



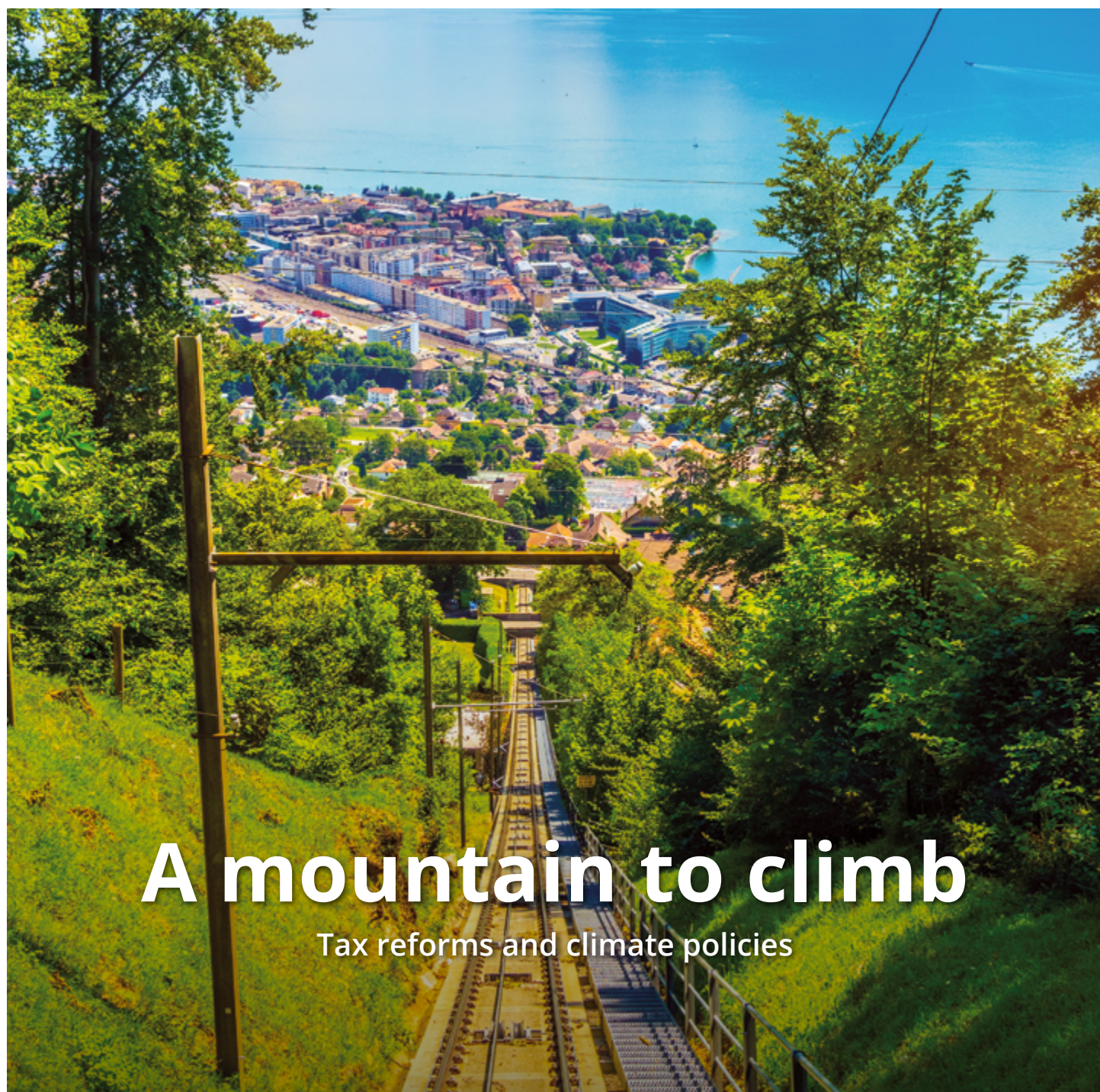
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NEWSLETTER



A mountain to climb

Tax reforms and climate policies

Inside this issue...

