

## Department of Economics

The MIT [Department of Economics](#) is committed to preeminence as one of the world's top institutions for economics research and education. The faculty balance substantial commitments to training both undergraduates and doctoral students with active and influential research programs. The department plays a central role as an innovator in economics research and a source of exciting new directions in undergraduate and graduate economics education. We aspire to maintain excellence in each of these areas while expanding our contribution to a more inclusive and diverse economics profession.

### Highlights

MIT faculty are on the cutting edge of economic research, as recognized by their strong publication records, distinguished awards, professional recognition, and roles in leading professional organizations. That was highlighted in Abhijit Banerjee's and Esther Duflo's 2019 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, shared with former MIT Economics faculty member Michael Kremer of Harvard University. Professors Banerjee and Duflo have been innovators in the area of development economics, using randomized controlled trials to apply new rigor to research on global poverty and the development of new antipoverty programs. They are co-founders, and co-directors with Professor Benjamin Olken, of the Abdul Latif Jameel Poverty Action Lab (J-PAL), whose work has transformed development economics and development policy. Duflo is the first MIT alumna to receive a Nobel Prize in any field, the youngest person to receive the Nobel Prize in Economics, and only the second woman to receive that honor. This brings to four the number of MIT Department of Economics faculty to receive the Nobel Prize in the last decade, five including our long-term visiting professor Jean Tirole, a remarkable accolade. Recognitions of the past year are detailed in the Faculty Honors and Awards section below, and the rich set of service to professional organizations (including editorial positions), are sketched in the Professional Service section.

Research activities in the department include both individual faculty research agendas and a number of collaborative research initiatives that span a range of researchers and sponsors. Fueled by a focus on new data sources—whether administrative data accessed through government agencies, original data developed by research teams through field experiments, or data made accessible by collaborations with the private sector—economic research is enjoying an empirical renaissance. These projects are often complex, involving research teams that have transformed empirical economics into a model more like lab sciences. A growing number of our faculty work with full-time “pre-doc” research assistants—college graduates who may spend one to two years working with a faculty team before applying to graduate school—as well as graduate research assistants and, in some cases, project managers. Collaborations among scholars characterize a number of our research initiatives, including J-PAL Global and J-PAL North America (J-PAL NA), the School Effectiveness and Inequality Initiative, and a number of relatively new initiatives that focus on the dramatic changes ongoing in labor markets. Daron Acemoglu, David Autor, and John Van Reenen co-direct a department initiative on The Future of Work. David Autor co-directs both a J-PAL NA experiment-based future of work initiative and the MIT-wide Task Force on Work of the Future.

The department's commitment to advancing path-breaking research is paired with a focus on providing the best quality economics education anywhere, both at the undergraduate and graduate levels. The department has made substantial investments in its graduate education program. In January 2020, the department welcomed the first class in our new residential Master of Applied Science in Data, Economics, and Development Policy (DEDP) program. Though their MIT residential semester was cut short by MIT closures in mid-March 2020 due to the COVID-19 pandemic, our 22 exceptional students successfully completed their spring coursework and summer practicums and will be awarded the first MIT master of applied science degrees in DEDP in September. Our doctoral program has undergone in-depth review and extensive discussions among faculty and graduate students over the past three years. These led to the adoption of significant revisions to the graduate curriculum, effective in AY2020. Among these are substantive changes to the first-year core curriculum and second-year general examination process, creation of a new second-year research communications course and paper, and increased support for the post-generals transition to research. A number of these changes were responsive to a department initiative to improve wellbeing, inclusivity, and diversity in the department, which is ongoing.

The department continues to advance our transformation of undergraduate education. The 2017 collaboration with Course 6 on a new undergraduate major, 6-14 (Computer Science, Economics, and Data Science), met with immediate and strong interest. In AY2020 there were 96 majors declared by students, 42 of whom are in the Class of 2022. This is in addition to 34 traditional Course 14 majors and 21 in our Mathematical Economics major. Individual faculty also have made substantial contributions to MIT undergraduate education. Of particular note, Joshua Angrist was named a MacVicar Faculty Fellow for his contributions to the undergraduate curriculum and teaching, including his work as a member of the Committee on the Undergraduate Program and advisor to the Vice Chancellor's office on redesign of the MIT curriculum.

A discussion of AY2020 is incomplete without acknowledgement of the exceptional challenges confronting us all in spring 2020, with the global COVID-19 pandemic and urgent calls to action on anti-racism that emerged in reaction to the horror of George Floyd's death under the knee of a Minneapolis police officer in late May. March was witness to unprecedented disruption from COVID-19, as recognition of the pandemic led to the closure of schools, workplaces, and most in-person activities at MIT, across Massachusetts, throughout much of the country, and around the world. Campus research and other activities were quickly virtualized, as undergraduates were sent home before spring break and campus access was closed to all but essential personnel. MIT Economics faculty embraced a diverse set of approaches to online instruction, and quickly joined other scholars in pivoting their research to target COVID-19-relevant work. The department launched a [new website for COVID-19 related research](#), with more than a dozen working papers posted by the end of June. These efforts, both educational and research, are ongoing. The anti-racism and Black Lives Matter protests that captured national attention in late May and early June sparked difficult but much-needed conversations and action at MIT. This intersected with ongoing discussions within the department and the broader economics profession about the stagnation or reversal of progress on gender and racial diversity in economics, and about the overall

climate within the profession. The Department of Economics has committed time and resources to engage faculty and students concerned about these issues to improve our understanding, explore options to expand MIT's role, and develop a more robust response to inclusion and equity issues.

Delivering cutting-edge economics research and education is increasingly expensive in an era where outside sources of funding for graduate fellowships, seed funding for new faculty initiatives, and support for large-scale basic research are all becoming more scarce. Ensuring the department has the resources it needs to continue its preeminence in both education and research has been a major focus of department leadership, and we have worked closely with the dean and provost, MIT's resource development teams, and the Department Visiting Committee on this mission. We were thrilled to announce the creation of a new endowed professorship in honor of long-time faculty member, Institute Professor emeritus, and Nobel Laureate Peter A. Diamond PhD '63 in June; to recognize substantial commitments to graduate student support with the creation of the Altman Family Fellowship Fund in AY2020; to support the first Jerry A. Hausman Graduate Dissertation Fellows (created by a gift from emeritus professor Jerry Hausman); and to establish the Gordon B. Pye '55, PhD '63 Dissertation Fellowship Fund. At J-PAL, a major new gift of \$25 million from King Philanthropies enabled J-PAL to establish the King Climate Action Initiative. As the department leadership transitions to Glenn Ellison, Development efforts continue as an important priority for the department in our future plans.

