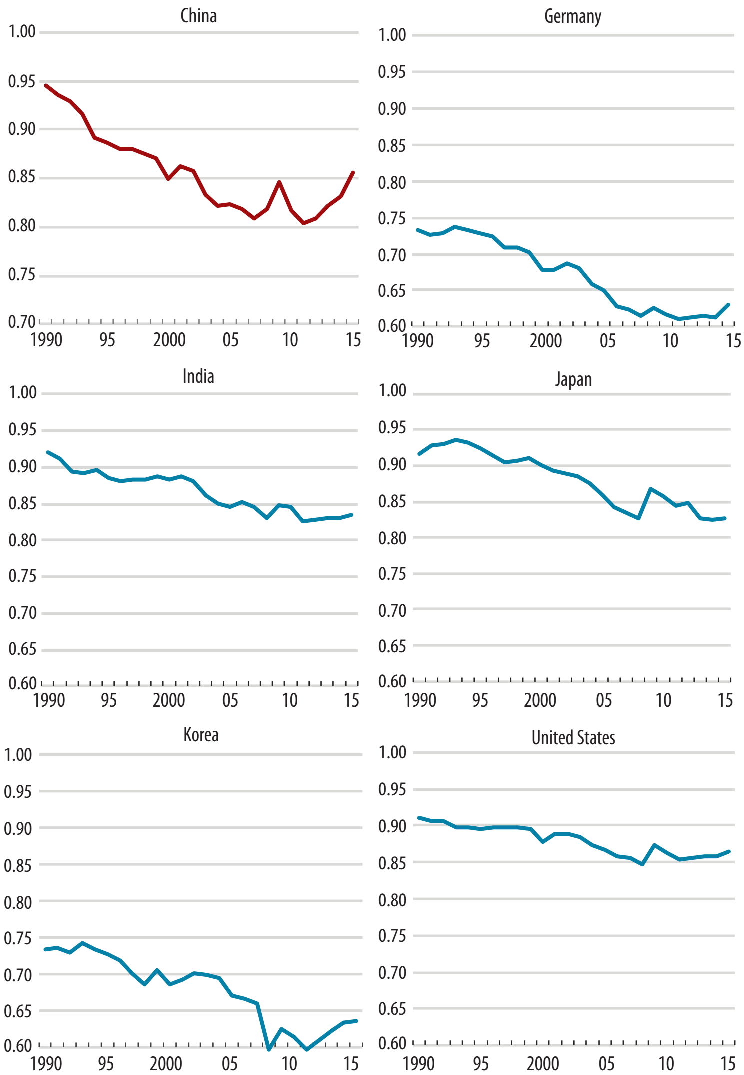
Exports of intermediate goods exhibited strong growth until 2013, with a short disruption during the global financial crisis, but declined steadily between 2013 and 2016. This measure, based on the value of exports, is influenced by several factors, including commodity prices. Chart 2 also offers an alternative measure of fragmentation that is more closely associated with global-value-chain goods trade: the share of parts and components in volume terms in manufacturing trade (red line). This share has increased at a moderate pace since the 1990s and has not shown any signs of reversal since the global crisis. Moreover, as Gaulier, Sztulman, and Ünal (2019) show, these dynamics are not the result of sectoral composition effects. Within the electronics sector—one of the most internationally

Chart 1

China versus the world

China commands a large share of the world export market. Among comparable economies, only Korea exhibits a similar trend to China—a steep increase in domestic value added starting in 2011.

(domestic value added, share of gross exports)



Sources: Organisation for Economic Co-operation and Development; Trade in Value Added (TiVA) Database; and World Trade Organization.
Note: The trend in domestic value added is a percentage of export value for selected countries.

fragmented sectors, with a 40 percent share in parts and components trade—there have been contrasting developments. While the share of parts and components trade relative to total trade for office machinery and computers has decreased, it has risen for telecommunications equipment. Finally, global value chains are still expanding in terms of product and country coverage: there is growing geographic and product diversity of parts and components trade as measured by the number of product-country combinations, net of new products (Gaulier, Sztulman, and Ünal 2019).

In conclusion, trade growth in the parts of trade most associated with fragmentation does not show clear signs of a slowdown. Along the same lines, arguments that automation and artificial intelligence will lead to onshoring and less trade in the future have not found empirical support. If anything, there is evidence that these advances will lead to more trade by boosting productivity. If a slowdown in global trade growth is not inevitably dictated by technology, policy can have a key role in shaping its future. But amid high uncertainty and a backlash against globalization, the appetite for trade liberalization seems to be waning. As an indication, the number of new regional trade agreements in 2018 fell to its lowest level since the early 1990s.

Silver lining

How did we get here? Increasing inequality within advanced economies has certainly contributed to creating an environment that is receptive to protectionism if not actively demanding it. Furthermore, long-standing frustration with the functioning of the current multilateral trading system has led to requests for reform or even dismantlement. Some complain that not everyone has played by the rules and that the current trade system is not "fair." Concerns about state subsidies, intellectual property rights, forced technology transfer, and exchange rate manipulation abound. The silver lining is that discontent may give way to constructive reform and a better-designed trading system in the future.

One source of dissatisfaction relates to processes and interpretations of rules. Views on the effectiveness of the present dispute settlement mechanism, the reach of subsidy disciplines, and the proper treatment of state-owned enterprises vary. Moreover, the World Trade Organization's (WTO's) traditional all-or-nothing approach, in which *all* WTO members must agree on *all* issues, has become a straightjacket. The Kennedy Round took four years to complete, but the Doha Round, which started in 2001, is considered all but dead. Ironically, the very success of the WTO, which resulted in near-global membership and reach, is proving its biggest challenge, because it makes it increasingly hard to reach consensus.

On the positive side, recognition of this challenge has led to a push for more flexible approaches, including plurilateral agreements among a set of like-minded countries (IMF-WB-WTO 2018). In multilateral deals all WTO members must participate, but plurilateral agreements involve only a subset of countries and allow members to adopt the new rules if they choose. The WTO still prefers multilateral agreements. But when these are not feasible, plurilateral agreements may offer a second-best alternative. Compared with bilateral or regional deals, they offer the advantage that they are in principle available to other WTO members if these members decide to join later. Hence, they overcome the potential inertia associated with fully multilateral negotiations, without undermining the basic principles of multilaterism. There are encouraging developments in this direction, among them the Information Technology Agreement, originally signed in 1996 and expanded in 2016, in which 53 members agreed to tariff cuts that they then applied to all WTO members. Alternatively, the WTO has sought to increase flexibility by pursuing multilateral agreements that unbundle specific issues from broader initiatives. The 2013 Trade Facilitation Agreement, aimed at improving customs practices, is a prime example. The adoption of these two agreements is testament to the effectiveness of a more flexible WTO.

A second source of dissatisfaction concerns the appropriate focus for international negotiations and new agreements. The digital revolution has changed the nature of trade. Many enterprises now operate as links in global value chains reaching multiple countries; several services, such as banking and insurance, can now be purchased from firms in other countries; and e-commerce plays an increasingly important role in cross-border transactions. Growth in these areas demands more than tariff reductions. It also requires addressing "behind the border" measures that stand in the way of cross-border trade (Mattoo 2019). These include harmonization of domestic regulations; agreement on intellectual property rights protection; and consensus on how to deal with data and delicate privacy issues. These issues have proved challenging so far, even among countries with past success in liberalizing their goods markets. Cross-national regulatory differences can reflect valid concerns about quality standards, exploitation of international market power, and data privacy. Policymakers must strike a balance between the legitimate use of domestic regulations to protect consumers and protectionist abuse. Trade policy alone will not bring about progress in these areas; regulatory cooperation and coordination are needed as well.

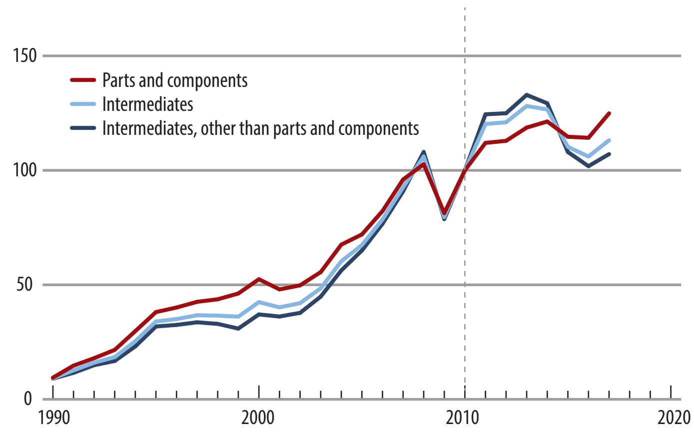
Contemplating the future, the kind of cooperation needed to spur growth in trade, especially in services, seems more likely to materialize if it involves economies at similar stages of development with similar objectives. Against this backdrop, regional trade agreements could serve as a useful starting point and complement to multilateral platforms. International trade is not doomed to a permanent slowdown. But it is at a critical juncture. Its future will crucially depend on the policy choices we make. FD

Chart 2

Mixed bag

Global exports of components and other intermediate goods provide a mixed picture of whether the globalization of manufacturing has run its course or is still unfolding.

(index; 2010 = 100)



Source: United Nations COMTRADE database.
Note: The chart shows the following variables: exports of parts and components, exports of other intermediates, exports of intermediates (parts and components + others), 1990–2017.

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The IMF Can (and Must) Disrupt Itself

In a rapidly changing world, the IMF needs member country support

Mohamed A. El-Erian

PHOTO COURTESY OF ALLIANZ

THERE IS LITTLE DOUBT in my mind that if the IMF didn't exist today there would be loud calls to create it.

Without the IMF, there would be no true lender of last resort at the international level at a time when crises can strike a country suddenly and infect other economies. Countries would need a higher level of inefficient self-insurance, including holding very large amounts of costly international reserves. They would be more tempted to weaponize economic tools in the pursuit of narrow interests. There would be less information sharing and less scope to coordinate economic policy to maintain global growth and stability.

Markets would be less orderly and efficient. Participants would miss the information, analysis, and data contained in the IMF's country and regional reports, not to mention the highly anticipated periodic releases of the *World Economic Outlook, Fiscal Monitor,* and *Global Financial Stability Report*. They would lack the third-party validation the Fund provides on individual countries' policies, as well as the important catalytic role of its lending.

All this would likely lead to greater risks of both government and market failures and a higher incidence of policy mistakes and market accidents—thereby eroding the ability of individual countries to generate high and inclusive growth and safeguard financial stability. And, remember, these risks are already elevated because of the current set of challenges facing the global economy (see "The IMF Today and Tomorrow" in this issue of *F&D*).

If it were to be invented today, how would the IMF compare with what we have known for the past 75 years? It would retain many of the structural attributes its founders envisioned. With a universal membership and a high-caliber staff, it would continue to fulfill its core functions: monitoring the well-being of individual economies and the world economy, lending to countries in need, helping governments build the capacity to shape sound economic and financial policies, and serving as a forum for discussion.

But it should, can, and must do more—being more of a leader in, and facilitator of, the orderly adaptation and transformation of the international system. To do that, it needs to devote more attention to how its staff is organized; how issues such as technology, social injustice, and sustainability are incorporated into its core activities; and how its executive board, management, and staff interact. None of this would achieve its aim if member countries didn't also step up to their responsibilities at both the individual and collective levels.

A revamped IMF would have higher quotas to back its activities, together with modernized distribution among member countries and greater access to borrowed financial resources. It would maintain a range of lending facilities to meet the different needs of its member countries. It would focus on its core competencies while being mindful of the need to take into account the effects of other macrocritical issues, such as climate change. It would collaborate with other multilateral and regional agencies. And its "first among equals" status on the multilateral stage would be a natural consequence of its strong reputation, along with the Bank for International Settlements, as the most efficient, technocratic, and effective international organization.

Keeping pace

That said, the world should also be more sensitive to certain aspects of the IMF's structure and operations that limit its effectiveness, hamper its credibility, and unduly challenge its reputation. These are areas that require attention today if the IMF is to keep up with significant changes in the global economy that are rendered even more complex by advances in artificial intelligence and big data, changing country power structures, a generalized loss of trust in institutions and expert opinion, changing economic and financial relationships at both the national and international levels, and forces favoring global fragmentation.

The IMF has already demonstrated its ability to reinvent itself in the wake of the global financial crisis, which exposed major lapses in its operations. In the area of surveillance, it has strengthened early warning approaches and has paid somewhat greater attention to social and sustainability concerns. In lending, it has introduced new financing instruments, with higher, more front-loaded access and mechanisms for more rapid disbursement of funds. It has shifted some of the emphasis toward conditionality that tries to take into account final outcomes and not just policy inputs.

In its governance and other associated adaptations, it has given developing economies a somewhat greater voice and representation, included the Chinese currency in the special drawing rights basket, and enhanced risk management. It has expanded internal and external communications and reinvigorated its internal watchdog, the Independent Evaluation Office (IEO).

Even with all these advances, the IMF recognizes the need for further change. Management and staff have stressed the need to progress further on several initiatives, including expanding the Fund's financial capabilities consistent with the demands that could well be placed on it. And to quote from a 2018 IEO report on IMF governance, "accountability and representation have continued to raise concerns which, if unaddressed, would affect the IMF's legitimacy and, ultimately, effectiveness."

But in an increasingly multipolar world with deep but changing financial interconnectivity, there is an urgent need to do more at three levels—institutional, national, and global.

At the institutional level, the IMF's resources and expertise are still too heavily tilted in favor of economics and policy, as opposed to society and the impact of financial markets. Nonbank financial and social links to economic progress are still lagging, often viewed too much as an afterthought. Behavioral science and decision-making insights are not employed frequently enough to support the transition from what's desirable to what's feasible and ultimately effective. There will be little progress in these areas without deepening further cognitive diversity in areas such as gender, educational qualifications, professional experiences, and cultural background.

There is an urgent need to do more at three levels—institutional, national, and global.

This transition also requires better incorporation of governance, social equity, and justice issues. It means greater evenhandedness, as the founders intended, in the approach to both deficit and surplus countries. It also entails being more open to learning from mistakes, be they persistent forecasting errors (such as excessive growth optimism in the aftermath of the global financial crisis), partially designed programs (including insufficient attention to the costs and risks of extreme austerity), excessive capture by major shareholders, or inadequate focus on how persistent debt overhangs can pull the rug from under a country's growth momentum.