APRIL 2022 | ISSUE NO. 197



It also takes economists to task, for ignoring the problem of climate change and providing excuses to wealthy nations and powerful corporations...

Daron Acemoglu, see pages 2–4

01 THE EDITORIAL

The Editor introduces a special issue on international tax reforms and climate policies

02 LETTER FROM AMERICA

Daron Acemoglu explains why economists should approach climate policy differently

05 CORPORATE TAX

Michael P. Devereux writes about fundamental reforms to the international regime for corporate tax

08 PROFILE

A profile of Sir Richard Blundell covers his upbringing and figures he admires, not least Miles Davis

10 BORDER CARBON ADJUSTMENT

Michael Keen explains why this has gone from a theoretical curiosity to increasing prominence

12 MONT PELERIN SOCIETY

Bruce Caldwell looks back to the founding event

14 COVID AND LMICS

Edward Miguel and Ahmed Mushfiq Mobarak on the pandemic and possible strategies

18 CAREER STRUCTURES

Oriana Bandiera and Imran Rasul describe a new initiative on career structures

20 THE WOMEN'S COMMITTEE

The past and present of the mentoring programme for early-career female economists

22 OBITUARY

An obituary for Geoff Harcourt, prepared by Peter Kriesler

25 THE ECONOMIC JOURNAL

A brief look back at a year in the life of the Economic Journal

26 NEWS AND EVENTS

Various items, including this year's RES Conference

28 FROM THE ARCHIVE

An earlier piece on corporate tax

Ending the pandemic in low and middle income countries

Edward Miguel and Ahmed Mushfiq Mobarak discuss the current position, possible strategies, and what the future may hold

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As SARS-COV2 reaches an endemic state, many high-income countries are trying to maintain low fatality rates through widespread vaccination. In contrast, low- and middle-income countries (LMICs) across Africa and Asia have made uneven progress towards managing the pandemic. In this essay we summarize our *Annual Review of Economics* article in which we look back at COVID-19's impact on LMICs (Miguel and Mobarak 2022), and summarize an article recently published in *Science* (Mobarak et al. 2022) for which we assembled global experts representing economics, medicine, public health, and other related disciplines — many of them based in those LMICs — to discuss the strategies that need to be implemented to end the pandemic in LMICs.

The COVID-19 pandemic has led to a massive macroeconomic shock with a global decline in gross domestic product of 3%. LMICs have been especially hard-hit. The majority of households in most LMIC country samples reported sharp drops in incomes, employment, and consumer spending in the early months of the pandemic (Egger et al. 2021, Bundervoet et al. 2022). Although unemployment rose and earnings dropped in nearly all countries



— rich and poor — this was more likely to result in widespread hunger among the poorest populations in poor countries that lacked adequate social safety-nets.

There were concomitant adverse effects on physical and mental health, and learning losses. In the *Science* article, Dr. Gagan-deep Kang of Christian Medical College in Vellore describes the devastating second wave of the pandemic in India in April 2021, where levels of infection and death left parts of the country without hospital beds to treat COVID-19 patients, oxygen supply shortages, and led to a breakdown of health



ulation, another 105 nations having offered a primary series (that is, the initial two doses without boosting) to less than 40%, and 20 countries not having enough doses to vaccinate even their elderly citizens and health care workers (Patel 2021).

While the COVID-19 Vaccines Global Access (COVAX) was set up to ensure equitable vaccine access to LMICs, it has struggled to achieve its goal. Other actors have made alternative proposals to expand access to COVID-19 vaccines by waiving intellectual property protections, sharing technology, and expanding manufacturing capacity for COVID-19 vaccines (Kavanagh et al. 2021). However, with limited support from governments in richer countries and resistance from key vaccine companies, these proposals have stalled and scale-up of vaccine production has failed to occur. This evident policy paralysis imperils millions of lives, risks the emergence of new variants, and delays the worldwide recovery from this pandemic. Unless there are new commitments to scale up production and access to vaccines to all who need them, we may be back here again in 2023, with numerous additional and preventable deaths to answer for.

