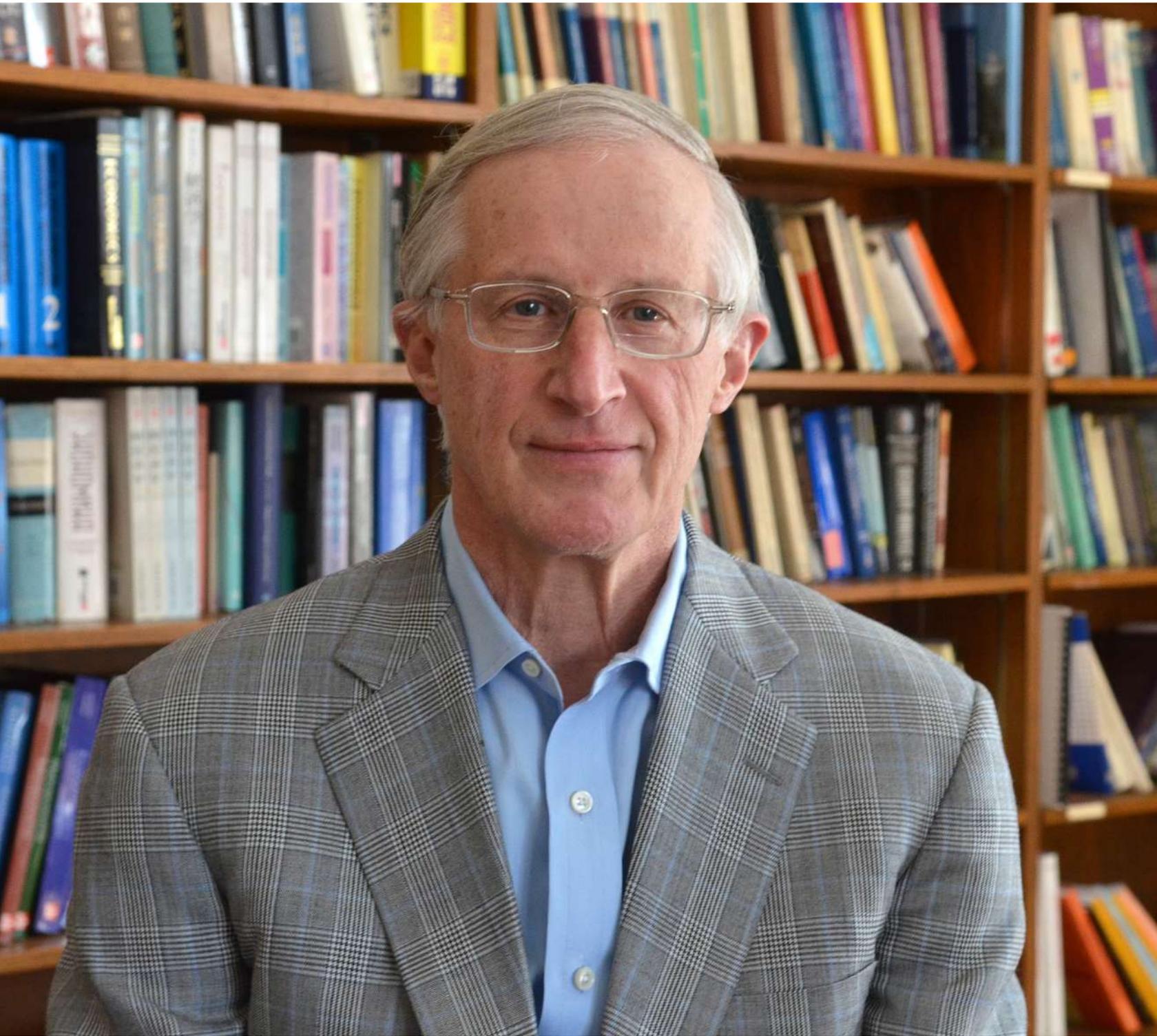


DEPARTMENT *of* ECONOMICS



WILLIAM NORDHAUS

2018 Nobel Prize Recipient in Economic Science

FIRSTLY THANK YOU

FOR YOUR SUPPORT!



Dear Alumni, Friends and Colleagues,

I am delighted to present you with the 2018 newsletter from the Department of Economics. A digital version can also be found on the departmental website, <http://economics.yale.edu>, as well as recent news, updates, and events.

The past academic year has been quite eventful, and we are excited to inform you of some of the highlights of the past year and give you an idea of what is ahead for us on the following pages.