Member countries can help by being more open to the role of the IMF as a trusted advisor. They should more seriously consider the risks of spillovers and spillbacks associated with narrow policy approaches. Should they need to borrow, they must resist the inclination to wait until the very last minute to approach the IMF, and they must be more active and explicit in taking ownership of both the design and implementation of the adjustment and reform programs supported by Fund resources.

Collectively, IMF members should take bolder and more decisive steps to implement a merit-based (rather than nationality-based) approach to the

The institution must adapt even faster if it is to fulfill its important role in the international system.

selection of its managing directors and deputy managing directors, doing a lot more—and quickly—to give a proper voice and representation to developing economies (particularly relative to European countries) and moving more swiftly to enhance the lending capacity of the IMF. Further delays in these areas increase the probability of financial crises, persistently low and insufficiently inclusive growth, further erosion of institutional credibility and standing, and the fragmentation of the international system.

The configuration and functioning of the global economy have changed greatly in the 75 years since the creation of the Bretton Woods institutions. While some may correctly point to instances where the IMF changed either too slowly or only in response to crises, overall the IMF has been among the most agile of the multilateral institutions when it comes to evolving its operational practices in response to new realities on the ground. With technological innovations and different power and market structures turbocharging change, the institution must adapt even faster if it is to fulfill its important role in the international system—one that is central to the well-being of the vast majority of people in its member countries.

Finding the right balance

In my first week at the Fund as a young full-time economist back in the summer of 1983, I was struck by the notion that the IMF can be uniform in its treatment of member countries while also being sensitive to case-by-case considerations. During my 15-year career there, I saw this applied in practice. It wasn't always easy to strike the right balance, especially when political issues and outmoded mind-sets and entitlements got in the way. But doing so on the basis of the staff and management's agile judgment, commitment, and timely responses proved critical for success.

Striking the right balance will become even more important for the IMF as global economic transformations accelerate, technological innovations change not just what we do but how we do things, the politics of anger interact with national economic policy management, and cross-country economic and financial links face greater fragmentation pressure. It will require the type of self-disruption that most institutions find hard to do well. But it will be much better than becoming less relevant, less impactful, and less respected.

The IMF's committed staff realizes this perhaps better than anyone. Their willingness to accelerate their orderly and beneficial self-disruption is considerable. With visionary leadership, they have the ability to respond, and do so on offense rather than from a position of weakness—but they won't be successful without empowering actions on the part of their shareholders, member countries. FD

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Schoolchildren attend computer training in Benin, where the internet penetration rate is just over 42 percent.

A *Digital* Africa

Technology can be a springboard for faster, more inclusive growth

Vera Songwe

As more nations have made the transition to technology-enabled platforms for services, low-income countries have not been left out of the digital boom. With the right policies, they stand to benefit the most.

With digitalization come opportunities to leapfrog development. Digital technology lowers costs and enhances efficiency while safeguarding inclusion. For low-income countries, it provides a way to deliver services when traditional institutions are weak. Yet the potential is far from being realized. That will require additional investment in information and communication technology (ICT) infrastructure, an enabling policy environment, adequate skills, and steps to ensure privacy and security.

Africa in particular faces many challenges. While growth is recovering and expected to reach 3.5 percent in 2019, the continent needs to triple its growth to achieve the United Nations Sustainable Development Goals. With about 33 percent of the continent's population living in extreme poverty, 0.6 percent GDP growth per capita is too low to be of much help. Governments, with debt averaging more than 50 percent of GDP, have little room to invest in economic and social infrastructure. More than 60 percent of the population lacks access to

PHOTO: GETTY IMAGES / YANICK FOLLY; ART: ISTOCK / IVANASTAR financial services. There is a need to do more, and digitalization can play a crucial role.

Low-income countries worldwide are struggling to maintain growth amid a slowdown in global demand and a decline in commodity prices. While diversified exporters appear to be faring the best, rapid investment in infrastructure is stretching their budgets. Low-income countries must increase savings, improve the quality of investments, and—most important—raise new investments' rate of return in order to manage debt and open up fiscal space for social sector spending.

The digital economy can help achieve these objectives in three ways:

First, improving the efficiency and transparency of government services can generate impressive savings. Using digital technology, Rwanda was able to increase annual revenue by more than 6 percent. South Africa reduced the cost of tax collection by 22 percent. By shortening the time needed to open a business, using e-commerce platforms, countries such as Mauritania, Rwanda, and Senegal have fostered growth in small and medium enterprises. India saved a staggering $99 billion through the Aadhaar digital identity system, which lowers the cost of delivering services while extending them to a greater share of the vulnerable population.

Innovative software applications are also playing a role. In Malawi, onebillion's onecourse, a software application that teaches reading, writing, and mathematics, is helping improve numeracy in grades 1–3 and narrow the gender gap in reading and mathematics skills, according to a study published in *Frontiers in Psychology*. Babyl, a mobile app implemented in Rwanda, asks patients about their symptoms and gives them information and a referral when necessary. Babyl reaches 30 percent of the adult population and hosts an average 2,000 consultations a day, according to *Mobile Health News*.

Second, technology can help low-income countries improve the environment for small and medium enterprises, including through better access to financing. One such opportunity is in e-commerce, which is particularly suited to the micro, small, and medium enterprises that constitute more than 80 percent of African businesses. E-commerce platforms provide access to a broader range of buyers. Some platforms offer services—payment processing, customer service, shipping, return handling, and delivery—that significantly lower costs.

Digital technology is a lever for financial inclusion. The Nigerian money transfer network Stellar brings affordable financial services such as banking, micropayments, and remittances, to people without access to financial services. Mobile money also provides access to more complex financial products. In 2017, Kenya launched M-Akiba, a government bond sold exclusively via mobile money, for as little as K Sh 3,000 (or US$30).

Third, the digital economy is opening up the service sector, a growing share of the economy of many low-income countries. In fields from transportation, to delivery, to medical diagnostics, to accounting, low-income countries can find an area of comparative advantage with the right policy environment. For example, iSON BPO has more than 10,000 employees across call centers in Nigeria, Ghana, Liberia, Sierra Leone, Burkina Faso, Chad, and Niger. Mauritius employs 12,000 people in the business process outsourcing (BPO) sector. In Egypt, the business consulting firm Frost & Sullivan estimates the BPO market at more than $1.2 billion. In the Philippines, BPOs generate one-third of total export earnings and employ 1.3 million.

Mobile's potential

The Brookings Institution estimates that mobile technologies and services in Africa had generated more than $150 billion in economic value as of 2015. The mobile ecosystem supported 3 million jobs and contributed almost $14 billion in tax revenue in 2017. The investment firm Partech Partners estimates that in 2018, African start-ups, mainly in the information technology sector, raised more than $1.1 billion, demonstrating that the digital economy is gaining momentum in Africa.

Yet these gains represent only a small proportion of the benefits a digital economy can yield for Africa's development. Despite more than 30 years of ICT implementation, African countries lag in ICT infrastructure and access, use, and skills. While mobile penetration was estimated at 44 percent in 2017, internet penetration averaged just 20 percent, with wide variations—from 90 percent in Kenya to 3 percent in Niger. Only 7 percent of African households subscribed to high-speed internet services in 2017.

The good news is that many African countries and regional organizations are putting policies, strategies, and regulations in place to take advantage of the opportunities presented by digitalization.

It is critical that the benefits of digitalization be spread across the entire population.

Deliberate investment in technology infrastructure and an enabling environment that rewards innovation could deliver substantial results.

It can be argued that technology is the most likely catalyst for inclusion. Why? Because of the relentless lowering of costs for computing, storage, networking, displays, internet access, and related elements. The average cost of a mobile phone with some of the features of a smartphone fell from more than $200 in 2008 to $20 in 2018. From 2012 to 2017, the cost of 500 megabytes of online data fell from almost $30 to $5. Such cost decreases are a powerful economic force that can drive inclusion and increase participation of women in the workforce. Inclusive growth in the BPO sector can be at least partially attributed to this factor.

As important as it is for each country to create an enabling environment for technology, the real benefit accrues from interoperability between countries. That requires regulation and harmonization. Think how limited the value of phones, email, or the internet would be if they worked only within each country, instead of globally. The advent of the African Continental Free Trade Area (AfCFTA) will offer a framework for developing technology standards, harmonization, and interoperability to support cross-border commerce.

Digital technology will play a dual role in turbocharging the free trade area. It will spur cross-border trade by speeding implementation, automating processes, and reducing costs. New areas of digital commerce and services will open up, including unlocking the supply chain logistics nightmare in many parts of Africa. Mobile devices, broadband networks, cloud services, the internet of things, and big data analytics could significantly lower the cost of planning, scheduling, tracking, delivering, and managing goods, opening up a massive opportunity to create jobs.

Spreading the benefits

It is critical that the benefits of digitalization be spread across the entire population. Perhaps 500 million Africans lack a legal identity. This implies that about half of the continent's people are unable to meaningfully contribute to economic growth or to access services to improve their well-being. Digital identity, the ability to verify an individual's or business's identity electronically, is the basis for digital economy platforms and provides a powerful solution to the identity crisis.

At the African Union Assembly of Heads of State and Government in February 2019, the United Nations Economic Commission for Africa was asked to collaborate with the African Union Commission, Smart Africa, and others to develop a digital ID and trade strategy—a clear sign that African leaders are aware of the urgency of the problem. The digital economy thrives on trust. It is crucial therefore that African countries have adequate regulation, particularly around data privacy, data governance, and digital security.

Digital infrastructure, digital skills, and additional investment are needed to realize the full benefits of the digital economy on the African continent. African Development Bank estimates indicate that just 2.6 percent of infrastructure disbursements in Africa went to information and communication technology in 2016. The AfCFTA represents a powerful vehicle to attract additional investment in ICT.

Macroeconomic stability enables both public and private investment in digital infrastructure and skill development. At the same time, digitalization offers opportunities to address structural issues affecting macroeconomic stability, such as revenue mobilization, debt management, and public expenditure management. The IMF, through its analytical work and policy dialogue with low-income countries, can help promote awareness and policy options for exploiting the links between macroeconomic policy and digitalization. Similarly, state institutions must be able to develop standards and regulatory frameworks to maximize gains in the digital ecosystem while minimizing associated risks. FD

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Reimagining the IMF

In the postcrisis world, the Fund must move beyond its role as lender of last resort

Adam Tooze

COURTESY OF ADAM TOOZE

IN 2007, on the eve of the global financial crisis, the IMF was an organization under siege. Economist Barry Eichengreen called it a "rudderless ship adrift in a sea of liquidity." Mervyn King, then governor of the Bank of England, warned that it was at risk of "slipping into obscurity."

Its outstanding loans had shrunk to about $11.1 billion. The only significant new borrower was Turkey. As business dried up, so did sources of revenue. If the period of easy credit had continued, the Bretton Woods institutions might well have been reformed beyond recognition. But the crisis of 2008 ended that discussion. In the absence of any obvious alternative, the Fund became a critical part of the crisis-fighting effort.

The past decade has seen dramatic financial, economic, and political turmoil. It has been a good decade for the IMF. Today it stands alone as the only global financial crisis–fighting agency. It is amply resourced. Its expert staff is not merely a tool in the hands of creditors. Particularly during the euro area crisis, it demonstrated a striking degree of programmatic independence.

But not every crisis is good for the IMF. The fact that countries did not want to borrow from the organization before 2008 was not simply an effect of the economic upswing and the easy availability of private funding. Their reluctance was also powerfully motivated by the stigma the IMF acquired during the Asian financial crisis of 1997–98, when it was accused of imposing needlessly painful conditions on its borrowers.

In an attempt to respond to the criticism, the IMF set up its own watchdog, the Independent Evaluation Office. It pushed for fundamental reform of sovereign debt restructuring, but that proposal was abandoned in the face of fierce objections from the financial industry. The George W. Bush administration called for more action by the IMF on current account imbalances, hoping to exert pressure on China. But it soon became clear that the United States had no intention of allowing oversight and criticism of America's own imbalances.

When the 2008 crisis hit, the IMF initially took a back seat. At least on the surface, in 2008 there was neither a balance of payments nor a currency crisis. It was not, in other words, an "IMF crisis." In South Korea, which did suffer a disruptive devaluation of the won in fall 2008, the Bush administration ruled out any IMF involvement. The memories of the 1990s were too fresh. It was only when the shutdown in credit markets morphed into a sudden stop in emerging market funding that the IMF was called to action.

Division of labor

Tacitly a functional and political division of labor took shape. National authorities bailed out banks. Countries with large reserves, like Russia and China, self-insured. The Federal Reserve provided dollar liquidity directly to a core group of 14 central banks. The IMF provided facilities for other countries and made sure to structure its support in a minimally intrusive way, offering Mexico and Poland one of its new flexible credit lines.

The scale of crisis lending and the need to expand IMF funding had the healthy effect of forcing the Western incumbents and the rising Asian economies to come to terms over rebalancing quotas and voting rights. At the London meeting of the Group of 20 in April 2009, the IMF's lending capacity was tripled to $750 billion.

Significantly, the IMF was both the chosen vehicle for global intervention on the part of the Obama administration and at the center of Chinese attention. When People's Bank of China Governor Zhou Xiaochuan called for an alternative to the dollar-based currency system in March 2009, his proposal was based on special drawing rights, the IMF's reserve currency, and took Bretton Woods as its inspiration. Germany also favored the IMF over European institutions as a vehicle for crisis fighting.

Dangerous ground

The IMF moved onto much more dangerous ground in 2010 when it joined the effort to stabilize the euro area. There was a rationale. The crisis was huge, in large part because of the inadequacy of Europe's own crisis-fighting efforts, and it threatened to be systemically destabilizing. In spring 2010, the Merkel and Obama administrations combined to put the Fund at the heart of the first stabilization of Greece. Henceforth, the IMF became an integral part of the troika that managed the euro area emergency programs. It also added €250 billion in commitments to the euro area's improvised financial safety net.

Altogether, the expansion of IMF activity from its low ebb in 2007 was dramatic. It boldly proclaimed that it was not simply returning to its old ways. Conditionality was less onerous and more adapted to local circumstances. The Fund's criticism of fiscal austerity in 2012 caused a minor political sensation. Faced with the gigantic capital flows unleashed by the Federal Reserve's quantitative easing and a chorus of criticism from emerging markets, the IMF backed away from absolute rigidity on capital controls.

The crises since 2008 have indeed been good for the Fund. But the question is whether any of the basic problems that led to the deep institutional crisis of the early 2000s have been fixed. On that score the answer is much less clear-cut.

