

# **A Tribute to 2019 Economics Nobel Prize Recipient, Professor Michael Kremer**

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<sup>1</sup> This is the article version of the tribute that Edward Miguel delivered at the Nobel Prize Session of the 2021 ASSA Meetings on January 4, 2021.

It is an honor to present in this session for our 2019 Nobel Prize winners. Let me start with congratulations to Abhijit Banerjee, Esther Duflo, and Michael Kremer, for their receipt of the 2019 Nobel Prize in Economic Sciences *“for their experimental approach to alleviating global poverty”*.<sup>2</sup> I have been fortunate to have known and worked with all three of the winners. But it is my privilege today to talk about Michael Kremer. Professors Pascaline Dupas and Rema Hanna will pay tribute to the other two prize winners next.

The genesis of the work that led to the Nobel Prize was Michael Kremer’s insight that experimental methods could be employed to study anti-poverty programs. Michael had this eureka moment while on a vacation trip to Kenya with his wife, Dr. Rachel Glennerster, in 1994. As Michael launched this research program, his initial focus on education was shaped by his own personal experience working in Kenya as a teacher in the mid-1980s, and his founding of the NGO WorldTeach. And in fact, the initial field experiments in schools that Michael set up starting in 1995 were direct collaborations with people he had worked with in Kenya in the 1980s.

At that time, there had been relatively few randomized field experiments in Economics. Michael had the at-the-time radical vision to establish a concerted research program based on utilizing this powerful tool to study international development. While Michael’s personal experience in Kenya was a catalyst, his earlier training in physics may have been a deeper source of inspiration for bringing rigorous scientific methods into development economics. It was my own personal good fortune to be Michael’s research

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<sup>2</sup> The Prize in Economic Sciences 2019. NobelPrize.org. Nobel Media AB 2021. Wed. 27 Jan 2021, <https://www.nobelprize.org/prizes/economic-sciences/2019/summary/>.

assistant as an MIT undergraduate, and to work on the first Kenya RCT studies in 1995 and 1996.

The view of the Nobel Committee is that the widespread use of randomized field experimental methods is one of the most important scientific advances in empirical economics in the last 25 years. Michael's key intellectual contribution and insight was that experimental methods could be applied in creative ways that go far beyond the simple "Treatment vs. Control" comparisons in standard medical trials. The wave of development economics field experiments that Michael, Esther, Abhijit and colleagues have launched are often purposely designed to explicitly test economic theories and estimate important parameters that have implications both for scholarly research and public policy.

With appropriate designs and sufficient scale, Michael's work has highlighted how RCT's can estimate externalities in novel ways. By creating a long-term presence in particular study sites, Michael and colleagues have been able to iterate in the design of RCT's, applying the lessons from previous studies to the design of the next study. By carrying out related experiments in multiple locations, Michael uncovered heterogeneity in effects and investigated external validity.

Michael's pioneering work also accelerated innovation in original data collection in development and made it normal and even downright necessary for development economists to spend extended time in the societies that they study. This greatly improved the quality of research and helped forge durable international scholarly networks.

No one in our field works harder and with more determination than Michael Kremer. Michael has been prolific over the past 25 years, carrying out dozens of original

field studies and reshaping development economics. He has made major contributions to multiple areas within economics including on agriculture, psychology and economics, education, credit and finance, labor markets, environment, political economy, gender, and health.

In agriculture, Michael has studied the classic puzzle of why there is low adoption of beneficial technologies, like fertilizer. He, together with Esther, Jon Robinson and co-authors, used RCT's to understand how behavioral biases affect the fertilizer take-up decision among Kenyan farmers, and also how these biases can be harnessed to design more effective policies (Duflo, Kremer and Robinson 2011). His recent research has used field experiments in tandem with machine learning to precisely target specific agricultural information to individual farmers.<sup>3</sup>

Together with Supreet Kaur and Sendhil Mullainathan, Michael shed new light on the determinants of effort among piece-rate workers in India (Kaur, Kremer and Mullainathan 2015). With an experiment tightly linked to a model, they uncover smoking-gun evidence for the importance of present-biased preferences and find that making commitment devices available can boost worker productivity.

In education, where his body of research is particularly rich, Michael's work has shown which innovations in inputs and incentives can unlock learning at levels from early childhood up to university (Holla and Kremer 2009). And his work also shows which

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<sup>3</sup> For more information on the Precision Agriculture for Development initiative that Kremer co-founded, see: <https://precisionag.org/>.

seemingly promising approaches fail to delivery impact or may exacerbate multi-tasking issues among teachers (Glewwe, Ilias and Kremer 2010).