## **Faculty**

### **Faculty and Teaching Staff**

Nancy Rose served as head of the department for her third and final year in AY2020. Glenn Ellison served as associate head and replaces Rose as head for the upcoming academic year. There were 42 Economics faculty members, excluding visitors, this year. Two new faculty joined the department: Stephen Morris, the inaugural holder of the Peter A. Diamond Professorship in Economics, and Clare Balboni, the 3M Career Development Assistant Professor of Environmental Economics. This number will decrease to 39 for AY2021, reflecting the retirements of two professors, Jeffrey Harris and Bengt Holmström, and the departure of one professor (John Van Reenen, joint with Sloan). Two new assistant professors, Ian Ball and Christian Wolf, accepted offers this spring to join the department, and will begin their appointments in July 2021 following postdoctoral fellowship years.

This year, the department promoted Frank Schilbach to the rank of associate professor without tenure, and Alexander Wolitzky to the rank of professor, and reappointed Sara Ellison as senior lecturer.

### **Faculty Searches**

All search committees are instructed to identify outstanding women and candidates from underrepresented minority groups for potential faculty appointments. During AY2020, the MIT Economics faculty included six women, including one junior faculty member (Clare Balboni) four tenured faculty members (Esther Duflo, Amy Finkelstein, Anna Mikusheva, and Nancy Rose) and one senior lecturer (Sara Ellison).

As part of the regular recruitment process for junior faculty during AY2020, the department received a total of 412 applications. Of those, 314 self-identified as male and 98 as female. From this data, we can report that of the self-identified domestic applicants, four identified themselves as Asian, 25 as white, two as African American, two as mixed race, and nine chose not to disclose. An additional 171, 41.5% of the total applicant pool, reported as international/non-US. The remaining 199 applicants chose not to disclose citizenship. The Department of Economics hiring committee, consisting of Professors Daron Acemoglu (chair), Nikhil Agarwal, George-Marios Angeletos, Abhijit Banerjee, and Drew Fudenberg, reviewed all applications, paying special attention to candidates from underrepresented minority groups. Of the 412 applicants, 32 (26 men, six women) were selected to be interviewed by the hiring committee and other faculty members at the American Economic Association's annual meeting in San Diego, January 3–5, 2020. The department invited seven candidates from the interview pool to the department to present seminars during MIT's Independent Activities Period; these candidates included five men and two women. The faculty voted offers to Ian Ball (PhD, Economics, Yale University, 2020), Victoria Marone (PhD, Economics, Northwestern University, 2020), and Christian Wolf (PhD, Economics, Princeton, 2020), subject to having slots for two junior faculty hires. Marone declined MIT's offer; Ball and Wolf accepted positions to begin July 1, 2021, after the completion of postdoctoral fellowships with the Economics and Computation group at Microsoft Research NYC and the University of Chicago Becker Friedman Institute, respectively.

The department also initiated an open rank search in behavioral economics, but did not vote any offers in AY2020.

### Visitors

The MIT Department of Economics hosted two visiting faculty, nine visiting scholars, and four postdoctoral economists for all or part of AY2020. The department's annual visitor, Nobel Laureate Jean Tirole PhD '82, continued his active participation, lecturing in our graduate industrial organization courses during a weeklong visit in the fall term, and virtually instructing a well-attended advanced topics course during the month of July; his usual spring visit was precluded by the COVID-19 shutdown. Other visiting faculty members who taught departmental courses in AY2020 included Professor Elias Papaioannou (London Business School), who taught 14.770 Introduction to Collective Choice and Political Economy; Postdoctoral Associate Florian Gunsilius (Brown University), who taught half of 14.382 Econometrics and half of 14.386 New Econometric Methods; and Professor Arindrajit Dube (University of Massachusetts at Amherst), who co-taught graduate course 14.662 Labor Economics II.

Several scholars visited to work with current MIT faculty members and interact with our doctoral students. They included Assistant Professor Annie Liang (University of Pennsylvania), Assistant Professor Donald Ngwe (Harvard Business School), Assistant Professor Federico Esposito (Tufts University), Professor Eduardo Engel (University of Chile), Professor Leonardo Bursztyn (University of Chicago), Sander Heinsalu (Australian National University), Takuo Sugaya (Stanford University), Professor Elke Jahn (University of Bayreuth), and Assistant Professor Alexander MacKay (Harvard Business School).

## Faculty Honors and Awards

Our faculty have been recognized with a wide range of honors and awards over the past academic year. Abhijit Banerjee was elected to the National Academy of Sciences, Victor Chernozhukov was inducted as a fellow in the Institute of Mathematical Statistics, Dave Donaldson was elected to the American Academy of Arts and Sciences, Amy Finkelstein was named a 2019 Distinguished Center of Economic Studies Fellow, Jonathan Gruber was awarded a Guggenheim Fellowship, Whitney Newey was named a Distinguished Fellow of the American Economic Association and a fellow of the International Association of Applied Economics, and Parag Pathak was named by *Science News* to their SN10 top young scientists.

A more complete list includes the following:

Daron Acemoglu received a 2020 Committed to Caring award from the Office of Graduate Education.

David Autor delivered the Sun-Chen Lecture at National Taiwan University and the Bob Gregory Lecture to the Asian and Australasian Society of Labour Economics, both in December 2019.

George-Marios Angeletos delivered in December 2019, the keynote at the Banque de France's conference—Heterogeneous Agents or Heterogeneous Information.

Abhijit Banerjee and Esther Duflo, along with Michael Kremer of Harvard University, were awarded the 2019 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for their groundbreaking work in the field of development economics. Banerjee was also elected to the National Academy of Sciences.