At the high point of the global crisis of 2008–09, the IMF was in truth a bystander. The crisis did not revolve, as many had anticipated, around the market for US government debt. It was centered on the banking system and money markets. Such a crisis was vastly beyond the resources of the IMF. It required changes not only to fiscal and monetary policy, public sector administration, and labor markets—the familiar provinces of IMF programs—but to the functioning of financial capitalism itself. This was new terrain. The IMF has now moved into systemic monitoring of financial flows and balance sheets. But it is unclear how far this commitment goes. When the going gets rough, the Fund's track record has been mixed.

Nowhere was this more evident than in Europe. Fund economists were early to spot the doom loop that entangled euro area banks and sovereign debt. While the Fund spoke of the need for European bank recapitalization, it did not impose its position on its European partners, nor did it decisively distance itself until the very final stages of the Greek crisis in 2015. As a result, it allowed itself to be sucked into a ruinous policy of extend-and-pretend.

Greece's debts were eventually written down in 2012, but only as a last resort and to an inadequate degree. The main effect was to substitute official for private loans, which makes subsequent restructuring even more difficult. The only way out of this impasse is to revive the IMF's campaign for orderly and routine restructuring. Otherwise, it will find itself endlessly repeating punitive, highly conditional workout programs.

Essential questions

Today, the Fund is facing a new type of politicization that dramatically raises the stakes: great power competition intertwined with large-scale intergovernmental lending.

That challenge invites some essential questions. At a time when the United States and Europe increasingly regard their relationship with China in terms of great power competition, how will the IMF arbitrate competing claims arising from lending under the Belt and Road Initiative in sensitive geopolitical flashpoints like Pakistan? How might this transform the issue of voting rights adjustment, the renewal of the funding streams put in place in 2009, and the choice of the next managing director?

In a world of massive private financial flows, with a profoundly lopsided and incoherent approach to public debt and mounting geo-economic rivalry, it seems optimistic to assume that every crisis will be good for the Fund. Instead, the Fund should learn the lessons of past decades and proactively advocate rigorous macroprudential regulation, a new sovereign debt restructuring regime, and the urgent priority of adjusting the balance of its quota and voting rights to reflect global realities. FD

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The Specter of Versailles

The conference that ended World War I was followed by an inward turn that has parallels today

Barry Eichengreen

French Premier Georges Clemenceau, US President Woodrow Wilson, and British Prime Minister David Lloyd George after signing the Treaty of Versailles at the end of World War I.

PHOTOS: GETTY IMAGES / HULTON-DEUTSCH COLLECTION; ISTOCK / MALIJA

On June 29, 1919, a century ago, the Treaty of Versailles was signed, officially ending World War I. This centennial is no cause for celebration, given how dismally the treaty failed at achieving its aims. It did not seal an enduring peace. It did not inaugurate an era of prosperity in Europe or worldwide. It did not create an effective institutional framework for governing international economic and political relations.

Indeed, it failed so utterly that an entirely different approach was taken after World War II, one that entailed more forceful US leadership and the construction of encompassing institutions in Europe and globally. The result, in the third quarter of the 20th century, was economic growth in the industrialized countries at a pace never seen before.

But memories fade, and it is not too strong to say that we are repeating the mistakes of Versailles. Back then, the United States was a party to treaty negotiations, but it largely washed its hands of the results. It refused to join the League of Nations. It was not an active participant in the 1922 Genoa Conference intended to strengthen the international monetary and financial system. It did not support the League's efforts to negotiate a tariff truce and provocatively raised import duties in 1923 and 1930. It did not forgive the war debts owed by its European allies, thereby compounding the German reparations mess.

Entanglements shunned

This inward turn was a reassertion of a long-standing isolationist strand in American political thought that stretches back to Thomas Paine's influential tract *Common Sense*, published in 1776, which argued against entangling alliances. That the country was separated from Europe by more than 2,000 miles of ocean allowed its leaders to believe that they could avoid becoming enmeshed in that continent's affairs. The United States entered World War I only after German U-boat attacks on American ships rendered the established policy of neutrality untenable. After the war, the country shunned these entanglements, not only erecting new tariffs but also adopting restrictive immigration laws.

The parallels with the current, inward-looking tariff and immigration policies of the United States are unmistakable.

The parallels extend also to the factors feeding the country's isolationist tendencies. The 1920s, like the early 21st century, were a period of rapid economic change, and it was tempting for those who felt left behind to blame foreigners and urge recourse to tariffs. In the 1920s this meant American farmers, grain growers in particular, who suffered from the expansion of acreage under cultivation in Argentina, Canada, and elsewhere. The Smoot-Hawley Tariff of 1930 was initially conceived as a measure to protect US farmers from cheap imports. The reality was that the tractor, not import competition, was the more important explanation for low US farm-gate prices. But it was easier to blame foreigners than to turn back technological progress.

Today, declining manufacturing rather than agricultural employment is the source of angst, and the culprit is robotics rather than motorized farm equipment. But the political reaction is no different.

Immigrant quotas

Then as now, there was also an identity-politics strand in the isolationist turn. Earlier immigrants from the British Isles and Scandinavia, often Protestants, were disquieted by immigration from the countries of southern and eastern Europe, whose populations were heavily Catholic. The sensational 1921 trial and conviction on murder charges of Nicola Sacco and Bartolomeo Vanzetti, two Italian-born anarchists, symbolized this suspicion of so-called new immigrants. Revealingly, the Immigration Act of 1924 based immigrant quotas not on current population shares but on the shares of various immigrant groups in 1890, before much of this new immigration. Hostility toward darker-skinned immigrants who spoke a different language and practiced a different religion was reinforced by hard economic times, notably in the period of the Mexican Repatriation from 1929 through 1936, when as many as 2 million Mexicans and Mexican-Americans were targeted for deportation.

Thus, isolationist tendencies in the American body politic are always present, but they are most powerful when fueled by a combination of economic dislocation and identity concerns, which is to say in the 1920s and today.

The other fundamental mistake at Versailles was to deny the rising powers a seat at the table. Germany was excluded from the League of Nations until 1926. It faced indefinite restrictions on its military. Its economic autonomy was limited, notably by a prohibition against forming a customs union with Austria. These impositions fueled the

Delegates gather at the opening session of the Paris Peace Conference in 1919.

It is not too strong to say that we are repeating the mistakes of Versailles.

destructive nationalism that ultimately resulted in the collapse of the Weimar Republic.

Separate peace

A weakened Russia had negotiated a separate peace with Germany in 1918. Although representatives of the anti-Bolshevik Russian Provisional Council attended the Versailles negotiations, the Bolsheviks were excluded. Hence, when the Soviet Union came into existence in 1922, it was in no position to participate in the reconstruction of the international system. The new Soviet state did finally join the League of Nations—temporarily—in 1934. By this time, however, the USSR was effectively kept out of Western economic and financial arrangements, setting the stage for the bifurcation of the world economy, and the world, into Soviet and Western blocs.

Today China is actively seeking to carve out a position on the global stage. The question is whether it will exert its influence through existing multilateral institutions, such as the International Monetary Fund and the World Bank, or through vehicles that China itself designs to project its economic and political influence globally, such as the Asian Infrastructure Investment Bank and the Belt and Road Initiative. If it invests and provides assistance through the IMF and World Bank, it will be subject to existing institutional constraints, and its influence can be counterbalanced by other members. If not, it will be freer to do as it pleases. The reluctance of the United States and other countries to give China a greater voice in the Bretton Woods institutions heightens this last danger.

The failure of the Treaty of Versailles is a reminder of the indispensability of leadership by the dominant power in crafting and sustaining stabilizing alliances and institutions. It is a reminder of the need to incorporate rising powers constructively into those arrangements. These are lessons that the United States seems to have forgotten for the moment. But there have been isolationist turns in US politics before. The question is whether this fit of forgetfulness will prove temporary or enduring. FD

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China’s Ascent

The rise of China in the coming decades will have far-reaching consequences—the world should get ready

Keyu Jin

AS IT TRANSFORMS from an economic backwater to the most connected hub in the global economy, China is driving seismic changes, within its own borders and beyond. It is the second time in recent history that a developing economy is on the fast track to becoming the world’s largest, but it is the first time this has happened in such an interconnected world.

How China—a unique country in transition—designs its financial liberalization and opening-up policies will be of paramount importance to all. So will the mantle the country is bound to assume in the realm of global economic cooperation. Contemporary thinking on the future of the international financial order does not yet focus on the new paradigm created by China—but it should.

China in 2040 will look on the face of things to be a mighty economic power. Under plausible projections, it will have firmly established itself as the largest economy in the world, with 60 to 70 percent of the US income level. But in 20 years, China will still be a developing economy by many measures—its financial development will lag its economic development, and many economic and policy distortions may still persist.

In that scenario, the world must be prepared for China to be its first *systemic* emerging market economy. It should brace for greater volatility and uncertainty as China becomes more intermeshed with global financial markets. It should prepare for a China that emits shocks distinctive to developing economies—but on a much larger scale and with greater thrust and impetus.

Every significant policy move, stock market panic, and cyclical upswing or downswing in China can plausibly diffuse and propagate through the web of financial networks that links nations. In China today, 70 percent of investors in capital markets are retail investors, quick to react to noise and changes in sentiment. Mercurial stock markets and volatile exchange rates may become the rule, not the exception.

Currently, China is already inadvertently sending shocks to the rest of the world, despite its small international financial exposure. My own research with Yi Huang shows that it is not only policy shocks (monetary and fiscal) that spill over to the rest of the world but also the shocks of policy *uncertainty.*

In a country where reforms big and small happen on a regular basis, where policy moves often instigate cyclical fluctuations rather than subdue them, where policy direction and strategy are based on experimentation rather than experience, uncertainty can be a first-order menace to overly sensitized financial markets.

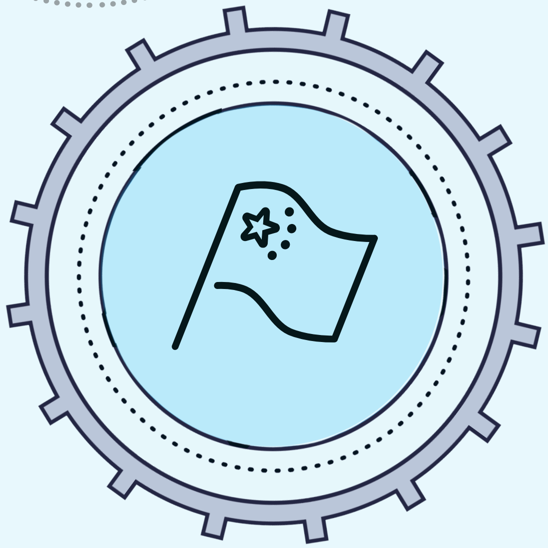
Our research shows that during 2000–18, Chinese policy uncertainty shocks significantly affected not only economic variables, such as world industrial production and commodity prices, but also key financial variables, including global stock prices and bond yields, the MSCI World Index, and financial volatility.

Now imagine China in 2040, more consequential and with a greater number of channels open to the rest of the world—whether cross-border bank lending, portfolio holdings, capital flows, or a more dominant renminbi. In that scenario, shocks emanating from China would not only propagate more swiftly and potently, they would also be amplified and expanded through its increasing and diverse financial channels.

The rise of China today bears much similarity to the ascent of the United States in the late 19th century. Although it was growing rapidly and catching up with European countries, it had the developing economy malaise of unsophisticated capital markets. Corporate governance was riddled with problems and banking crises occurred regularly; weak financial intermediaries and a shortage of financial assets, along with the absence of a lender of last resort, prevented the efficient mobilization of capital. The vagaries of the US economy and the financial panic in 1873 were fully transmitted to Europe and Great Britain, which had significant exposure to the US economy.

This raises three questions for the future of China and international global cooperation.

The first is the desirability of China's rapid financial liberalization and opening up. From China's point of view, financial liberalization and integration may lead to better allocation of financial capital. It will also constrain policy. When a country is subject to the harsh scrutiny of global investors, there is less room for opaque, erratic, or irresponsible



policies—all of which are more acceptable behind closed doors.

The second question concerns what the world wants, and to what extent it should say what it wants. The world is still wrestling with the tension between domestic policies and international imperatives, and sometimes there is a double standard. The Federal Reserve asserts that it bases its policies on US interests not on world interests, but US monetary policy substantially affects the rest of the world. Is it realistic to ask China to base its financial policies on the world's interests rather than its own?

The third question relates to international cooperation, which will be imperative in the future if the Federal Reserve and the People's Bank of China, each with its own mandate and objective, embrace two different and potentially conflicting views of the world. Cooperation was very much the aspiration of the Bretton Woods system, the earlier parts of the flexible exchange rate regime, the Group of Seven, and the 1985 Plaza Accord. It has largely disappeared from discussion but crucially needs to return.

On the positive side, China will be an anchor for demand in the world, particularly since aggregate demand deficits in advanced economies may be a perennial affliction. It can also serve as an additional source of diversification for global portfolios and currencies—and the renminbi could even be an alternative reserve currency. We live in a world of shifting paradigms. "Is China ready to open up?" is a question often posed. The real question may be: "Is the world ready?" FD

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Toward a Multipolar System

We must prepare for a possibly turbulent transition to a safer, more efficient international monetary system

Emmanuel Farhi

THE INTERNATIONAL MONETARY system has undergone several transformations over the past two centuries, as it moved from the gold standard to the current arrangement of flexible exchange rates.

Yet there was one constant feature: the system was almost always dominated by a single currency. Until World War I, it was the pound sterling. After a turbulent sterling-dollar era between the two world wars, the dollar ultimately prevailed following World War II.

The reign of the dollar survived the end of the dollar exchange standard instituted by the Bretton Woods Agreement and emerged from the global financial crisis even stronger than before. At the same time, new competitors—the euro and the renminbi—are emerging. How will this geopolitical monetary competition play out? How should we prepare? By heeding the lessons of history, we can trace out scenarios and draw contingency plans for the next phase of the international monetary system.

Dollar dominance

Today, the dominance of the dollar makes the United States the world's banker. As such, the country enjoys exorbitant privileges, in the words of Valéry Giscard d'Estaing, and bears exorbitant duties. Directly or indirectly, it is the preeminent supplier of safe and liquid assets to the rest of the world, the issuer of the dominant currency of trade invoicing, the strongest force in global monetary policy, and the main lender of last resort.