To further encourage equitable access and supplies, experts have also argued for optimizing limited vaccine supplies through fractional dosing, a strategy that has been used in the past for yellow fever (World Health Organization 2017) and polio (Okayasu et al. 2017). The speed of COVID spread created pressure to produce high-efficacy vaccines quickly, which led to large doses getting trialled and adopted. Once the trials showed success, there were commercial incentives to stick with approved formulations. However, during a pandemic and a vaccine shortage, there are large potential benefits from using lower doses to save supplies, thus allowing more doses to be distributed. This could

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systems. This offers lessons for LMICs — the importance of early signal detection, acknowledgment, and analysis; preparedness of the health system and its supply chains; and the ability to collect, integrate, analyse, and interpret data in real time so that resources can be directed appropriately when needed.

Widespread vaccination coverage is now required to prevent fragile health systems in LMICs from becoming overwhelmed. However, global vaccine distribution has been highly inequitable, with 45 countries having vaccinated less than 10% of their pop-

greatly accelerate vaccination, particularly benefiting those in LMICs still waiting in a queue.

In parallel to vaccine development and distribution, we need to ensure vaccine demand exists to meet the supply. COVID-19 vaccine acceptance rates are generally higher in LMICs than in high-income countries (Solis Arce et al. 2021). However, LMICs are not a homogeneous bloc; there is substantial variation in vaccine acceptance rates between and within LMICs. National governments and international agencies must develop context-specific strategies to reach out to different segments of the population. Moreover, when vaccine doses arrive, it is important to ensure that they can reach LMIC population segments that reside in areas farther away from clinics and vaccination centres. Many LMICs face substantial challenges in last-mile delivery of vaccines, especially to people living in more remote, rural, low-density areas. For instance, data that we collected in



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Sierra Leone show that a trip to a vaccination centre for a person residing in a rural community is \$6 and 1.5 hours, on average, each way. Thus, what may at first appear to be vaccine hesitancy might in fact reflect the real constraints on access.

We should therefore prioritize development of creative solutions that enhance access for all LMIC citizens, and there have

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been efforts to that end: several countries, including Ghana, India, Liberia, Pakistan, and Sierra Leone, have started experimenting with the concept of “mobile vaccination teams” that take batches of vaccines closer to where people live, to make getting jabs more convenient (Bloxham 2021, WHO Regional Office for Africa 2021). Such efforts must be encouraged and efficiently scaled up.

While LMICs work on these vaccine procurement, distribution, access, and demand challenges, they must adopt non-pharmaceutical interventions (NPIs) to curb transmissions. Research in West Bengal, India has shown that mobile phone messaging can be used as an effective tool to promote preventative behaviours (Banerjee et al. 2020). Researchers found that mobile phone messages affected knowledge of effective prevention, willingness to pay for masks, and more self-reported prevention behaviour, suggesting that specific messages by trusted messengers can still lead to meaningful

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change at scale during a pandemic.

Further, promoting mask wearing is another effective tool. A randomized trial in Bangladesh found that mask promotion strategies increased mask usage in rural areas by 29 percentage points, and that in turn led to a 9% reduction in symptomatic infections (Abaluck et al. 2021). However, ensuring consistent mask usage is not straightforward: in Kenya, 88% of survey respondents said they wear masks to public places but only 10% of people were observed with masks (Jakubowski et al. 2021), and gaps were even

larger in Uganda (Jakubowski et al. 2022). It is unclear how consistent mask use can be maintained in the longer term, and future research is needed here.

While LMICs have faced their share of challenges during this pandemic, we would be remiss not to mention the pioneering research and innovation efforts in these countries that have mitigated pandemic impacts and shaped policy globally. Prominent examples include genome sequencing in South Africa, which led to early identification of the Omicron variant; vaccine development of both injectable and intranasal Covaxin in India; the mask trial in Bangladesh, and trials of fluvoxamine, an existing drug repurposed for treatment of COVID-19 in Brazil. These innovations are products of a strong research infrastructure emerging in many LMICs, and provide evidence that, with the necessary technology transfer, LMICs should be able to solve problems like vaccine production and distribution.

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