Ricardo Caballero gave the keynote lecture at the second annual conference of the SCOR-PSE (Paris School of Economics) in July 2019.

Victor Chernozhukov was inducted as a fellow of the Institute of Mathematical Statistics, and delivered the Fisher-Shultz lecture at the 2019 European meeting of the Econometric Society.

Arnaud Costinot was awarded the Best Co-Editor Prize by the Journal of International Economics.

Dave Donaldson was elected to the American Academy of Arts and Sciences.

Esther Duflo was awarded an honorary doctorate from the Erasmus School of Economics in Rotterdam.

Amy Finkelstein was named a 2019 Distinguished CES (Center for Economic Studies) Fellow and received a National Institutes of Health Merit Award in 2020.

Jonathan Gruber was awarded a Guggenheim Fellowship to support his work to develop and evaluate a Louisiana state pilot of a subscription model for making expensive, life-saving drugs affordable for all.

Anna Mikusheva received a 2020 Committed to Caring award from the Office of Graduate Education.

Stephen Morris was named the inaugural holder of the Peter A. Diamond Professorship. Morris also delivered the Econometric Society's Presidential Lecture at the annual LACEA-LAMES (Latin American and Caribbean Economic Association-Latin American Meeting of the Econometric Society) Meeting in November 2019.

Whitney Newey was named a distinguished fellow of the American Economic Association and a fellow of the International Association of Applied Economics. He also delivered the keynote address at the annual meeting of the Chinese Econometrics Forum in December 2019.

Ben Olken gave the keynote address at the 2019 annual meeting of the LACEA-LAMES.

Parag Pathak was named a "Top 10 Young Scientist to Watch" by *Science News*.

Robert Townsend gave the American Finance Association 2020 lecture at the annual Allied Social Science Associations Meeting in San Diego, California.

### Professional Service

MIT faculty extend their professional impact through leadership at top economics journals and of national and international professional societies.

Department faculty are active among the editorships and editorial boards of leading economics journals. Esther Dufló continues to serve as editor of the *American Economic Review (AER)* and Amy Finkelstein as founding editor of *AER: Insights*. This year, Ben Olken became an editor of the *American Economic Journal: Applied Economics*, after serving as co-editor for four years. Arnaud Costinot serves as co-editor of the *Journal of International Economics*, Dave Donaldson as co-editor of *Econometrica*, and Anna Mikusheva as co-editor of *Econometric Theory*. John Van Reenen is a member of the editorial boards of *American Economic Review* and the *Quarterly Journal of Economics*. Alex Wolitzky is a foreign editor of the *Review of Economic Studies*.

Associate editorships and editorial board positions include Alberto Abadie (*Econometrica* and *AER: Insights*), Nikhil Agarwal (*American Economic Journal: Microeconomics*), David Atkin (*American Economic Review*, *Journal of International Economics*, and the *Quarterly Journal of Economics*), Arnaud Costinot (*American Economic Review* and *Journal of Economic Literature*), Dave Donaldson (*Journal of Economic Literature*), Amy Finkelstein (*Journal of Economic Perspectives*), Drew Fudenberg (*Theoretical Economics*), Paul Joskow (*Energy Journal* and *Journal of Law, Economics, and Organization*), Anna Mikusheva (*Econometrics Journal* and *Journal of Econometric Methods*), Stephen Morris (*Annual Review of Economics*), Ben Olken (*Journal of Development Economics* and *Review of Economics and Statistics*), Parag Pathak (*Journal of Political Economy*), Rob Townsend (*American Economic Journal: Microeconomics*), and Alex Wolitzky (*Econometrica* and *American Economic Journal: Microeconomics*).

Our faculty also contribute to the leadership of a number of professional societies and organizations. Stephen Morris is president of the Econometric Society, of which Daron Acemoglu and Whitney Newey also serve on the executive committee. Abhijit Banerjee, Esther Dufló, and Benjamin Olken serve on the board of directors for the Bureau for

Research and Economic Analysis of Development. Robert Gibbons is the president-elect of the Society for Institutional and Organizational Economics. Jonathan Gruber serves on the board of directors for the American Society of Health Economists. Nancy Rose is vice president of the Industrial Organization Society.

The National Bureau of Economic Research (NBER), the top academic economic research organization in the country, is led by MIT professor James Poterba. Research program directors at the NBER during AY2020 include David Autor (Labor Studies), Amy Finkelstein (Public Economics through 2019, Health Care beginning 2020), Ben Olken (Development Economics), and Jon Gruber (who directed the Health Care program through 2019). Parag Pathak co-directs the Market Design Working Group and Robert Gibbons directs the Organizational Economics Working Group.

Our faculty also continue the department's tradition of broader public service. For example, Abhijit Banerjee serves as a trustee for Save the Children. David Autor and James Poterba serve on the panel of economic advisors for the Congressional Budget Office. Autor also serves the Opportunity and Inclusive Growth Initiative for the Federal Reserve Bank of Minneapolis. Amy Finkelstein serves as a member of the Congressional Budget Office's panel of health advisors. George-Marios Angeletos serves on the European Economic Association Council and Bengt Holmström serves the Ministry of Finance for the government of Finland. Ben Olken continued engagements with the government of Pakistan on improving their flagship anti-poverty program. This spring, Ricardo Caballero advised the president of Chile on the country's COVID-19 response. Ben Olken also provided COVID-19-response guidance to the governments of Pakistan and Indonesia.

## Research

### **Abdul Latif Jameel Poverty Action Lab**

The Abdul Latif Jameel Poverty Action Lab—directed by faculty members Abhijit Banerjee, Esther Duflo, and Ben Olken—seeks to reduce poverty by ensuring that policy is based on scientific evidence.

J-PAL aims to set a new standard of rigorous evaluations to identify effective programs across various sectors, including agriculture, education, energy and environment, finance, governance, health, gender, firms, and labor markets. J-PAL continues to expand the scope and influence of its research. Since its launch in 2003, J-PAL has grown into a network of 194 affiliated professors from around the world and seven regional offices worldwide, including a new regional office at American University in Cairo.