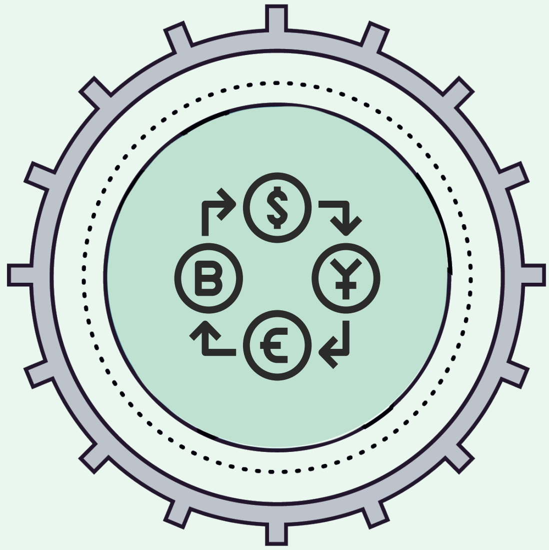
These attributes reinforce one another. The dollar's dominance in trade invoicing makes it more attractive to borrow in dollars, which in turn makes it more desirable to price in dollars; the US role as lender of last resort makes it safer to borrow in dollars, which in turn increases the responsibility of the United States in times of crisis. All these factors consolidate the special position of the United States.

This is not to say that all is well in the dollar-centric international monetary system. There is a growing and seemingly insatiable global demand for safe assets, or assets that do not carry a high risk of loss across all types of market cycles. The resulting shortage of safe assets has brought interest rates on relatively risk-free investments down to historically low levels and catalyzed serious and persistent global challenges to both macroeconomic stability (by increasing the probability of hitting the zero lower bound) and financial stability (by pushing investors to lever up and take risks to reach for yield).

It also creates the conditions for a new so-called Triffin dilemma: over the long run, the only way the United States can accommodate this growing global demand for safe assets is by stretching its fiscal and financial capacities, which could strain investors' trust in the dollar and lead to volatility and self-fulfilling crises. It is a similar mechanism, foreseen a decade earlier by the Belgian economist Robert Triffin, that brought down the Bretton Woods system by forcing the

United States to go off gold and float the dollar following a run on its currency.

The ineluctable arrival of new competitors, such as the euro and the renminbi, in the global currency game could provide a way out in the long run. And competition could deliver its usual benefits by making the international monetary system safer and more efficient. This competition would resorb the shortage of safe assets, eliminate the new Triffin dilemma, and relieve the United States of its exorbitant duties and privileges.



Concrete steps

However, a truly multipolar international monetary system will not be here tomorrow. The euro area and China are taking sometimes aggressive steps to strengthen the international role of their currencies, but reputation and institutions are not built overnight, and coordination on the status quo can be persistent.

Furthermore, the monetary instability of the interwar years, when the pound sterling and the dollar coexisted, should remind us that, in the medium term, more instability could be on the way. Some of this instability, according to the Estonian economist Ragnar Nurkse, arose from the actions of investors who frequently rebalanced their portfolios between currencies. The lesson for our times is that as competitors to the dollar emerge, international investors will have a place to go if they decide to abandon the dollar. This could exacerbate destabilizing speculation and lead to self-fulfilling confidence crises.

In sum, it will take time for the benefits of monetary competition to materialize. In the meantime, investors should prepare for a potentially disorderly period of transition to a multipolar international monetary system.

The international community can take concrete steps to prepare for these challenges. It could, of course, try to encourage and hasten the transition to a truly multipolar system. But the most important and most actionable priority is to strengthen the global financial safety net, with the dual objective of making the global financial system more resilient and alleviating the global safe asset shortage, thereby mitigating its destabilizing consequences.

Some concrete measures involve preserving the ability of central banks and governments to act as lenders of last resort in their own countries. Other measures encourage decentralized arrangements between countries: reserve-sharing agreements through which several countries pool their reserves in order to economize and bilateral swap line agreements between central banks that allow one bank to borrow another's currency against collateral. Finally, other measures involve bolstering the existing facilities and expanding the financial capacity of the international organization at the center of the multilateral system—the IMF—as well as strengthening its support to decentralized arrangements.

Perhaps more radically, we could envision a larger role for the IMF by adapting and modernizing some old ideas from the defunct Keynes-Triffin plans. The IMF could centralize reserve-sharing agreements by administering a global deposit facility built on the existing special drawing right. It could also multilateralize the decentralized, sparse, and discretionary network of bilateral central bank swap lines and enhance it with a star-shaped structure. This could be accomplished either by acting as a central counterparty clearinghouse and underwriter of bilateral swap lines or by offering short-term swap facilities of its own.

The economist Rudiger Dornbusch, of the Massachusetts Institute of Technology, famously said that "in economics, things take longer to happen than you think they will, and then they happen faster than you thought they could." It is a good time to prepare. FD

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Globalization and Narcos

Manufacturing job loss resulting from international competition can carry large social costs

Melissa Dell

IN A SENSATIONAL interview published by *Rolling Stone*, actor and filmmaker Sean Penn asked Joaquín "El Chapo" Guzmán—named the world's most powerful drug trafficker by the US government—how he became involved in the drug business. El Chapo responded: "In my [geographic] area...there are no job opportunities." On this much, the late Nobel laureate Gary Becker—who pioneered the economic study of criminal behavior—and El Chapo could agree: economic opportunities matter for criminal behavior.

The point is also borne out in recent research. My study with Benjamin Feigenberg (University of Illinois, Chicago) and Kensuke Teshima (Hitotsubashi University) shows that Mexican manufacturing job loss—resulting from increasing trade competition with China in the US market—has played an important role in the explosion of drug violence in Mexico in recent years.

Conflicts over drug trafficking during the past decade have transformed Mexico into an epicenter of global violence, claiming over 100,000 lives (Beittel 2017). Whether weak economic performance promotes urban violence is a major policy issue, with newly elected President Andrés Manuel López-Obrador arguing for job creation as one of the pillars of his platform to reduce drug-related violence. More generally, much of the violence in the world today is concentrated in urban areas of developing economies involved in the cocaine trade (Igarapé Institute 2017).

While international trade has brought enormous benefits to developing economies, our research on Mexico highlights that manufacturing job loss resulting from international competition can also carry large social costs. Sustainable economic integration on an international level requires collaboration on developing and implementing innovative approaches for navigating the social and distributional challenges that accompany such integration.

Job loss and crime

There has been scant research on the link between job opportunity and violent crime in urban areas of developing economies. Much of the literature on the link between opportunity and crime focuses either on industrialized countries with strong institutions or on rural conflicts in developing economies. Studies from these two settings tend to produce contradictory results: those done in rich countries typically find no such link (Draca and Machin 2015), whereas studies of rural insurgency identify a strong causal relationship between economic opportunity and conflict and crime (Dube, García-Ponce, and Thom 2016).

There is good reason to expect the link between job loss and violent crime to be stronger in poorer economies with weaker institutions, even in places like Mexico with well-developed urban labor markets, than in advanced economies. In lower-income settings, the social safety net is often weak. Criminal justice institutions typically lack resources and struggle to prevent corruption. Significantly, criminal organizations may provide extensive employment opportunities, adding to their appeal and lowering the job search costs for unemployed people. At the same time, it is not clear that findings about rural conflict—which differs in many fundamental ways from urban crime—can be extrapolated to these settings.

In a new paper (Dell, Feigenberg, and Teshima, forthcoming) my coauthors and I fill this gap by examining how changes in urban manufacturing job opportunities resulting from international trade competition have affected drug-trade-related violence in Mexico. Trade competition in the US market between Mexico and China has been an important driver of local labor market conditions in Mexico, generating considerable popular and policy interest. This competition appears to have a damping effect on local employment opportunities that we show is uncorrelated with preexisting trends in drug trafficking and violence.

Our study concludes that if Chinese exports to the United States had not risen significantly during 2007–10, the increase in drug-related homicides in Mexico in our sample—totaling about 6,000 in 2007 and more than 20,000 in 2010—would have been about 27 percent lower. Effects are larger where international competition is likely to disproportionately affect young, less-educated men, consistent with this subgroup's high propensity to participate in the illegal sector.

Importantly, the impact is concentrated in municipalities with a transnational drug gang presence. In contrast, there is no impact on overall and drug-related homicides in municipalities where no known drug trade operations existed initially. This underscores the role of criminal organizations in linking labor market conditions and violent crime.

Importance of incentives

We provide evidence that, in some parts of Mexico, young people are moving away from legitimate employment toward criminal activity because changes in the local labor market have made it more lucrative to traffic drugs. The decline in the opportunity cost of pursuing criminal employment makes it more lucrative for gangs to traffic drugs, which involves extensive mobilization of local labor. This in turn leads criminal organizations—or factions within them—to fight for control of these territories. Indeed, municipalities where employment opportunities decline also experience a large increase in cocaine seizures, which can serve as a reasonable proxy for cocaine traffic in the absence of major changes in enforcement. Cocaine trafficking, which is highly lucrative—and whose destination is overwhelmingly the United States—involves extensive mobilization of lookouts, the largest group of drug trafficking organization employees.

These findings underscore the value of a Gary Becker–style approach that views violent criminality through a lens that includes economic incentives. Our results suggest that strengthening the social safety net for workers displaced by trade competition or technological change could reduce criminality by improving workers' outside options.

In the coming years, countries with weak institutions may well be those hit hardest by workers displaced as a result of economic integration and technological change, with criminal and other actors outside traditional institutional structures poised to exploit such shocks to their advantage. These countries will need a combination of national and international measures to fight these challenges successfully. National efforts should ensure that productivity and income gains from globalization are shared, including through education and training for low-skilled youth employed in more exposed sectors.

It is likely, however, that in countries with weak institutions, national and local governments lack the resources to mitigate these challenges on their own, leaving an important role for the international community. As with the international drug trade, the reverberations will transcend international boundaries. Governments, civil society, and the international community must work together to reduce the social impact of economic integration and develop practical approaches to mitigating the costs. FD

MELISSA DELL is a professor of economics at Harvard University.

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PHOTO: COURTESY OF MELISSA DELL

A Solution to Sudden Stops

The IMF and central banks should work together to resolve financial crises

Ricardo Reis

A MAJOR FUNCTION of the IMF is to provide short-term loans to countries that experience a sudden stop in the inflow of private capital. Left on their own in these circumstances, countries can experience a sharp depreciation of their exchange rates, suffer large recessions, and likely default on their foreign debt. Experience shows that these events can quickly spread to other countries. Some insurance against sudden stops is valuable, if only to smooth the outflow of capital over time, prevent "fire sales" (the sale of assets at prices far below their market value), and limit contagion. Since the 1944 Bretton Woods conference, the causes, features, and consequences of these sudden stops have changed, but the IMF's role as lender of last resort has endured.

Banks also fall victim to sudden stops, but of a different sort. Sudden stops afflict banks when they lose access to the short-term funding they need to finance their long-term investments. In this situation, they turn to their central bank, an institution that has long served as their lender of last resort.

Recently, these two types of sudden stops have merged. Banks with global operations often borrow in foreign currencies to invest in assets abroad. In 2007, when US dollar money markets froze, some banks outside the United States experienced a sudden stop. As with country sudden stops, this event involved a flow of capital across borders, but it was bank, not sovereign, funding that was at stake. Central banks were ready to take up their role, but their domestic currency had to be converted to foreign currency, and the strains of the financial crisis on foreign exchange markets made the cost of borrowing skyrocket.

The Federal Reserve provided a solution by opening dollar swap lines with central banks in selected countries. Through these arrangements, the Fed lent dollars to these central banks, which in turn lent them to their domestic banks to fund their US dollar investments. Since the sudden stop involved US dollars, the Fed could provide the needed funding and prevent fire sales of dollar assets. As it was domestic banks that needed funding, it was their own central banks—which regulate them and can best assess their solvency and the collateral offered—that provided the funding through their lending facilities and bore the credit risk. In return, the Fed held the other countries' currency, so it bore almost no risk. If repayment was made, as it always was, this currency would never enter circulation.

The effectiveness of these central bank swap lines can be assessed in two complementary ways. First, central bank lending facilities should cap the rates charged by private lenders and thereby lower the average market rate. Indeed, the various US dollar swap lines significantly lowered a currency's basis to the dollar relative to currencies that did not benefit from a swap line. Second, banks that have access to a central bank swap line should be relatively more willing to invest in US dollar financial assets, since they can count on the lender of last resort in the event of a crisis. The data show that, after the rate charged on US dollar swap lines fell by 50 basis points in 2011, financial institutions trading in Europe significantly shifted their investments to US dollar bonds.

These loans of last resort are clearly the domain of central banks. Unlike the IMF, central banks can create money quickly, assess the solvency of banks, and judge the quality of collateral. Unlike IMF loans, swap lines are not loans to governments and do not monetize public debt, whether domestic or foreign; they use collateral rather than conditionality as the incentive; and they lead to conventional credit risk for the recipient central bank but little risk for the originator central bank.

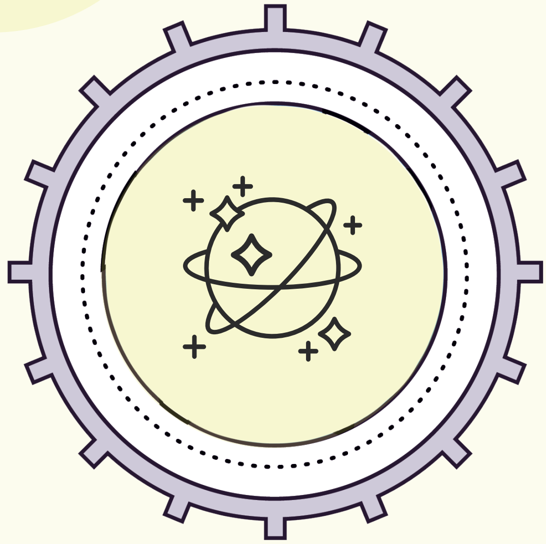
In the future, however, the distinction between the role of the IMF and that of central banks in dealing with international sudden stops will likely be less clear.

Why?

First, because capital flows are often intermediated by banks, a run on a country often starts with a run on its banks. Further, because of the diabolic loop that arises when banks hold a large amount of their government's bonds, the solvency of both becomes intertwined. Central bank swap lines may be used at first, but soon the IMF is called, with the distinction between the two becoming one of timing. In fact, during the euro crisis of 2010–12, the sudden stop in stressed euro area economies first triggered credit between the euro area central banks in their TARGET II (the euro area's payments processing network) balances. Eventually IMF lending was needed.