I could go on and discuss Michael's insights in all these areas. But for reasons of time let me briefly mention his work on health, where it has been one of the privileges of my career to work with Michael. For over 20 years, we have worked on a project that provided deworming treatments to primary school kids in Kenya, and have traced out impacts on their health, schooling, and adult labor outcomes (Miguel and Kremer 2004, Kremer and Miguel 2007, Baird, Hicks, Kremer and Miguel 2016, Bouguen, Huang, Kremer and Miguel 2019, Hamory, Miguel, Walker, Kremer and Baird 2021).

The rigor and transparency of the experimental methods that Michael has pioneered in development economics have facilitated the translation of research findings into policy impact. For example, the deworming research has contributed to policy changes that have resulted in hundreds of millions of children in low-income countries receiving free deworming drugs over the last decade.<sup>4</sup>

Michael and Esther and Abhijit's work has also reshaped development and applied economics as a whole. Field experiments are far more common throughout economics today than they were 20 years ago, in part due of the intellectual impact of development economics RCT's. Today there are over 4,200 RCTs registered on the AEA site, with studies in over 150 countries. And the pace of studies registered on the site each quarter just keeps on climbing (see Figure 1).

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<sup>4</sup> See reports by the NGO Evidence Action's Deworm the World Initiative for more information: <https://www.evidenceaction.org/dewormtheworld/>.

Michael has advised scores of students during his time as a faculty member at MIT, Harvard and now Chicago, populating universities, institutes and government ministries around the world with women and men with expertise in these powerful tools. The RCT Revolution in development economics has also inspired the adoption of experimental methods in other research disciplines, including sociology, ecology, political science, and beyond. For instance, over 1,400 RCTs have now been posted on the Experiments in Politics and Governance study registry.<sup>5</sup>

Beyond his work utilizing randomized experimental methods, for which he, Esther and Abhijit were awarded the Nobel Prize, Michael has also made some of the most important recent theoretical advances in development and economic growth. His famous work on the O-Ring theory, which was part of Michael's dissertation, highlighted the importance of production complementarities and assortative matching in driving sustained economic growth (Kremer 1993).

Some of my favorite papers are Michael's work on how public policy can help preserve natural resources, such as elephant herds and other wildlife in Eastern and Southern Africa (Kremer and Morcom 2000). He shows that, for governments whose announcements lack credibility, an effective way to eliminate extinction equilibria could – perhaps counter-intuitively – be to accumulate a large stockpile of the storable good, such as elephant tusks. They could then threaten to sell them off should the wildlife population fall below some level. Doing so would flood the market for the illicit product, reducing poachers' profits and thus their incentives to continue poaching.

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<sup>5</sup> For more information on the EGAP registry, see <https://egap.org/registry/>.

One of Michael's insights that has had the most real-world impact is his proposal to create advanced market commitments, or AMC's, to spur innovations valuable to poor people, such as research into infectious diseases. In articles and an award-winning book joint with Dr. Rachel Glennerster, they show how AMC's can serve as a financial "prize" for researchers to successfully develop treatments for diseases that private pharmaceutical companies otherwise do not find profitable to work on, mainly due to the poverty of those who have these conditions (Glennerster and Kremer 2000, 2004). This brilliant idea has resonated in the policy world, and directly led to the creation of an AMC for the Pneumococcal vaccine by the Global Vaccine Alliance. In 2016, over 164 million children around the world received doses of the Pneumococcal vaccine through the AMC, an achievement that can be directly traced back to Michael's theoretical insight and his energy to see it through to fruition.

Michael is still so young and will continue to make major contributions in the coming years, both through his RCT-based research, his theory work, and surely in other ways we have not thought of yet. And I haven't even mentioned Michael's direct policy impact as Scientific Director of Development Innovation Ventures, a major USAID initiative that incubates new approaches to global poverty alleviation.<sup>6</sup>

Michael Kremer is an inspiring human being, thoughtful and humble, generous with his friends and dedicated to his family life. He sets a high standard for all of us every day, as a scholar and as a human being. Michael is famous for his constructive style to providing feedback to students and colleagues. While many economists unfortunately prize an

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<sup>6</sup> For more information on DIV, see: <https://www.usaid.gov/div>.

aggressive, in-your-face approach to research seminars, Michael focuses like a laser on a project's strengths and how any limitations can be improved, rather than looking for embarrassing "gotcha" moments. Michael's remarkable generosity and humility is a large part of why so many young development economists – myself included, a few decades back – flock to his classes and seek to learn from him. When arguably the most brilliant and creative person in the room is also the most patient and generous with praise, it can set the tone for an entire research community, as it has in development economics.