To date, J-PAL's affiliated research faculty are leading or have completed more than 800 randomized evaluations in 69 countries to find the most effective approaches to critical development issues. Some examples include helping people leave extreme poverty, reducing the spread of HIV/AIDS, increasing student attendance, reducing industrial pollution, and reducing corruption in government projects. Eleven programs evaluated by J-PAL affiliates and found to be effective have been scaled up, currently reaching 300 million people worldwide. J-PAL is working with governments in 11 countries to institutionalize the use of evidence in decision making.

A major new gift of \$25 million from King Philanthropies is allowing J-PAL to establish the [King Climate Action Initiative](#), a research and policy initiative that will design, evaluate, and scale evidence-based solutions to combat climate change and poverty, focusing on mitigating carbon emissions, reducing carbon pollution, helping low-income communities adapt to climate change, and providing access to affordable and reliable energy in developing countries. In addition, significant grants from Google and the Bill and Melinda Gates Foundation are funding two new initiatives, the Jobs and Opportunities Initiative and the Gender and Economic Agency Initiative, respectively.

J-PAL North America, led by Amy Finkelstein and Harvard professor Lawrence Katz, brings randomized program evaluation methods to policy in North America across a wide variety of areas. Among its major efforts are studies of how the use of health care services affects patient outcomes and costs (through the Health Care Delivery Initiative), evaluations of innovative practices that can address the changing nature of work (through the Work of the Future Initiative), and research to understand how best to help communities recover in the wake of COVID-19 (through the new COVID-19 Recovery and Resilience Initiative). Through the State and Local Innovation Initiative, the organization works closely with leaders in government to provide funding, technical support, and collaboration with preeminent researchers in order to answer high-priority policy questions. J-PAL NA is also leading efforts to improve how high-quality research is conducted. The organization recently put out an evaluation toolkit, which provides research teams with concrete guidance on how to run randomized evaluations.

Since its launch over six years ago, J-PAL NA has catalyzed more than 100 new projects to study major policy issues related to poverty, ranging from innovations in health care delivery to programs in homelessness. Its studies have received widespread coverage from major media outlets such as the *New York Times*, *Washington Post*, and *The Economist*, among others.

### **School Effectiveness and Inequality Initiative**

Under the direction of MIT economics professors Joshua Angrist, David Autor, and Parag Pathak, the School Effectiveness and Inequality Initiative (SEII) continues to shift the education policy debate from guesswork and ideology to scientific insights. Founded in 2011, SEII has grown to include 15 faculty, seven graduate students, and 13 full-time research staff members. Over the past academic year, SEII researchers have not only published topical research findings related to education and the workforce but have also made significant efforts to bridge the gap between research and informed policy making.

In AY2020, MIT SEII researchers contributed to a deeper understanding of important topics in education. In a paper published in the *American Economic Review*, SEII co-director Parag Pathak and his co-authors ask the question: What do parents value when choosing schools? As it turns out, in the context of New York City's public schools, many parents do not choose the city's most effective schools, opting instead for those that attract a high-achieving student population. SEII's current research, funded by the MIT Integrated Learning Initiative, explores the educational and social impacts of New York and Boston public school programs aimed at diversifying schools.

SEII also expanded its outreach to school districts and policy makers by hosting the second annual MIT School Access and Quality Summit on November 11–12, 2019. The event brought together school districts, research institutions, and philanthropic organizations to discuss research on how to grant every child access to high-quality K-12 schools.

In the upcoming year, SEII researchers will continue to work with their growing array of school districts and state agency partners to explore the effects of COVID-19 on student learning loss. As the educational landscape continues to be fundamentally transformed, SEII is working actively with its partners to understand the impacts of new policies and programs on student outcomes.

### **Work of the Future Task Force**

MIT's [Work of the Future Task Force](#), launched by MIT president Rafael Reif in February 2018, studies how technological and societal developments are reshaping traditional jobs and building a future workplace. The task force seeks to address three broad questions: How are emerging technologies transforming the nature of human work and the skills that enable people to thrive in the digital economy? How can we shape and catalyze technological innovation to complement and augment human potential? How can civic institutions—existing and new—act to ensure that the gains from technology innovation contribute to equality of opportunity, social inclusion, and shared prosperity? The task force is co-directed by faculty members David Autor and David Mindell (Aeronautics and Astronautics), with Elisabeth Reynolds serving as executive director. It issued its interim report, *The Work of the Future: Shaping Technology and Institutions*, in October 2019. Throughout the summer and fall of 2020, it has been releasing a series of briefing papers. The task force will culminate its work in the fall, with the release of its final report coinciding with the MIT Work of the Future Congress in November 2020.

### **Technology and the Future of Labor Initiative**

In 2017, Professors Daron Acemoglu, David Autor, and John Van Reenen launched the MIT initiative on Technology and the Future of Labor, which is housed in the Department of Economics. This initiative catalyzes and supports frontier theoretical and empirical research on the microeconomic and macroeconomic implications of changing technologies and expanding global integration for labor market operation, earnings and employment stability, skill and training demands, and worker productivity. Supported by Accenture, IBM Global Universities Program, the Schmidt Sciences Foundation, and the Smith Richardson Foundation, the research initiative advances economic understanding and aid policy formation to maximize the opportunities and minimize the adverse consequences presented by the advance of automation and globalization. In addition to supporting faculty research, the initiative provides financial support for several economics doctoral dissertation students each academic year.

## **Economics Education**

### **Graduate Education**

MIT Economics continues to attract the best students to its doctoral program. For 2019 PhD admissions, the department received 709 applications. A total of 38 prospective students were offered admission, of which 19 accepted and enrolled and two deferred

to fall 2021. One additional student enrolled from a 2019 deferral. The group of 20 matriculating students for fall 2020 includes six women and eight international students. The department was delighted by this outcome, particularly given our usual two-day visit program for prospective PhD students (scheduled for March 30–31 this year) was converted with very little notice to an entirely online experience due to COVID-19 restrictions. Our academic administration staff, admissions and recruiting chairs, faculty, and current students mobilized to reimagine how we could convey the MIT experience to admitted students who had never been to campus, and implemented a well-received program on the scheduled days.