Second, central bank lending facilities are set up to deal only with short-term liquidity problems and require a transition to a fiscal operation if the problems persist. When a bank has difficulty repaying the central bank for a prolonged period, the fiscal authorities are called in and a bailout package that replaces monetary with fiscal policy is arranged. Although central banks strive to lend to institutions that are illiquid but solvent, sometimes these institutions turn out to be insolvent. When that happens the problem is fiscal and involves government finances, the purview of the IMF.

Third, the number of central bank swap lines has grown quickly. There are roughly three types of such arrangements today. Type I are bank-focused, as just described. Type II are arrangements such as those between the People's Bank of China and central



banks in countries where there is significant Chinese investment or where large financial centers facilitate bilateral trade settlements between firms. Type III include the Chiang Mai Initiative among Southeast Asian countries, which pools foreign reserves in case of a speculative attack, and the European Central Bank's Exchange Rate Mechanism II arrangements, which support confidence in exchange rate pegs. Type III swap lines closely complement or substitute for IMF actions; however, they are bilateral, up for frequent renewal, and subject to discretionary political choices between nations, so they can conceivably be withdrawn just as they are needed.

The IMF could play a role in future swap lines and in promoting multilateralism. The Fed has only five standing Type I swap lines, all with advanced economies, but many other central banks, especially in emerging markets, would benefit from them, given the dollarization of their banks and exports. Advanced economy central banks legitimately worry that swap lines may not be honored by recipient central banks and that the foreign currency held could be worth less if the exchange rate is very volatile. The IMF is in the best position to assess this risk, choose the margin to apply to the current exchange rate, and underwrite these contracts. The central bank that is the originator would then bear no risk, nor should it. If the recipient central bank and its government default, the IMF would control how much domestic currency enters circulation, the amount of IMF lending, and how much IMF capital is put at risk. IMF lending and central bank swap lines are very different instruments, but the IMF could play a role in the latter to complement the former. FD

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PHOTO: COURTESY OF RICARDO REIS

Economist as **Engineer**

*Bob Simison profiles Stanford's **Susan Athey**, who brings machine learning to economics*

It was just plain luck when Susan Athey glanced out the kitchen window one day last January. A coyote was making off with one of the family's pet chickens clutched in its fangs.

Athey grabbed a broom, fought off the coyote, and got Viola, a buff-colored chicken, to a veterinarian to be stitched back together. After a month-long convalescence in the family home on the Stanford campus, Viola rejoined the nine-chicken flock.

"The idea that I kept a chicken in my house for a month would be horrifying to my relatives in Alabama," where her grandmother once raised chickens, says Athey, a Stanford economist. As for the choice of chickens as pets, that was simple resource-allocation economics, says Guido Imbens, a Stanford econometrics professor who's been married to Athey since 2002. Chickens are lower-maintenance than dogs or cats, and they lay a couple of dozen eggs a week.

The Superwoman episode is no surprise to those who know Athey as an academic superstar. At the age of 48, she is the economics of technology professor at the Stanford Graduate School of Business and has won just about every award imaginable. She has published an array of papers on some of the hottest issues in economics, pioneered the role of tech economist, and helped confront her profession's #MeToo history.

Through academic positions at Stanford, Harvard, Yale, and the Massachusetts Institute of Technology (MIT), as well as consulting for Microsoft and other companies, she has since broken ground studying the economics of the internet, applying auction theory to online services such as search-related advertising, and developing the emerging field of tech economics.

"It's astonishing the breadth and depth of what she has worked on," says Robert Marshall, an economics professor at Penn State University. "That's not usual. Scott Adams, the creator of the comic 'Dilbert,' has said that there are 100 people on the planet at a given time who will make a difference. She is one of them."

In 2007, Athey won the John Bates Clark Medal for outstanding economists under the age of 40, the first female to do so. It normally goes without saying that winners are a good bet for a Nobel. Marshall says it anyway. Marshall was a mentor of Athey's when she was a Duke University undergraduate in the late 1980s. Before she landed a job as Marshall's research assistant, Athey focused on math and computer science.

The Clark medal recognized her work in solving complex statistical problems, advancing knowledge of market design and the mechanics of auctions, econometrics, and industrial organization. Some of her early findings supported the Federal Reserve's adoption of inflation targeting for managing monetary policy.

For an academic of her prominence, Athey has few visible critics, according to those who know her and her work well. Some of them say there may be quiet resentment over her success academically and economically as a woman.

"Susan is really a model of what I think economists should be," says Matthew Gentzkow, a Stanford economics professor who won the Clark medal in 2014. "She combines absolutely cutting-edge engagement with research on the frontiers of economics, while having a deep level of engagement with communities outside of economics. She's translating science into an impact on the real world."

Athey sees the diverse elements of her career on a continuum. Her early research on timber auctions and pricing schemes flowed into work on technology markets such as designing search-engine advertising auctions, she says. When she realized that the tools for finding cause-and-effect links using machine learning or artificial intelligence didn't exist, she set out to develop them. That led to her current interest in using technology, machine learning, and other tools of tech economics to help address social problems, she says.

"Market design is a cross-cutting theme all the way through," Athey says. "We want to think of the economist as engineer, that we want to get out and actually use the tools of economics to make markets work better."

Athey is known as a hard worker. The day after Christmas 2004, she came to school to help Catherine Tucker, then a Stanford PhD candidate and now a professor at MIT, prepare a key presentation. As an assistant professor, she worked all hours, says Stanford business dean Jonathan Levin. Athey responded to an email from Joshua Gans, an economics professor at the University of Toronto and a former grad school colleague, by phoning him in Australia from the labor and delivery room while having the first of her three children.

The daughter of a physicist and an English teacher, Athey enrolled at Duke University in Durham, North Carolina, at the age of 16 after growing up in the Maryland suburbs of Washington. She was active in a sorority and was president of the Duke field hockey

PHOTOS: NOAH BERGER PHOTOGRAPHY

club. Then a friend introduced her to Marshall, who was working on procurement auctions at the time.

"I asked my research assistant, who was leaving, to find me someone who was as good as she was or better," Marshall says. "She came back with what looked like a high school student." Athey soon impressed him as eager, thoughtful, deliberate, and brilliant. At Marshall's suggestion, Athey began searching for information about the timber industry and found a source who had digitized the records from thousands of timber auctions. This formed the basis of several research papers for Marshall, and years later Athey returned to write several papers using the same data set.

"Susan was instrumental in doing work on my paper," Marshall says. "She made me very much more productive. I told colleagues that she was smarter and better than I was."

As a newly minted, 24-year-old Stanford PhD in 1995, Athey was the subject of a *New York Times* profile proclaiming her "the top draft pick in economics" and reporting that she fielded two dozen job offers, from which she chose MIT.

Athey went on to publish paper after paper on auctions and government procurement, showing how market structures can encourage collusion among buyers and sellers and how government agencies were leaving vast amounts of money on the table. She points out that she designed the timber auction system now used by the government of British Columbia, one of the world's largest producers of lumber.

Bidding war

Athey put her knowledge of markets and auctions to practical use in 2001, when she and husband Imbens found themselves in the quintessential California experience, a four-way bidding war for a house. It showed how she approaches problems, methodically gathering all the information, according to Imbens. Athey says it wasn't rocket science, just Auctions 101.

"I quizzed the real estate agent and went through previous types of auctions he'd been part of," she says. That helped her calculate just the right bid to win the house.

Athey caught the attention of Microsoft's then-CEO Steve Ballmer in 2007. He says he read about her Clark award in a Harvard publication and recruited her as a consultant. It lasted until 2014, when the company asked her to come on full-time and she chose to stick with her academic career.

In 2007, Microsoft was working to make its search engine—which eventually became known as Bing—competitive with Google. Such companies sell advertising space for search results through auctions, Athey says.

"The early academic literature on these auctions hadn't really accounted for the fact that auction design affects the quality of the advertisements, and further, how much attention consumers pay to the advertisements depends on that quality," she says. Together with MIT economist Glenn Ellison, Athey published a paper "that brought the consumer into the picture."

It was an important insight that applies not just in search, but also to online marketplaces like Airbnb and others, Athey says. It pointed toward paying more attention to the role of auction design on the quality of the user's experience, which feeds back into the advertisers' incentives to participate and create high-quality advertisements. "When the advertisements are a better match to the consumer intent, the advertisers will pay more for a click," she says.

Athey's work at Microsoft extended well beyond market design and included work on mapping economic objectives into the measurements that were used to guide and operate the search advertising business.

Athey's contributions were significant, says Ballmer, the billionaire businessman who stepped down as Microsoft CEO in 2014. That's why other top tech companies have taken to hiring PhD economists by the hundreds, he says.

"We've entered a world in which computer science, instead of figuring out absolute answers, is using data to guess at answers statistically," Ballmer says. Athey was one of the first economists to help develop that approach, he says. "Economics and computer science are both evolving, and economists are using statistical technology to think about all things economic."

Athey cites her role in "pioneering tech economics" alongside economists such as Google's Hal Varian as one of her proudest contributions.

"When I think about tech economics, it's actually a very broad thing," Athey says. "Tech economics includes market design, but it also includes machine learning and understanding the impact of technology on the economy."

Women in economics

Colleagues both male and female credit Athey for providing an important role model for women in a traditionally male-dominated discipline. Of the

45 PhD holders she has advised—an astonishing total, other academics say—more than a third have been women.

One of them is Amalia Miller, now an economics professor at the University of Virginia. She says Athey provided "inspiration and role-modeling," including starting a family while serving as an adviser to Miller. Now Miller has a four-year-old daughter of her own.

"When I told Susan the good news that I was expecting, she wrote back to me with pages and pages of advice," Miller says. It included suggestions on "all kinds of practical issues associated with being productive" as a professor while parenting, and which rocking chair to buy. Miller bought the rocker, she says,

Athey herself says there was a real shortage of female role models for her.

"There was a stereotype of what a good mathematician looks like, and I didn't fit it," she says. "So I tried to look serious, because people questioned how serious I was. People question how smart you are." The challenges changed at each stage of her career, she says.

"You claw your way up," Athey says. "At the time I got my PhD, it was an open question whether many women would be able to get tenure if they had kids, but then the women in my cohort blew that issue out of the water. At first it seemed as if the biggest gender issues were solved." But in fact they weren't, she says. "Everything was supposed to get better. It's disappointing that it didn't."

Athey was among female economists who confronted the profession's history of sexual harassment, bullying, and discrimination at the American Economics Association's (AEA's) annual meeting last January. In a panel discussion, Athey said she wore khakis and loafers to fit in with the men at MIT, according to the *New York Times*.

"I spent all my time hoping that no one would remember I was female," the *Times* quoted her as saying.

A subsequent survey of more than 9,000 economists by the AEA found significant evidence of sexual harassment and discrimination. Seventy percent of the female respondents said their work was taken less seriously than that of men. The organization responded by announcing several measures to fight discrimination and harassment.

Athey is faculty director of the Stanford business school's Shared Prosperity and Innovation Initiative (SPII). The year-old project aims to use technology to address social problems, including poverty and inequality.

"Through all my work in tech markets, I became aware of all the things that you can do with data," Athey says. "That has led me to my very latest set of interests, which is using technology to solve social problems."

Early projects for the initiative include applying machine learning in educational technology companies and improving approaches to measuring impact. This is critical because technology companies typically engage in rapid, incremental improvements guided by data from many experiments, Athey says. It is especially important for social impact projects that often rely on philanthropy or government funding. Being able to demonstrate effectiveness can

> "There was a stereotype of what a good mathematician looks like, and I didn't fit it."

complement approaches that tie funding to measurable benefits, such as pay-for-outcomes plans. The initiative is also studying other ways of encouraging innovation, including income sharing for training and prizes for innovation, she says.

"Delivering services digitally or through digital platforms is a natural area of growth for social impact work," Athey says. "I view the work at SPII as combining market shaping and incentive design with machine learning for social impact. It is also a natural extension of my work as a tech economist—applying tech economics to the social impact space."

Athey will continue having a significant impact on economics for some time, based on the numbers of students she's nurtured at all levels, her undergraduate mentor Marshall says. At retirement dinners in two or three decades, he predicts, "there will be an astonishing number of her students to attest to the difference she made in their lives."

For her part, Athey says, "My greatest hope is that in a few decades, people will be able to point to significant achievements in what I've pivoted to recently, trying to take all these learnings from economics, market design, and machine learning, and applying them to social problems." FD

BOB SIMISON is a freelance writer and editor who previously worked at the *Wall Street Journal*, the *Detroit News*, and Bloomberg News.

COURTESY OF THE RWANDA DEVELOPMENT BOARD

Open for Business

Clare Akamanzi *explains how Rwanda is encouraging private sector development*

CLARE AKAMANZI spends her days working on innovative ways to bring more business to her country. As CEO of the Rwanda Development Board (RDB), a multiagency governmental department billed as a "one-stop shop" for investors, Akamanzi has seen the country earn accolades for its business-friendly environment, recently winning the #2 spot regionally in the World Bank's ease of doing business rankings. Prior to her RDB role, Akamanzi served as head of strategy and policy for Paul Kagame, president of Rwanda. She was also Rwanda's commercial diplomat in London and its trade negotiator at the World Trade Organization in Geneva. Akamanzi holds a law degree and a master's degree in international trade and investment policy. She spoke with *F&D*'s Andrew Kanyegirire in early March.

F&D: What is the RDB's role in getting the private sector to contribute to Rwanda's development?

CA: Our vision is to transform Rwanda into a dynamic global hub for business, investment, and innovation. We are responsible for promoting investments and exports. We provide services covering a range of issues faced by the business community: negotiating contracts with the private sector, helping investors to secure concessions, and settling disagreements. We are also in charge of the privatization of government assets and tourism promotion, including the management of national parks.

Since the RDB's establishment in 2009, doing business in Rwanda has gotten easier, and the private sector has contributed more toward Rwanda's economic growth. About 25 years ago, we were 100 percent reliant on aid, but today we are 86 percent self-reliant, which means that we depend on aid for only about 14 percent of our budget. On average, the private sector now creates about 38,000 jobs per year, many of which are targeted toward our young people.

F&D: How have you improved the business environment?

CA: Along with the Ministry of Economic Planning, we have spent a lot of time thinking about those sectors that require private sector engagement, what the challenges are, and whether these sectors can indeed help to generate wealth and jobs for Rwandans. We took a very focused approach to this, and it is therefore not surprising that today the World Bank's *Ease of Doing Business Report* ranks Rwanda the 29th easiest place to do business in the world and the second in Africa. A few years ago, we were ranked at 150. This is the result of some concrete reforms put in place to simplify the processes for starting a business, registering property, filing taxes, and accessing tax-related information. Today, you can register a company in six hours. In some instances, digital solutions have played a key enabling role.