Let me close with a personal reflection. It is hard to put into words how lucky I feel to have had the chance to work with Michael for over 28 years now, and to participate in the methodological revolution that his work launched. It is hard to put into words how lucky we in the field are to have him as a colleague, someone who has for decades dedicated his incomparable intellectual firepower and personal energy to tackling some of humanity's greatest challenges. His research has not only transformed economics; it has directly improved hundreds of millions of lives around the world. Michael is truly one of a kind.

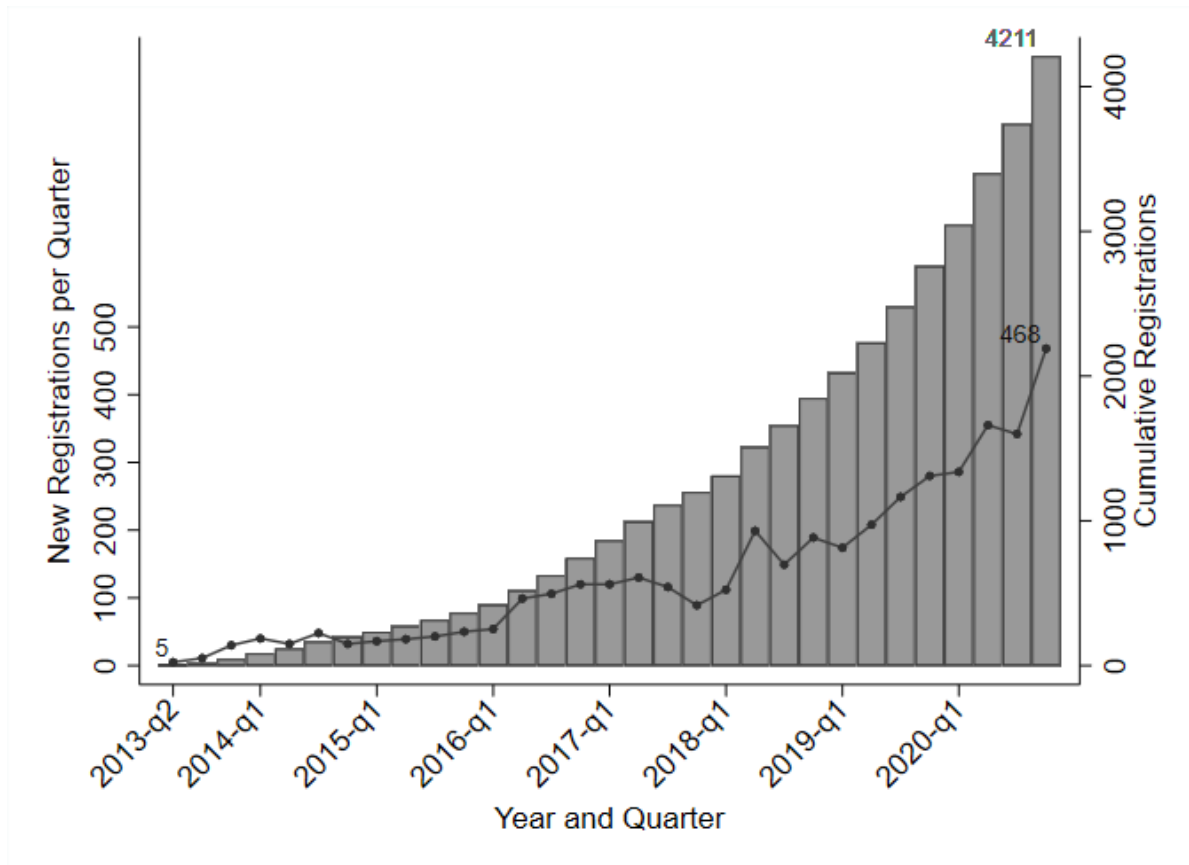
Congratulations, Michael, on the well-deserved Nobel honor.

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## Figures

**Figure 1:** Studies Posted over Time, American Economic Association Randomized Control Trial Registry



Notes: Cumulative and new registrations of studies (by quarter) on the AEA Registry for Randomized Controlled Trials. Data downloaded on December 30, 2020 from <https://www.socialscienceregistry.org/>. This figure was produced by Garret Christensen, Edward Miguel and Sarah Stillman, and is in the public domain at: <https://doi.org/10.7910/DVN/FUO7FC>.

**Figure 2:** Michael Kremer in June 1997 with colleagues who worked on the earliest experimental research studies in Busia, Kenya, including (from left to right) Professor Mary Kay Gugerty, Damary Alembi, and Sylvie Moulin. (Photo by Edward Miguel.)