Commensurate with the selectivity of the incoming class and the quality of MIT training, the department's graduating PhD students do exceptionally well in placement. In 2020, newly minted MIT PhDs joined the faculties at the University of California at Berkeley, University of California at Los Angeles, Dartmouth College, London School of Economics, Stanford Graduate School of Business, and the Wharton School of the University of Pennsylvania, among many other excellent universities. Others accepted positions at leading internet firms and private sector finance and consulting organizations, including the Federal Reserve Bank of Boston. The department's highest honor for doctoral students, the Robert M. Solow Prize for Graduate Student Excellence in Teaching and Research, was awarded to graduating students Chen Lian (joining the faculty at University of California at Berkeley) and Mert Demirer (joining the faculty at MIT Sloan School of Management).

The department does not take these outcomes for granted. Sustaining this record requires quality and depth in our curriculum and investment of significant time and effort in doctoral advising. In keeping with this, the department made substantial investments in curriculum evaluation and reform in recent years. Following extensive review and discussion of the doctoral program over AY2019, the department adopted significant curricular changes effective fall 2019. Among these are revision of the required core curriculum and general examination processes, creation of a required year-long research communications course that culminates in completion of a second-year research paper, and adoption of a third-year student-led research lunch to facilitate the transition to research post-graduates. The department's commitment to advanced students includes support of advanced topics courses and reading groups, and the institution of weekly student-faculty advising lunches, at which students can present research in progress for feedback from faculty and other students in their field. Individual faculty also make substantial investments of their time and energy.

The department continues to advance its program for master's level education as well. MIT Economics and the Abdul Latif Jameel Poverty Action Lab created the MITx MicroMasters Program in Data, Economics, and Development Policy in 2017. In September 2019 the program added a new elective course on political economy and economic development taught by Professors Abhijit Banerjee and Ben Olken. Through a series of five online courses and proctored exams, learners from around the world gain a strong foundation in microeconomics, development economics, and data analysis. More than 35,000 learners from over 200 countries and territories have enrolled in at least one of the DEDP courses, paying for courses according to their income. To date,

369 learners have completed the series of five courses to earn the full MicroMasters credential. In June 2020, for the first time, the DEDP program came together with other MITx MicroMasters programs to celebrate the achievements of credential holders in a joint completion ceremony.

The past year marked an important milestone for the DEDP program, as we welcomed our first class of students in a new residential master's program. Top students earning the MITx MicroMasters DEDP credential have the opportunity to apply to the DEDP master's program at MIT. Students admitted to the program gain credit for their online coursework, enabling them to earn an MIT Master of Applied Science in Data, Economics, and Development Policy in just eight months. In January 2020, the program welcomed its first cohort of 22 students to MIT's campus. Despite disruptions due to COVID-19, the inaugural class excelled; after completing their capstone internships this summer, the students will receive their degrees in September. This year's admissions cycle also yielded a new cohort of 22 students who plan to enroll in 2021. The incoming class has a diversity of backgrounds, ranging in age from 19 to 36 and coming from 18 countries (approximately half of which are low- or middle-income countries).

### **Undergraduate Education**

Enhancing our undergraduate program remains a focus for the department. In fall 2017, the department launched a new undergraduate major in collaboration with the Department of Electrical Engineering and Computer Science called Computer Science, Economics, and Data Science (Course 6-14). This joins our traditional economics major (Course 14-1) and the new mathematical economics major (Course 14-2), introduced in fall 2016. Course 6-14 aims to give students the skills to identify, analyze, and solve real-world challenges in both real and virtual settings. Students gain foundational knowledge in economic analysis, computing, optimization, and data science, as well as hands-on experience with empirical analysis of economic data. A central motivation for the new major was the rise of contemporary electronically mediated platforms for market-level and individual exchange that combine complex human decisions with intensive computation and data processing, all of which operate within an engineered economic environment. Our two newest majors provide students with opportunities for deeper grounding in the mathematics, statistics, and econometric skills that are increasingly in demand across a wide span of "big data" applications and careers. Applications of these skills are as diverse as online markets, crowdsourcing platforms, spectrum auctions, financial platforms, crypto currencies, and large-scale matching/allocation systems such as kidney exchanges and public school choice systems.

Student response has been very positive. In AY2020, 34 students were enrolled in our traditional economics major, 21 as mathematical economic majors, and 96 students as Course 6-14 majors. Total undergraduate enrollments in the department increased in AY2020, with 2,019 students enrolled in economics courses relative to the previous year's 1,896.

The department has taken a number of actions to refresh the curriculum, expand undergraduate outreach, and support the three economics majors. The department has put considerable effort into improving the quality of students' initial contact with the department, most of whom do so through our introductory 14.01 Principles of

Microeconomics and 14.02 Principles of Macroeconomics courses. We continue to work on the quality of instruction in these classes, staffing them with faculty and graduate students who we think will be compelling teachers. We have reduced the number of graduate student sections and replaced them with recorded faculty-led lectures, which are available on demand. This maintains consistency in the lecture material across all students enrolled that semester, and enables the graduate teaching staff to focus on recitations, small group study sessions, and one-on-one help. We also have invested in instructor training and transitions. Assistant Professor Martin Beraja moved into the 14.02 Principles of Macroeconomics rotation in fall 2018, and Senior Lecturer Sara Ellison moved into the 14.01 Principles of Microeconomics rotation in spring 2020.

We continue to encourage faculty innovation in the undergraduate curriculum. For fall 2019 we initiated a new first-year discovery class, 14.009 Economics and Society's Toughest Problems, to take advantage of MIT's ongoing curriculum experiments with the first-year experience. Ben Olken led the series of faculty lectures. The class was favorably received by the 123 students who enrolled, and we considered it a great success. Glenn Ellison will lead the class in fall 2020. We hope that this class, in addition to 14.01 Principles of Microeconomics, 14.02 Principles of Macroeconomics, and 14.73 The Challenge of World Poverty, will entice students into the study of economics.

The MIT Undergraduate Association (UA) supports outside-the-classroom economics education through its public economics lecture series. In fall 2019, Stanley Fischer, professor of economics emeritus at MIT and Former US Federal Reserve vice chair, delivered a talk, "Should a Central Bank Be Independent?" This well-attended lecture attracted undergraduate majors, faculty, graduate students, and economics-curious attendees from throughout the MIT community. The UA planned a spring lecture by Esther Duflo in May that unfortunately was cancelled due to COVID-19 and the closure of campus.