We have also focused on promoting Rwanda as a place to come and do business. Last year, by the time we closed our investment books, we had registered $2 billion worth of investments. In 2010, it was about $318 million. So we have grown considerably in the space of eight years, which shows that the reforms that we are putting in place are working. Some of the investments are practical ones, and we are very proud of them. For example, Volkswagen is assembling in Rwanda. We have a company from Latin America called Positivo that is assembling laptops. We have an American-Nigerian company, Andela, that is going to train about 700 local programmers. And we have a company that has begun refining our coltan. If you break down the $2 billion that we have attracted, you realize that these are investments in sectors that can help transform the lives of Rwandans by providing jobs, incomes, and broader economic diversification.

> "About 25 years ago, we were 100 percent reliant on aid, but today we are 86 percent self-reliant."

F&D: What factors have most enabled you to push for reforms?

CA: One key factor has been the leadership's concerted efforts to transform the country. You can call it political will. The Cabinet, a related steering committee, and the president himself have taken an avid interest in understanding the reforms that we are pushing for. President Kagame has made himself available to us, and we have found this to be extremely important. Because without buy-in at that level, it can be difficult to try out new, bold, and even risky initiatives.

Let me give you an example. We wanted to automate our business registration system. That meant cutting out the revenue sources of some of the private players in that process. To make it easier to start a company, we had to take out a step that requires every company to have articles and memoranda of association. We estimated that the cost for getting these documents done via a lawyer was about $400, and so it was quite clear to us that this cost was deterring potential companies from registering. However, to eliminate this step also meant that lawyers were losing out on clientele. It was a bold decision—we needed political support to get it done. But we were able to show that if you make it expensive and difficult to set up a company, the private sector will not grow. We were registering on average about 500 companies at the time, and today we are registering about 13,000 companies a year. Having that political will helped us to show that sometimes there is a short-term cost to be paid for longer-term gain.

F&D: How about the challenges?

CA: Here, there are mainly two issues. The first has to do with the fact that we are a landlocked country. The high cost of transportation, especially for imported goods, is evident in almost every sector of the economy. This is a challenge that creates an additional cost for Rwanda. The second, related to the first, is that although we have done very well in removing red tape, we need to do more about cutting the overall costs of doing business. We need to bring down the costs of financing, energy, and infrastructure. We have tried to put in place many reforms to mitigate these challenges, but these ongoing structural issues still must be dealt with.

F&D: What are you doing specifically to overcome these challenges, and how do they relate to the reforms you are pushing for?

CA: When we think about the Rwanda of the future, we consider the advantages and challenges that we have as a country. It is for this reason that we want to position ourselves as a knowledge and services hub, given that this sector does not rely heavily on transport and logistics. We have also been promoting leisure tourism, such as the push to visit the mountain gorillas in the national park. In addition, we are promoting a new sector called MICE, which stands for meetings, incentives, conferences, and exhibitions, and it is already accounting for about 10 percent of our tourism receipts. It is the fastest-growing segment of our tourism sector, and through this we are making Rwanda a hub for regional and global events. In this way, we have invested in service-based sectors to respond to our challenge of being a landlocked country. FD

This interview has been edited for length and clarity.

INVISIBLE LINKS

Value chains transform manufacturing—and distort the globalization debate

David Dollar

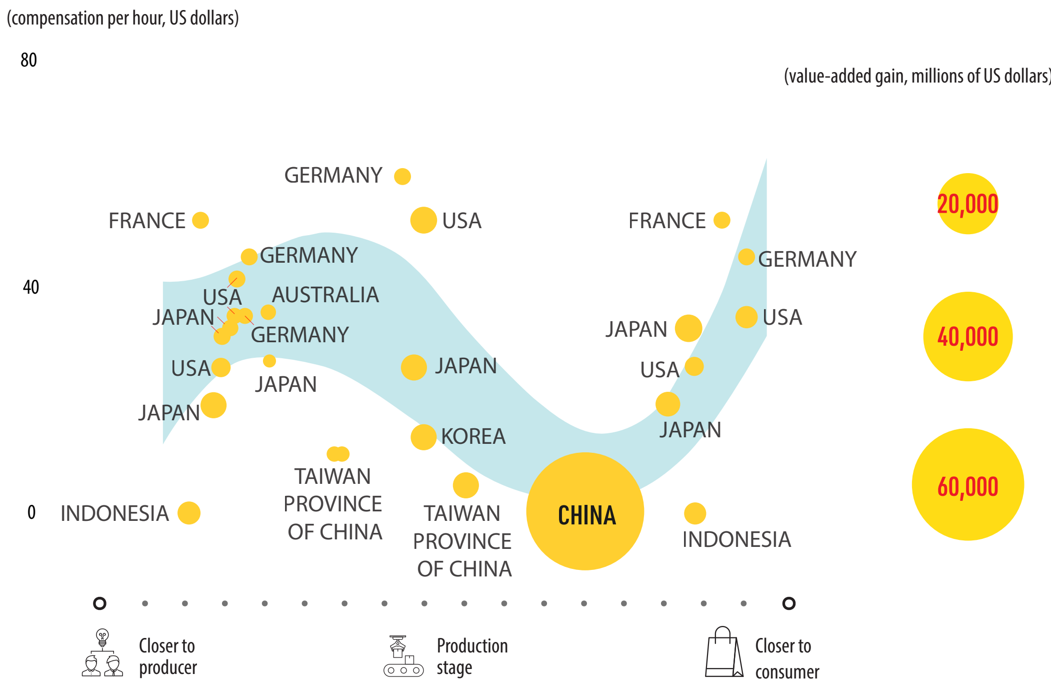
Walk into a Toyota dealership in New York or Munich, and you might think you are looking at cars made in Japan. You would be mistaken. In fact, the 15,000 components that make up a modern car are often produced by different firms in different locations. There are three main hubs for auto production—North America, Europe, and east Asia. Research and development and design mostly take place in Germany, Japan, and the United States, with China starting to play a significant role as well, given the 5 million STEM (science, technology, engineering, and mathematics) graduates it trains each year. Each of these hubs combines production in high-wage economies with parts and components from lower-wage, emerging market economies. Parts and components crisscross multiple borders during the production process.

From smartphones and autos to TVs and computers, more than two-thirds of international trade now takes place within such global value chains. That's up from 60 percent in 2001. The rise of value chains has reshaped the world economy, fueling dramatic advances in living standards in emerging-market economies like China and Vietnam, where labor costs are relatively low, while widening income inequality in advanced economies, including the United States. Yet decades-old methods of gathering trade data, developed in the pre-value-chain world, fail to reflect this transformation, giving rise to a skewed picture of the movement of goods and services around the world. The result: acrimonious debates over job losses blamed on trade are rooted in inadequate data, amplifying misguided calls for protectionism.

Take the case of a smartphone exported by China. When it is shipped to the United States, official trade statistics record its full value as an import from China. But research on value chains, such as the *Global Value Chain Development Reports,* published by the World Trade Organization and the World Bank, shows that it would be more accurate to say the United States imports different types of value added from different partners, including labor-intensive assembly from China and more sophisticated manufacturing inputs from South Korea. That is because official trade statistics measure the gross value of trade, not the value added at each link in the chain. What is more, official statistics don't capture the growing importance of services, such as computer coding, logistics, and marketing, that are contained in the value of manufactured goods.

Adding value

China's contribution to exports of electrical and optical equipment come toward the end of the chain, with production of some simple parts and assembly.



Source: World Trade Organization, *Global Value Chain Development Report 2019*.
Note: Figures are for 2009.

Much of the value added in a nominally Chinese-made smartphone, such as computer coding and marketing, originates in the United States and other advanced economies. Viewed from this value-added perspective, bilateral trade imbalances look quite different. The contentious US trade deficit with China, for example, is roughly cut in half when the analysis shifts from gross value to value added because China tends to be at the end of many value chains.

Growth driver

Global value chains have been a boon to developing economies because they make it easier for them to diversify away from commodities toward higher-value-added manufactured goods and services. How? By breaking up the production process so that different steps can be carried out in different countries. In the past, a country had to master the production of a whole manufactured product to export it, which rarely happened. With value chains, a country can specialize in one or several activities in which it has a comparative advantage. The phenomenon has enabled China to export nominally high-tech products even though its role has been largely that of assembler. The unbundling of production started within advanced economies in response to competition and declining logistics costs and then went global as big developing economies opened up.

The global value chain for China's 2009 exports of electrical and optical equipment—a category that includes smartphones, tablets, and cameras—illustrates the country's role (see chart). The vertical axis shows worker compensation per hour, a measure of value added. The horizontal axis maps the steps in the production process, starting with high-value design and financial inputs from advanced economies. Then come sophisticated parts such as computer chips from Japan, the United States, South Korea, and Taiwan Province of China. China adds value toward the end of the chain with production of some simple parts and assembly. China also has many so-called backward linkages to domestic sectors such as metal and plastic manufacturing, which contribute to the production process prior to assembly. Finally, at the end of the chain come high-value inputs consisting mostly of services such as marketing as products are sold in the United States, Europe, and Japan. In the case of exports of these products to the United States, China contributes almost half the value added. The country's considerable share of value added has provided jobs for large numbers of low-skilled workers, helping drive economic growth and reducing poverty. So breaking up the production process enabled many labor-intensive activities to settle in China, enhancing the country's ability to exploit its comparative advantage.

ART: ERICA MALLOZZI

Vietnam is another emerging market economy deeply involved in global value chains. Following its market-oriented reforms and opening to global trade starting in the late 1980s, Vietnam attracted major investments by foreign firms, such as Korea's Samsung, seeking a low-cost locale for labor-intensive assembly. Policymakers in Vietnam worry that they will be stuck with only low-end assembly, but analysis of the production chain shows that there are extensive backward linkages; that is, many firms sell to exporters but are not exporters themselves. In 2012, about 5 million Vietnamese worked for firms that manufactured for export; the number working in firms that sold to exporters was much higher at 7 million. These linkages have important implications for policy. Although developing economies maintain higher barriers to imports than advanced economies, they recognize that their exporters need access to the best imported inputs if they are to be competitive globally. Many solve that problem by creating special economic zones where exporters have duty-free access to imported parts. Shenzhen, China, is a classic example. However, it would be much better to liberalize the entire economy so that indirect exporters and producers of goods sold domestically also have access to the best inputs.

Advanced economy impact

The growth of global value chains also benefits advanced economies, which tend to concentrate on high-value-added activities such as advanced technology, financial services, sophisticated manufacturing components, and marketing and servicing. Still, there are winners and losers. Studies have found that the United States has lost middle-skill manufacturing jobs because of trade with China and economies contributing to its value chains, while gaining jobs in high-skill manufacturing and in services, leaving total employment largely unchanged. College-educated American workers have seen their salaries rise, while those without a college education have seen wages decline.

The impact wasn't limited to the United States. Between 1995 and 2015, when emerging market and developing economies were opening to the expansion of trade and value chains, advanced economies saw increases in high- and low-skill jobs and declines in middle-skill employment. This was not all the result of trade; many studies emphasize the dominant role of technological change. Middle-skill jobs involving routine, repetitive tasks have been the easiest either to automate or move to lower-wage countries, allowing employers to cut costs. The activities remaining in advanced economies have been more technology- and skill-intensive. In addition, many low-skill jobs in construction, health care, and hospitality have been difficult to automate or outsource.

The perceived distributional consequences of expanding trade and value chains are driving the backlash against globalization and prompting calls for trade barriers in rich countries. But protectionism was a bad strategy before the rise of global value chains, and it is a worse strategy now. Take, for example, the tariffs the United States imposed on China in 2018—25 percent on $50 billion in imports and 10 percent on $200 billion in additional imports. Parts and components comprise 37 percent of US imports from China, and the list of products taxed seems to have been even more heavily weighted toward these items, which US firms use to more competitive. The cost of the tariffs was passed on to US firms, which lost sales as a result. That was the case even before Chinese retaliation imposed additional losses on US exporters. In a world of complex value chains, it is hard to predict the precise impact of import tariffs, but it is safe to say that some firms and workers in the protectionist country will be hurt, and the net effect will be negative.

Rather than trying to hold back progress, public policies should seek to ease the adjustment for displaced workers. Distinguishing between job losses resulting from trade and technology does not make sense when designing safety nets to help workers and communities affected by change. Some advanced economies have adjusted better to the forces of globalization than others. In Germany, for example, because of progressive taxation and a strong safety net, there has been little change in inequality as measured by its Gini coefficient *calculated after taxes and transfers.* In the United States, on the other hand, there has been a significant increase in inequality because public policy has exacerbated the market trend toward job and wage polarization through regressive tax cuts.

Shifting perspective

Official statistics tell us that about 80 percent of world trade consists of manufactured goods and primary products such as food, oil, and minerals, with the remaining 20 percent consisting of services such as tourism, overseas college education, and international finance. This ratio has changed little in 40 years. The picture looks very different when the analysis shifts to value added in trade. The share of services in trade, measured in value-added terms, rose by more than a third from 1980 to 2009—from 31 percent to 43 percent. This means that the services content in merchandise was increasing. Some of the increase reflects the growing use of software. Moreover, managing global supply chains involves relying more on services such as transportation, finance, and insurance. A final factor is that prices of services have risen, while manufacturing prices have declined because of the sector's more rapid productivity growth.

In every major economy, the share of services in trade is larger in value-added terms than in gross value terms. Among the 34 economies in the Organisation for Economic Co-operation and Development, services account for about half of value added in exports. For emerging market economies that are well integrated into global value chains, such as Mexico, China, Vietnam, and Thailand, the proportion is about 40 percent. In addition, advanced economies use a lot of *imported* services in their production chains. This is less true for developing and emerging market economies because they tend to have greater restrictions on imports of services and on foreign direct investment in service industries. Recent research has shown that using imported services enhances manufactured exports of emerging market economies, because access to the best inputs in the world improves productivity.

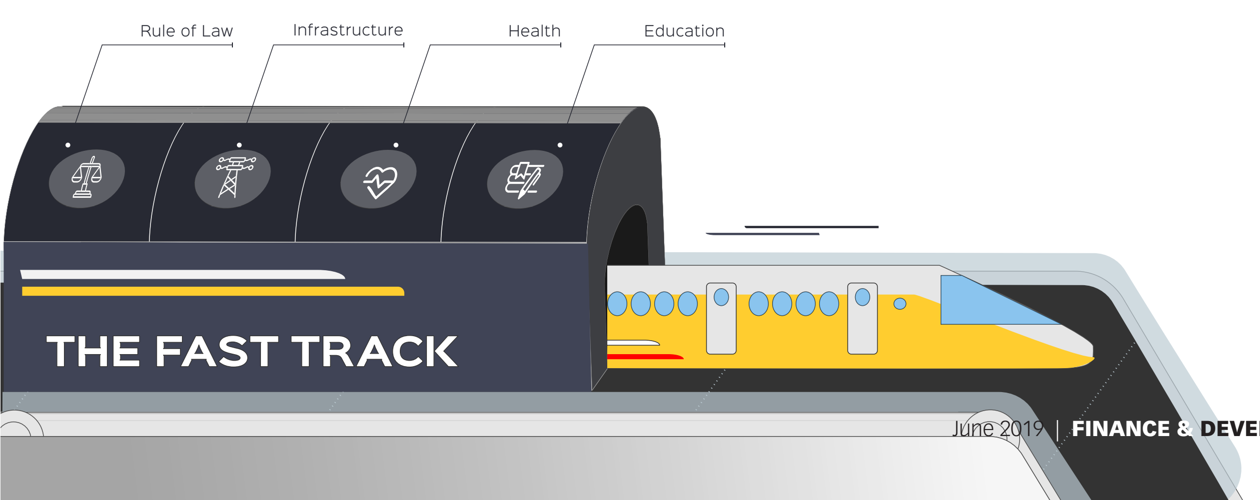
Developing economy lessons

The rise of global value chains does not fundamentally change trade theory, but it does provide a more complex picture. Breaking up the production process offers new opportunities for integration of rich and poor economies, with potential benefits for each—but with homework as well. I have mentioned some of the emerging market economies that are deeply involved, but large parts of the developing world are left out. Globalization is like a fast train, and you need a platform to get it to stop at your location. Building the platform requires all the basic elements markets depend on: rule of law, infrastructure, education, and health care. Developing and emerging market economies that have succeeded even moderately well have seen impressive economic growth and poverty reduction.

For rich countries there is an analogous challenge: integration and innovation spur change in employment and wages, creating winners and losers. It is tempting to use protection to try to slow or reverse these changes. But total isolation will cut you off from the dynamic global economy, and partial protection will benefit some firms at the expense of other firms, while also hurting consumers. With the complexity of modern value chains, it is impossible to fine-tune trade policy to help a geographic region or group of workers. It is better to concentrate on easing the adjustment as production and jobs naturally evolve.

For rich and poor countries alike, free trade is the best policy. The world has achieved reasonably free trade in manufactures, at least until the recent bouts of protectionism. But there are greater restrictions on trade and investment in services, especially in the developing world. Given their growing role in production and value chains, services are a logical next focus of liberalization. FD

DAVID DOLLAR is a senior fellow at the Brookings Institution's John L. Thornton China Center.



What Is Carbon Taxation?

Carbon taxes have a central role in reducing greenhouse gases

Ian Parry

DETERRING THE BURNING of fossil fuels is crucial to reducing the accumulation of heat-trapping greenhouse gases in the earth's atmosphere. A carbon tax could discourage the use of fossil fuels and encourage a shift to less-polluting fuels, thereby limiting the carbon dioxide (CO_2) emissions that are by far the most prevalent greenhouse gas.

According to the World Meteorological Organization, without measures to reduce greenhouse gases, global temperatures are projected to rise by about 4°C above preindustrial levels by the end of the century (temperatures have already increased by 1°C), with rising and irreversible risks of collapsing ice sheets, disruption of ocean circulatory systems, inundation of low-lying island states, and extreme weather events.

The case for carbon taxes

Carbon taxes, levied on coal, oil products, and natural gas in proportion to their carbon content, can be collected from fuel suppliers. They in turn will pass on the tax in the form of higher prices for electricity, gasoline, heating oil, and so on, as well as for the products and services that depend on them. This provides incentives for producers and consumers alike to reduce energy use and shift to lower-carbon fuels or renewable energy sources through investment or behavior.

While addressing climate change by reducing greenhouse gases, carbon taxes can also generate more immediate environmental and health benefits, particularly by reducing deaths that result from local air pollution. They can also raise significant revenue for governments, revenue they can use to counteract economic harm caused by higher fuel prices. For example, governments could use carbon tax revenue to ease the burden of taxation on workers by lowering personal income and payroll taxes. Carbon tax revenue could also fund productive investments to help achieve the United Nations Sustainable Development Goals, including reducing hunger, poverty, inequality, and environmental degradation.

Other policies are less effective than carbon taxes. For example, incentives for renewable power generation do not promote switching from coal to gas or from these fuels to nuclear, do not reduce electricity demand, and, not least, do not promote emission reductions beyond the power-generation sector.

International appeal

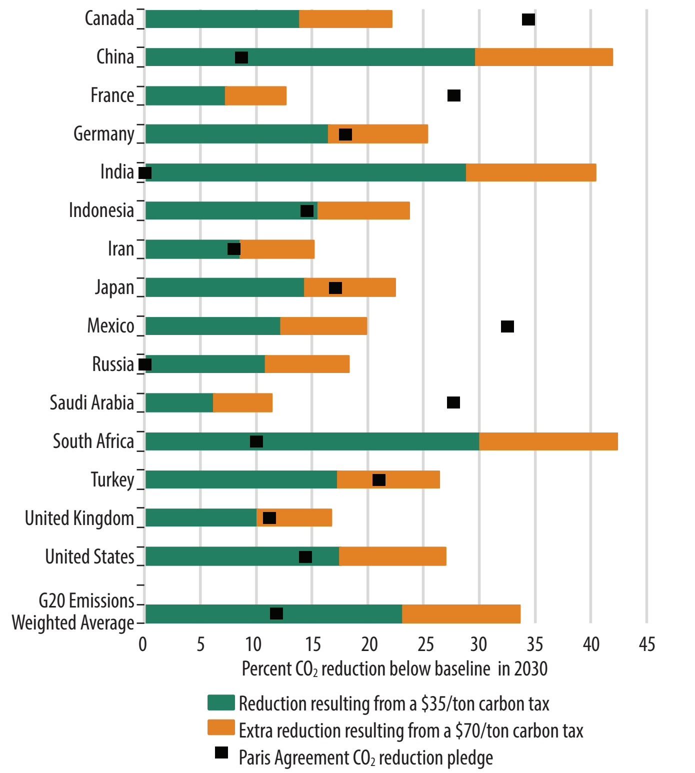
Carbon taxes are generally straightforward to administer because they can be piggybacked on existing fuel taxes, which most countries already collect with ease. It is also possible to integrate carbon taxes into the royalties paid by coal mining and oil and gas drilling industries. In fact, the fiscal and administrative case for carbon taxes may be especially appealing in developing economies, where large informal sectors of the economy constrain revenue that can be collected from broader taxes on income and profits. With the establishment of emission-monitoring capacity, variants of carbon taxes can be applied to other sources of greenhouse gases, such as emissions from forestry, international transportation, cement manufacturing, and mining and drilling activities.

Carbon taxes can play a key role in achieving countries' pledges under the 2015 Paris Agreement,

ART: ISTOCK / RASTUDIO

Tracking reductions

Countries such as Canada, France, Mexico, and Saudi Arabia made ambitious CO_2 reduction pledges under the Paris Agreement. Even with a $70 a ton carbon tax, these countries will fall short in achieving their pledged CO_2 reductions.



Source: IMF staff calculations.
Note: For countries such as China, India, and South Africa that are heavy coal users, even a $35/ton carbon tax is extremely effective in reducing overall emissions.

which lays the foundation for international action to combat global warming. These commitments must be updated every five years.

The chart provides a broad sense of the effectiveness of different levels of carbon taxes. Reductions in emissions produced by a $35 a ton carbon tax (green bars) would be more than sufficient to meet the total commitments of the Group of Twenty countries. Those commitments, shown by the black squares in the chart, represent percentage reductions in projected fossil fuel CO_2 emissions in 2030 below baseline levels (that is, levels in the absence of new mitigation measures) implied by Paris pledges.

A $35 a ton carbon tax would be particularly effective in reducing emissions in heavy coal users such as China, India, and South Africa. The tax would roughly double coal prices but would increase pump prices for road fuels only moderately. In contrast, even a $70 a ton carbon tax falls short of what is needed in other cases, such as Canada and some European countries. In part, this reflects the more stringent pledges made by these countries.

These findings may make the case for some degree of international price coordination. A group of large-emitting countries could agree to impose a minimum price on carbon. These price floors guarantee a certain level of mitigation effort among participants while also providing some assurance against losses in competitiveness. A prototype for this sort of approach is Canada, where provinces and territories must phase in a minimum carbon price, rising to Can$50 (US$38) a metric ton by 2022. Advanced economies could accept more responsibility for mitigation through a higher minimum price requirement. And the regime could be designed flexibly to accommodate carbon taxes, emission trading systems, or other approaches.

Domestic push

The most immediate challenge, however, is moving mitigation policy forward at the national level: carbon taxation can be politically very difficult. Carbon taxes should be introduced gradually, with targeted assistance for low-income households, trade-dependent industries, and vulnerable workers. The rationale for reform and the use of revenues must be clearly communicated to the public. Other instruments may be needed to reinforce carbon pricing, or substitute for it. One potentially promising approach avoids a politically difficult increase in fuel prices by implementing revenue-neutral tax subsidies to promote incentives for cleaner power generation, shifting to cleaner vehicles, and improvements in energy efficiency.

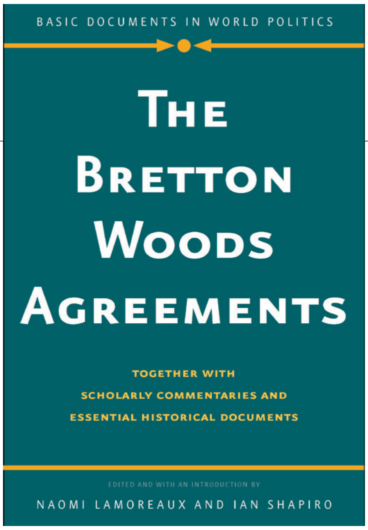
A good first step has already been taken. More than 50 carbon tax and emission trading systems now operate at the regional, national, and subnational levels, but the global average carbon price is only $2 a ton, far short of what is needed. Ministries of finance will need carefully crafted policy packages to provide broader and stronger mitigation incentives, accounting for national efficiency, distributional, and political economy considerations. FD

IAN PARRY is the principal environmental fiscal policy expert in the IMF's Fiscal Affairs Department.

A New Global System

THIS USEFUL COLLECTION of basic documents and essays marks the 75th anniversary of the Bretton Woods Agreement of July 20, 1944. The Bretton Woods system is chiefly identified with the monetary agreement that set up the International Monetary Fund (IMF) to help countries maintain fixed exchange rates. In fact, the IMF was part of an interlocking set of institutions, including the International Bank for Reconstruction and Development (IBRD), progenitor of the World Bank, and—three years later—the General Agreement on Tariffs and Trade, forerunner of the much later World Trade Organization.

Naomi Lamoreaux and Ian Shapiro, eds.
The Bretton Woods Agreements
Yale University Press, New Haven and London, 2019, 504 pp., $29.50



Technically, these institutions were subordinate parts of the United Nations. The whole ensemble was viewed by the imaginative as an embryonic world government, reflecting the revulsion against laissez-faire capitalism and uncontrolled politics, which had seemingly led to the Great Depression of 1929–32, the currency and trade wars of the 1930s, and ultimately to the Second World War.

On the monetary side, the editors, Naomi Lamoreaux and Ian Shapiro, and Jeffrey Frieden argue that the pre-1914 gold standard worked because of wage and price flexibility. This ignores Charles Kindleberger's well-known thesis that its success was due to its being a British-managed standard. Barry Eichengreen's contribution is as accomplished as one would expect—but is it really true that the fixed, but adjustable, peg system set up in 1944 was brought down in 1971 by the US dollar's link to gold? Any reserve currency has to maintain the confidence of its holders: modern inflation targeting is as much a commitment to sound money as is gold convertibility. The "original sin," rather, is human nature, which wants tomorrow to come too quickly, and Michael Bordo is surely right to say that it was not the gold link but US inflation from the late 1960s that broke the camel's back.

Harold James's elegant essay is the most thought-provoking in the book. The Bretton Woods agreement, he writes, was possible because it insulated the monetary settlement from interminable trade disputes, which held off trade wars for 70 years.

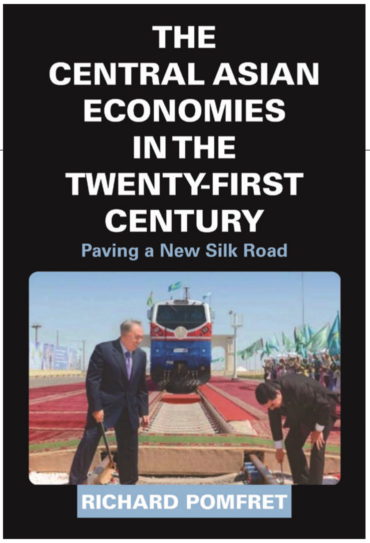
A particular strength of this volume is the space it gives to the idea of the Global South. Selwyn Cornish and Kurt Schuler show that Australia tried but failed to make full employment a central concern of the IMF, but Eric Helleiner documents how pressure from countries like China, some in Latin America, and India—starting with a Sun Yat-sen paper in 1920 proposing an "International Development Organization"—led to the setting up of the IBRD as a "new kind of multilateral framework for development."

The section "Paths Taken and Not Taken" includes Keynes's International Clearing Union plan (which hardly gets discussed) and various proposals for flexible exchange rates (Douglas Irwin). It would have been worth mentioning that opponents of flexible rates, including Keynes, argued that exchange rate depreciation could lead away from balance of payments equilibrium, depending on the price elasticities of exports and imports.

Disappointingly, little thought is given to how the world might escape the looming confrontation between market-led globalization and economic and political nationalism. FD

LORD SKIDELSKY is a British economic historian, emeritus professor of political economy at Warwick University, and author of a three-volume biography of John Maynard Keynes.