Finally, MIT Economics faculty have played a role in recent revisions to the MIT-wide curriculum. Josh Angrist (AY2019) and Esther Duflo (AY2020) served on MIT's Committee on the Undergraduate Program, playing an important role in developing and analyzing the Institute's experiments revising the first-year experience and approach to the science and math General Institute Requirements (GIR). Angrist continued his service as an analytic advisor to the Vice Chancellor's Office in AY2020, processing data from the AY2019 and AY2020 first year experiments. These MIT-wide efforts culminated in the approval by MIT faculty last spring of a major revision to the undergraduate grading policy. The new policy permits undergraduates to designate up to 48 units (four typical classes), including GIR and major requirements, taken at any time following their first semester at MIT as flexible pass/no record. This policy is designed to facilitate major exploration and discovery during students' first year at MIT.

### **Well-Being, Inclusion, and Diversity**

In addition to advancing economic pedagogy and developing the research talent of our students, the department has embarked on a number of initiatives designed to improve the well-being of our students and the department's environment. This became a top priority in 2018 after a Harvard-led survey identified significant adverse mental health

outcomes in top economics departments, including our own. That timing also dovetailed with an MIT-wide focus on these issues, including the MindHandHeart initiative. The department head, select faculty, Graduate Economics Association (GEA) leaders, DREFs (volunteer student peer counselors trained as department liaisons through MIT's Resources for Easing Friction and Stress program), academic staff, and others have been working over the past two years to identify and implement changes the department could make to improve well-being and promote a more inclusive and supportive environment. These included a number of the curricular changes discussed above, as well as other programmatic changes, and increased financial support to the GEA and DREFs for activities to connect students to one another and to the department.

Two of our faculty were recognized this year for their individual contributions to student well-being: Daron Acemoglu and Anna Mikusheva were among 12 MIT faculty recognized by Committed to Caring—a program celebrating mentorship and devotion to students' well-being.

We have also identified opportunities for the department to better connect with undergraduates, from concentrators to potential and declared majors, and the department head and undergraduate officer have worked with the UA to begin to implement a number of changes in that regard. A long-standing departmental objective has been finding ways to encourage more undergraduates to explore the field, which was a significant impetus behind the 2019 development of the discovery subject, 14.009 Economics and Society's Toughest Problems (discussed above). A particular focus in the past two years has been how to engage more women and students from underrepresented minority groups; Black people, especially, have been substantially underrepresented in economics, though MIT Economics has historically done better than national averages for undergraduates in this regard. The GEA expressed interest in supporting these efforts, and the department has been exploring inclusion of graduate students in mentorship and outreach initiatives.

Making needed progress on diversity, particularly racial diversity, requires focused effort. Discussions of racial diversity and inclusion took on intense urgency in the wake of the national anti-racism and Black Lives Matter protests early this summer. Department faculty and students, both graduate and undergraduate, are committed to stepping up to those challenges. The department's diversity officer, a role long held by the Department of Economics head, has been reconstituted as the sole department administrative responsibility for a senior faculty member, to provide the time and focus to direct new initiatives on diversity and create accountability. A faculty committee has been established to focus on anti-racism education, self-examination, and outreach, and both the GEA and UA have indicated their commitment to work with us on these important issues. We expect these to be important initiatives in AY2021 and beyond.

### **COVID-19 Responses**

When MIT suspended classes effective March 13, department faculty joined others around the Institute in preparing for the resumption of classes two weeks later as entirely virtual endeavors. The Institute rapidly deployed resources to facilitate this transformation, and the department's IT group jumped in to help faculty and students

implement solutions and ensure the department staff had the necessary technology to work from home. Remote teaching groups were set up at the Institute and department to exchange information and ideas, training seminars on Zoom were held, and faculty began the challenging work of reconfiguring 33 undergraduate and graduate classes for remote instructions. The resulting adaptations ranged broadly, from reproducing traditional in-person classes as best possible with synchronous Zoom classes, particularly in smaller discussion-based classes, to booking time with campus audio-visual staff before campus closed to professionally prerecord lectures for the remainder of the term so students could watch at times suitable for whatever time zone they were in—and combinations in between. Faculty and teaching assistants created new ways of interacting with students online, adapting to chat functions in lectures or adding small group discussions, and many converted scheduled exams to project- or paper-based assessments. With most fall 2020 classes likely to be remote, many of these investments and key learnings will guide faculty in designing AY2021 classes for successful virtualization.

The move to an entirely remote experience was especially unfortunate for our inaugural DEDP master's class. While those students had amply demonstrated their ability to navigate online instruction through the MITx portion of their program, the primary draw of the master's program was the opportunity to be on campus, interacting with faculty and other students. Faculty and J-PAL staff focused on ensuring that community, and the terrific start these students had made in their first two months on campus, were not lost in the transition online. This also required ensuring that planned summer capstone experiences could be converted or replaced by projects that were suitable for online completion. We were delighted by the continued enthusiasm and strong finishing performance of these students.

The department recognized that the interpersonal interactions that are such an important part of the residential campus programs, both between students and faculty and among students, would be jeopardized by the closing of campus access and that support structures could be further impaired as many students left Cambridge to join family or friends elsewhere. MIT quickly put supplemental structures in place to support undergraduates, and the department turned its focus to graduate students. We recognized the loss of campus access could be especially challenging for thesis students, who were not interacting regularly with faculty and other students through classes. One adjustment was the creation of the Econ-connect network, which matched every graduate student with at least one faculty or DEDP staff member committed to check in weekly with that student (ideally by video or voice), patterned on a similar program the Institute developed to keep undergraduates connected. Responses to this program were generally quite positive, and most continued the regular check-ins into the summer.

In addition to quickly pivoting spring courses for online instruction, many MIT Economics faculty joined other scholars in redirecting their research to target COVID-19-relevant work. The department launched a new [website to highlight this COVID-19 related research](#), with more than a dozen working papers posted by the end of June. This research has attracted considerable attention in the media, and a number of our faculty have participated in various online MIT events discussing their work and its implications for policy. In addition, the department held its first all-alumni/alumnae

online webinar, featuring research done by three faculty members—Jeffrey Harris, Parag Pathak, and Ivan Werning—in a panel discussion moderated by Department Head Nancy Rose. This event was well received, with 275 Course-14 alumni and friends of the department in attendance.

### **Future Plans and Development Initiatives**

The department continues to build on its record as a leading research and teaching institution with the highest caliber senior and junior faculty, graduate students, and undergraduates. A new generation of faculty, many of whom came to MIT as junior faculty and have built their careers here, is taking on growing responsibility for departmental leadership. The faculty is committed to expanding the presence of economics in the undergraduate experience at MIT and supporting new initiatives in cross-disciplinary offerings.

Delivering cutting-edge economics research and education is increasingly expensive in an era where outside sources of funding for graduate fellowships, seed funding for new faculty initiatives, and support for large-scale basic research are all becoming scarcer. The Economics Department therefore relies on gifts from alumni and other supporters to advance its research and educational mission. That support—whether modest gifts to the annual fund or substantial endowments for the future—is critical to our ongoing success. Ensuring the department has the resources it needs to continue its preeminence in both education and research has been a major focus of department leadership, and we have worked closely with the dean and provost, MIT’s resource development teams, and the department visiting committee on this mission.

A few highlights from AY2020 include the following:

- The establishment of a new professorship in honor of Institute Professor emeritus and Nobel Laureate Peter A. Diamond PhD '63, endowed by our alumna and long-time supporter C. C. Chen '63, Sloan '65, PhD '67); Stephen Morris was named the inaugural Peter A. Diamond Professor of Economics
- The creation of the Altman Family Fellowship Fund, endowed in honor of Economics visiting committee chair Roger Altman to support graduate students in the department
- The first year of support for Hausman Dissertation Fellows, a competitive fellowship created by a gift from Professor Emeritus Jerry Hausman for doctoral students in applied microeconomics and econometrics; this provides students with support to work exclusively on their dissertation research during the year; seven additional students have been named Hausman Dissertation Fellows for AY2021
- The creation of the Gordon B. Pye '55, PhD '63 Dissertation Fellowship, a competitive fellowship open to postgenerals doctoral students in any field within economics
- The first disbursements of awards from the Cara Nickolaus Graduate Student Fund, which was established in AY2019 in memory of graduate student Cara Nickolaus to support graduate student community and well-being

Incoming department head Glenn Ellison will continue to prioritize securing additional funds for graduate student support, endowed professorships, and faculty research support, working with MIT leadership, resource development staff, and the department's faculty and administrative staff to strengthen the department's financial base.

### **Selected Publications**

Faculty members have carried out research on a broad array of frontier topics in economics and attracted notice within the academic sphere and, in many cases, from the national and international press. A selection of publications during the academic year illustrates the scope of the department's research activities.

In addition to the publications mentioned below, department faculty have been active contributors to the burgeoning literature on COVID-19 related research, beginning in spring 2020 and accelerating since then.

Alberto Abadie published "Choosing Among Regularized Estimators in Empirical Economics: The Risk of Machine Learning" (co-authored with Max Kasy), *Review of Economics and Statistics*; "Using Synthetic Controls: Feasibility, Data Requirements, and Methodological Aspects," *Journal of Economic Literature*; "Sampling-based vs. Design-based Uncertainty in Regression Analysis" (with Susan Athey, Guido Imbens, and Jeffrey Wooldridge), *Econometrica*; and "Statistical Non-Significance in Empirical Economics," *American Economic Review: Insights*.

Daron Acemoglu published "The Wrong Kind of AI? Artificial Intelligence and the Future of Labor Demand" (co-authored with Pascual Restrepo), *Cambridge Journal of Regions, Economy and Society*; "Endogenous Production Networks" (with Pablo Azar), *Econometrica*; "Weak States: Causes and Consequences of the Sicilian Mafia" (with Giuseppe De Feo and Giacomo De Luca), *Review of Economic Studies*; "Sustaining Cooperation: Community Enforcement versus Specialized Enforcement (with Alexander Wolitzky), *Journal of the European Economic Association*; and "Robots and Jobs: Evidence from US Labor Markets" (with Pascual Restrepo), *Journal of Political Economy*.

Nikhil Agarwal published "Market Failure in Kidney Exchange" (co-authored with Itai Ashlagi, Eduardo Azevedo, Clayton Featherstone, and Omar Karaduman), *American Economic Review*.

George-Marios Angeletos published "Optimal Monetary Policy with Informational Frictions," *Journal of Political Economy*, and "Imperfect Macroeconomic Expectations: Evidence and Theory," *NBER Macroeconomics Journal*.

Joshua Angrist published "Inside Job or Deep Impact? Using Extramural Citations to Assess Economic Scholarship" (co-authored with Pierre Azoulay, Glenn Ellison, Ryan Hill, and Susan Feng Lu), *Journal of Economic Literature*, and "Maimonides' Rule Redux" (with Victor Lavy, Jetson Leder-Luis, and Adi Shany), *American Economic Review: Insights*.

David Atkin published "How Distortions Alter the Impacts of International Trade in Developing Countries" (co-authored with Amit Khandelwal), *Annual Review of Economics*.

David Autor published “The Fall of the Labor Share and the Rise of Superstar Firms” (co-authored with David Dorn, Lawrence Katz, Christina Patterson, and John Van Reenen), *Quarterly Journal of Economics*; “Disability Benefits, Consumption Insurance, and Household Labor Supply” (with Magne Mogstad, Andreas Kostøl, and Bradley Setzler), *American Economic Review*; “When Work Disappears: Manufacturing Decline and the Falling Marriage-Market Value of Men” (with David Dorn and Gordon Hanson), *American Economic Review*; “Family Disadvantage and the Gender Gap in Behavioral and Educational Outcomes” (David Figlio, Krzysztof Karbownik, Jeffrey Roth, and Melanie Wasserman), *American Economic Journal: Applied Economics*; and “The Work of the Future: Shaping Technology and Institutions” (with David Mindell and Elizabeth B. Reynolds), for the MIT Work of the Future Task Force.