In Transition



Richard Pomfret

The Central Asian Economies in the Twenty-First Century: Paving a New Silk Road

Princeton University Press, Princeton, NJ, 2019, 328 pp., $45.00

WITH HIS PREVIOUS WORKS, Richard Pomfret has already established himself as one of the leading scholars of the five central Asian economies: Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. His new book, *The Central Asian Economies in the Twenty-First Century: Paving a New Silk Road*, is very timely given the increased interest by policymakers, investors, and scholars in the region since the transition of power in Uzbekistan in 2016 following the death of the country's long-serving president. The size, location, and recent political and economic reforms in Uzbekistan have had an impact on the rest of central Asia, boosting regional cooperation, cross-border trade, and greater connectivity. Global political dynamics and the growing economic influence of China in this part of the world have also stimulated interest in Pomfret's book.

Pomfret takes the reader through the economic transitions of these five former Soviet republics—from centrally planned economies to independent states—with different degrees of market systems and openness to trade and investment. He outlines three major economic shocks faced by all central Asian countries starting in 1991: dissolution of the Soviet Union, transition from central planning, and hyperinflation. The book describes the diverse strategies used by these countries in dealing with these shocks, from the open market approach of the Kyrgyz Republic to the slow reform policies of Uzbekistan (until 2017) and the closed economy of Turkmenistan. Pomfret also analyzes the role of natural resources in the economic development of central Asia, with Kazakhstan being the major beneficiary of the oil development of the past two decades.

The book provides a detailed description of the evolution of the political economy of these five countries. Pomfret demonstrates deep knowledge of the economic models and government policies of each country since its independence. The book also analyzes the impact of different external forces on central Asian countries, with particular emphasis on the Russia-led Eurasian Economic Union and the impact of trade and investment ties with China.

A particular focus of the book is the challenges and opportunities of regional cooperation in central Asia. Unfriendly and sometimes tense relations between some countries have restricted opportunities for intraregional trade and infrastructure development. With the significant investments in infrastructure by these countries' governments and international financial institutions as well as by foreign investors, conditions are favorable to increase regional integration, maximize the transit potential of the region, and restore the historic role of central Asia as the crossroads of the silk roads connecting Asia and Europe. Pomfret expands on this potential in the last chapter of his book, expressing cautious optimism for central Asia to restore its historic influence.

Pomfret's book would have been stronger if it had focused more on the private sector's perspective on national and regional economic development models and on the links between foreign direct investment, employment, and hard and soft infrastructure development for better connectivity and trade.

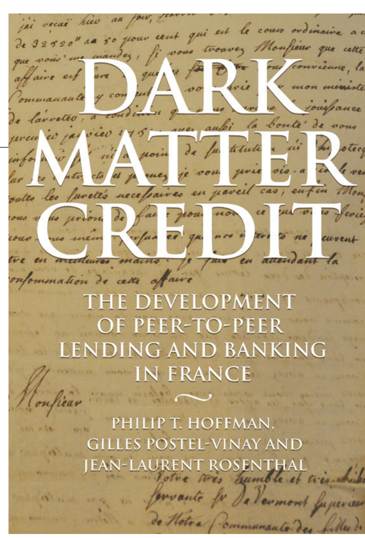
Overall, the book makes a significant contribution to the study of the evolution of the economies of central Asia and to evaluating the potential of these countries to meet the challenges and opportunities of the 21st century. FD

MAMUKA TSERETELI, senior fellow, Central Asia-Caucasus Institute at the American Foreign Policy Council

Back to the Future

PEER-TO-PEER LENDING, information networks, collateralized loans, and shadow banking sound like financial innovations that flourished only on the heels of the digital revolution. But Philip T. Hoffman, Gilles Postel-Vinay, and Jean-Laurent Rosenthal show that, contrary to traditional economic thinking, peer-to-peer lending (or banking without banks) dominated credit markets in 17th century France. One-third of French households used this type of credit in 1740. By 1840, peer-to-peer-originated mortgage credit in France was as large as mortgage credit in America in 1950 as a share of GDP.

Philip T. Hoffman, Gilles Postel-Vinay and Jean-Laurent Rosenthal
Dark Matter Credit: The Development of Peer-to-Peer Lending and Banking in France
Princeton University Press, Princeton, NJ, 2019, 320 pp., $39.95



This book, based on a new data set of French regional notarial archives spanning centuries, shows how credit originated long before bank networks had a meaningful presence outside of Paris and other large cities. While banks focused on financing high-wealth individuals and merchant activities in cities, public notaries in France were the backbone of development of peer-to-peer lending. Owing to regulations dating back to the Middle Ages and the population's low literacy level, public notaries in France drew up most marriage contracts, certified land sales, and served as fiscal agents in a variety of private transactions. Notaries were able to collect large amounts of information on the wealth of their customers. This insight into potential borrowers' and lenders' financial health supported an active loan brokering role among individuals that dominated credit in the mortgage market. It is only when the French government in the second half of the 19th century decided to boost mortgage lending by granting state guarantees to a nationwide institution (named Crédit Foncier) that peer-to-peer mortgage lending started to recede as a share of total lending.

This original and enlightening book questions the connection between bank networks and economic growth. While banks play a unique role in pooling and managing risk, they can price and supply loans properly only if adequate information on debtors' creditworthiness is readily available. The paucity of public information on creditworthiness is one reason for repeated bank failures throughout the 19th century, and for notaries' edge in matching lenders and borrowers well into 20th century France.

The book also offers interesting policy takeaways for contemporary observers of financial markets. History shows that a diversified credit ecosystem is one way to ensure the resilience of credit in the face of large shocks. The book demonstrates in particular that the uncertainty and hyperinflation that bankrupted most financial intermediaries in the first years of the French Revolution were somewhat mitigated by the existence of this "paleo shadow banking system" and explains why lending resumed quickly in the first years of the Napoleonic regime.

The authors also have an important message for anyone interested in financial development or other similar topics: focusing on new, alternative data sources may uncover visions of future finance in past events. FD

ALEXANDRE CHAILLOUX, assistant to the director, IMF Statistics Department

Operating Manual for Economists

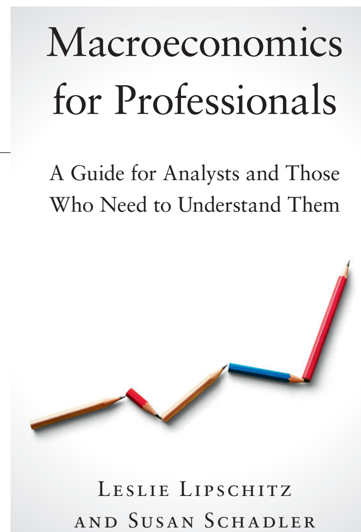
JUST AS MEDICAL students must be seasoned as interns, the IMF teaches its new economists how to transition from a theoretical, model-driven view of an economy to an understanding of how a real country's economy actually behaves. Like the human body, a country's economy reflects the composite operation of many specialized "macro" organs—the real economy, the fiscal sector, and the monetary and financial sectors—that interact with one another and with the rest of the world. Understanding the nitty-gritty of how these different organs function, and whether they are performing well, is as much art as science.

The IMF's approach to such an education relies in part on an apprenticeship model and in part on short bursts of training from its teaching and capacity development unit. This wise book, *Macroeconomics for Professionals*—the collaboration of two former senior IMF staffers—distills the essence of the basic analytical framework the IMF uses to understand a country's economic reality.

Leslie Lipschitz and Susan Schadler provide a superb road map for assessing a country's policies. It is relevant not only for new IMF economists but also for analysts in investment banks, rating agencies, finance ministries, and central banks, as well as for economic journalists seeking to bridge the gap between theory and real-world practice. Indeed, this book would enhance economics training in graduate schools of public policy.

Separate chapters elucidate the analytical and statistical frameworks that underlie the macroeconomic sectors, the data measures that explain their operation, and the role of normative diagnostic indicators pertinent to sectoral assessments. The authors highlight the challenges of determining the direction of causality in the movement of key economic variables. Historical case studies and exercises in both the book and the online workbook highlight the limitations of policy guidance, gleaned from the frameworks. Effectively, the book allows the reader to consider the challenges policymakers face when making critical decisions, using all available tools and data to help narrow the scope of inevitable uncertainties.

Finally, the book implicitly provides the necessary cautionary perspective that high-level officials and policy analysts in government are too often "fighting the last war." We are now in a century where the combination of rapid technological change and (still not fully understood) environmental forces may soon give rise to unexpected and substantial systemic or country-specific shocks. The economic verities of 2050, let alone those of 2100, threaten to be very different from those of today. Policymakers will be challenged to innovate responses—most likely untested—quickly to limit economic and social damage. The framework of *global* economic policy coordination cannot be so easily analyzed in a book of this kind. Yet the need for effective coordinated policy responses is both important and urgent. FD



Leslie Lipschitz and Susan Schadler
Macroeconomics for Professionals: A Guide for Analysts and Those Who Need to Understand Them
Cambridge University Press, Cambridge, UK, 2019, 308 pp., $39.99

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The Boom in Benjamins

What makes the US $100 bill so popular?

Melinda Weir

A CURIOUS thing recently happened in US currency: in 2017 the $100 bill overtook the ubiquitous $1 bill in circulation volume, for the first time in history. In other words, the most valuable US banknote became the most widely circulated. (The $20 bill is in third place.)

According to the Federal Reserve, there are more $100 bills circulating now than ever before, roughly doubling in volume since the global financial crisis (see chart).

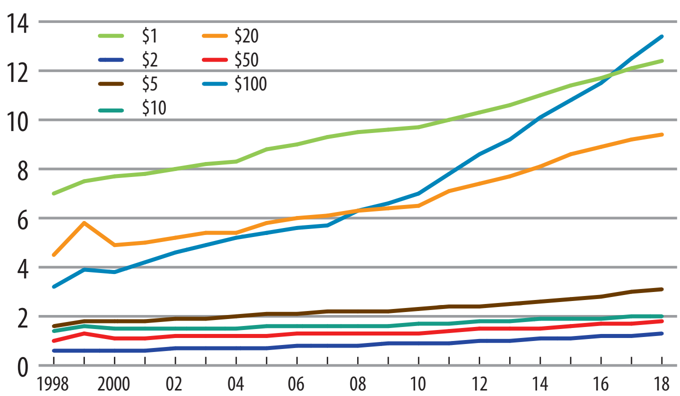
So what explains this boom in Benjamins, as the bills are known, especially when cashless options are increasing by the day? In this age of Venmo transfers and digital everything, are Americans suddenly growing nostalgic for greenbacks in high denominations?

Not exactly. While overall demand for US currency is indeed on the rise, with $100 bills outpacing other denominations in both volume and total value, most $100 bills are held abroad. According to the Federal Reserve Bank of Chicago, nearly 80 percent of $100 bills—and more than 60 percent of all US bills—are overseas, up from roughly 30 percent in 1980. In fact, the average American keeps only about $60 in cash on hand (Federal Reserve Bank of Atlanta 2018).

Top dollar

US $100 bills have doubled in circulation volume since the global financial crisis, overtaking the $1 bill.

(billions of notes)



Source: US Federal Reserve Board of Governors.

Safe havens

Geopolitical instability could be one reason behind the surge in $100 bills, according to Fed economist Ruth Judson. "Overseas demand for US dollars is likely driven by its status as a safe asset," Judson told the Richmond Fed's *Econ Focus* in 2018. "Cash demand, especially from other countries, increases in times of political and financial crisis."

And the world has hardly seen a shortage of crises in recent years.

According to a 2017 paper by Judson, international demand for US dollars increased over the 1990s and into the early 2000s, and then stabilized or declined after the 2002 debut of the cash euro. This decline in demand continued until late 2008, when the global financial crisis triggered renewed demand for US banknotes.

Where exactly the $100 bills are these days is impossible to know for sure. Whether it's a conflict or refugee crisis in the Middle East or turmoil in Venezuela, it's easy to imagine the importance of cash—particularly high-value, globally accepted currency—in unstable regions. Distrust of local currency is also thought to be a contributing factor.

Underground economics

There are, of course, other plausible explanations for this phenomenon.

IMF Assistant General Counsel Nadim Kyriakos-Saad is an expert on international anti-money-laundering efforts. "The underground economy, the informal economy, the criminal economy—all of it contributes certainly to the appeal of large denomination bills." With increasing digitalization of payment systems in recent years, Kyriakos-Saad says, concerns about traceability could be a factor. But it's incorrect to always associate cash with corruption, he says. "There's this lingering desire for privacy, and desire for anonymity, which can be entirely legitimate."

And this anonymity is precisely what makes cash usage patterns so challenging to understand.

Harvard University economics professor and former IMF Chief Economist Kenneth Rogoff says illicit activity and big banknotes are closely linked. "Worldwide, high-value currency notes are mainly used to avoid taxes and regulation, and for illegal activity," he says. "Apartments and houses in major cities all over the world are paid for with suitcases of cash every day, and it is not because the buyers are afraid of bank failures."

Rogoff adds that there may be another factor at play: "Underground demand for paper currency has been surely rising in part because interest rates and inflation are exceptionally low."

But why the dollar? Other countries have currencies used abroad. "We think that the significance of foreign demand is unique to the dollar," Judson says. "Other currencies are also used outside their home countries, but as far as we can tell, the dollar has the largest share of notes held outside the country."

The dollar's role as the dominant international reserve currency may be the key, according to Rogoff. "The dollar is now the only global currency; the euro has stalled, and the renminbi is decades away from challenging," he says.

No sign of waning

Some prominent economists, including Rogoff and former US Treasury Secretary Lawrence Summers, have advocated phasing out high-denomination paper currency to discourage tax evasion and other forms of corruption. India and euro area countries have done just that in recent years: the Reserve Bank of India withdrew the 500 and 1,000 rupee bills from circulation and stripped them of their status as legal tender in 2016, with disruptive effects, while the European Central Bank stopped producing and issuing the 500 euro note in early 2019.

However, there are no signs that Benjamins are on their way out. Reasons for keeping the $100 bill include the expense of replacing them with a higher volume of $50s, possible economic repercussions of such an action, and the inevitable reduction in seigniorage—the profits a government makes from issuing currency. (A $100 bill costs the government 14 cents to produce, resulting in a tidy profit; Rogoff argues that any losses would be offset by decreased tax evasion and crime.)

One wonders what Benjamin Franklin might make of all this. The US Founding Father, who famously advised that "a penny saved is a penny earned," is now not only the face of his country's most valuable banknote, but possibly of the world's most in-demand paper currency. And despite great technological strides in digital payment systems, the popularity of his bills shows no sign of waning. FD

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