Abhijit Banerjee published “A Theory of Experimenters: Robustness, Randomization, and Balance” (co-authored with Sylvain Chassang, Erik Snowberg, and Sergio Montero), *American Economic Review*, and “On the Road: Access to Transportation Infrastructure and Economic Growth in China” (with Esther Duflo and Nancy Qian), *Journal of Development Economics*.

Ricardo Caballero published “A Model of Fickle Capital Flows and Retrenchment” (co-authored with Alp Simsek), *Journal of Political Economy*, and “A Risk-centric Model of Demand Recessions and Speculation” (with Alp Simsek), *Quarterly Journal of Economics*.

Victor Chernozhukov published “Nonseparable Multinomial Choice Models in Cross-Section and Panel Data” (co-authored with Whitney Newey and Ivan Fernandez-Val) and “Conditional Quantile Processes Based on Series or Many Regressors” (with Denis Chetverikov, Alexandre Belloni, and Ivan Fernandez-Val), *Journal of Econometrics*.

Esther Duflo published “HIV Prevention Among Youth: A Randomized Controlled Trial of Voluntary Counseling and Testing for HIV and Male Condom Distribution in Rural Kenya” (co-authored with Pascaline Dupas, Thomas Ginn, Grace Makana Barasa, Moses Baraza, Victor Pouliquen, and Vandana Sharma), *Plos ONE*.

Glenn Ellison published “Policy Implications of Models of the Spread of Coronavirus: Perspectives and Opportunities for Economists” (co-authored with Christopher Avery, William Bossert, Adam Clark, and Sara Ellison), *Covid Economics*.

Amy Finkelstein published “A Strategy for Improving US Health Care Delivery – Conducting More Randomized, Controlled Trials” and “Health Care Hotspotting: A Randomized, Controlled Trial” (co-authored with Annetta Zhou, Sarah Taubman, and Joseph Doyle), *The New England Journal of Medicine*, and “Take-up and Targeting: Experimental Evidence from SNAP,” *The Quarterly Journal of Economics*.

Drew Fudenberg published “Learning Theory and Heterogeneous Play in a Signaling-Game Experiment” (co-authored with Emanuel Vespa), *American Economic Journal: Microeconomics*; “Predicting and Understanding Initial Play” (with Annie Liang), *American Economic Review*; “Payoff Information and Learning in Signaling Games” (with Kevin He), *Games and Economic Behavior*; “Training and Effort Dynamics in Apprenticeship” (with Luis Rayo), *American Economic Review*; and “Indirect Reciprocity with Simple Records” (with Daniel Clark and Alexander Wolitzky), *Proceedings of the National Academy of Sciences*.

Jonathan Gruber published “Paying for Medicaid—State Budgets and the Case for Expansion in the Time of Coronavirus” (co-authored with Benjamin Sommers), *The New England Journal of Medicine*; “Defensive Medicine and Obstetric Practices” (with Michael Frakes), *Journal of Empirical Legal Studies*; “The Affordable Care Act’s Effect on Patients, Providers and the Economy: What We’ve Learned so Far” (with Benjamin Sommers), *Journal of Policy Analysis and Management*; “Defensive Medicine: Evidence from Military Immunity” (with Michael Frakes) and “Non-Cognitive Deficits and Young Adult Outcomes: The Long-Run Impacts of a Universal Child Care Program” (with Michael Baker and Kevin Milligan), *American Economic Journal: Economic Policy*.

Paul Joskow published “Transmission Capacity is Needed to Decarbonize the Electricity Sector Efficiently,” *Joule*.

Stephen Morris published “Crisis: Equilibrium Shifts and Large Shocks” (co-authored with Muhamet Yildiz), *American Economic Review*; “Refinements and Higher Order Beliefs: A Unified Survey” (with Atsushi Kajii), *Japanese Economic Review*; and “Observational Implications of Non-Exponential Discounting” (with Andrew Postlewaite), *Revue Économique*.

Benjamin Olken published “The Development Effects of the Extractive Colonial Economy: The Dutch Cultivation System in Java” (co-authored with Melissa Dell), *Review of Economic Studies*, and “Designing Anti-Poverty Programs in the 21st Century: Evidence from Indonesia for the World,” *Bulletin of Indonesian Economic Studies*.

Parag Pathak published “Do Parents Value School Effectiveness?” (co-authored with Atila Abdulkadiroglu, Jonathan Schellenberg, and Christopher Walters), *American Economic Review*; and “Explicit vs. Statistical Targeting in Affirmative Action: Theory and Evidence from Chicago’s Exam Schools” (with Umut Mert Dur and Tayfun Sönmez), *Journal of Economic Theory*.

James Poterba published “Martin Feldstein,” *Business Economics*.

Nancy Rose published “Five Principles for Vertical Merger Enforcement Policy,” (co-authored with Jonathan Baker, Steven Salop, and Fiona Scott Morton), *Antitrust*.

Frank Schilbach published “Realizing the Potential of Digital Development: The Case of Agriculture” (co-authored with Raissa Fabregas and Michael Kremer), *Science*.

Robert Townsend published “Family Firms, Bank Relationships and Financial Constraints: A Comprehensive Score Card,” (co-authored with Alexander Karaivanov and Jesús Saurina), *International Economic Review*.

John Van Reenen published “Are Ideas Becoming Harder to Find?” (co-authored with Nick Bloom, Chad Jones, and Michael Webb), *American Economic Review*; “A Toolkit of Policies to Promote Innovation” (with Nick Bloom and Heidi Williams), *Journal of Economic Perspectives*; and “Can Helping the Sick Hurt the Able?” (with Felix Koenig, Barbara Petrongolo, and Nitika Bagaria), *Economic Journal*.

Alexander Wolitzky published “The Folk Theorem in Repeated Games with Anonymous Random Matching,” (co-authored with Joyee Deb and Takuo Sugaya), *Econometrica*.

Muhamet Yildiz published “Pretrial Negotiations under Optimism” (co-authored with Shoshana Wasserman), *RAND Journal of Economics*.

**Nancy L. Rose**

**Department Head**

**Charles P. Kindleberger Professor of Applied Economics**