At the beginning of the summer we received exciting news from President Peter Salovey and Provost Ben Polak. A successful fundraising initiative will allow us to add a new building and a new research center to the Department of Economics called the Tobin Center for Economic Policy. The new building will be adjacent to 28 and 30 Hillhouse Avenue, and substantial enough to create new spaces for faculty, graduate students and pre-doc and post-doc researchers. Blueprints are currently being drawn up which I hope to share with you next year.

The members of the department continue to be recognized for their outstanding research. William Nordhaus, Sterling Professor of Economics, has been awarded the Nobel Prize in Economic Science for his pioneering research on the economics of climate change. See the full article on page 4. Last fall Bill was also honored with the naming of a new endowed professorship donated by long-time friend of the University, Petr Aven. The inaugural professorship was awarded to Pinelopi Goldberg as the Elihu Professor of Economics. Incidentally, Penny will be on a public service leave starting this fall to take on the role of new chief economist of the World Bank. Continuing our travel through the world, Samuel Kortum, the James Burrows Moffatt Professor of Economics, won the 2018 Onassis Prize in International Trade for his research on the impact of technology on global trade. Sam is sharing the prize with his frequent collaborator, Jonathan Eaton '73 M.A., '76 Ph.D.

The department has been steadily growing with new faculty whom we are delighted to welcome. Marina Halac joined us from the Graduate School of Business at Columbia University. Her research focuses on delegation, relational contracting, and experimentation and innovation. Gerard Padro-i-Miguel is joining the Departments of Economics and Political Science from the London School of Economics, and is sure to strengthen our political economy and development groups. Lastly, Guillermo Noguera joins us from Warwick University, whose research focuses on the intersection of international trade and development economics.

In addition, John-Eric Humphries from the University of Chicago, and Cormac O'Dea from the University College of London were appointed Assistant Professors in the Department. Both served as postdoctoral fellows at the Cowles Foundation last year. Similarly, Anna Sanktjohanser is serving as a postdoctoral fellow at the Cowles Foundation this year before becoming an Assistant Professor of the Department next year. Anna is joining us from Oxford University where she completed her Ph.D. with research on repeated games and bargaining.

Looking ahead, Kaivan Munshi and Sönje Reiche will join the department in the next academic year. Kaivan is currently the Frank Ramsey Professor at Cambridge University whose recent work has examined the effect of community networks on education, health, and mobility, which are key determinants of growth and development. He will strengthen the development group in the Economic Growth Center. Sönje, also from Cambridge University, will join the economic theory group. Her current work is in contract theory, the economics of organization and issues of commitment.

With the beginning of the new academic year. I encourage all our undergraduate and graduate alumni to visit the department whenever you are in New Haven. The faculty, staff and I are always delighted to welcome you back to Hillhouse Avenue!

Remember to look us up on <http://economics.yale.edu>, follow us on Twitter, like us on Facebook, and send us your updates at economics@yale.edu.

A handwritten signature in black ink that reads "D. Bergemann". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Dirk Bergemann

Douglass and Marion Campbell Professor of Economics
Chair, Department of Economics

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WILLIAM NORDHAUS

2018 NOBEL PRIZE RECIPIENT IN ECONOMIC SCIENCE

William Nordhaus '63 B.A., '72 M.A., Sterling Professor of Economics at Yale University and the world's leading economist on climate change, has been awarded the 2018 Sveriges Riksbank Prize in Economic Sciences for "integrating climate change into long-run macroeconomic analysis."

"I am honored to be awarded the Nobel Prize in Economics for work on environmental economics," Nordhaus said. "But even more, I am grateful for the intellectual environment at Yale that taught me as a student, nurtured me as a teacher and scholar, and allowed the freedom to devote my life to one of the critical emerging issues of humanity."

Nordhaus shared the prize with Paul Romer, professor of economics at New York University's Leonard N. Stern School of Business.

Nordhaus' research has focused on economic growth and natural resources, the economics of climate change, and resource constraints on economic growth. Since the 1970s, he has developed economic approaches to global warming, including the construction of integrated economic and scientific models (the DICE and RICE models) to determine the efficient path for coping with climate change. These models are widely used today in research on studies of climate-change economics and policies. He has also studied wage and price behavior, health economics, augmented national accounting, the political business cycle, productivity, and the "new economy."

"This is fitting recognition of William Nordhaus' work on the economics of climate change," said Yale University President Peter Salovey. "Yale is absolutely thrilled to have one of our most distinguished faculty – who is also one of our most distinguished alumni – receive this great honor."

Born in Albuquerque, New Mexico, Nordhaus completed his undergraduate work at Yale in 1963 and received his Ph.D. in economics in 1967 from the Massachusetts Institute of Technology. He joined the Yale faculty in 1967 and in 2001 became a Sterling Professor of Economics – the highest honor given to a Yale faculty member. He is also a professor in Yale's School of Forestry & Environmental Studies.

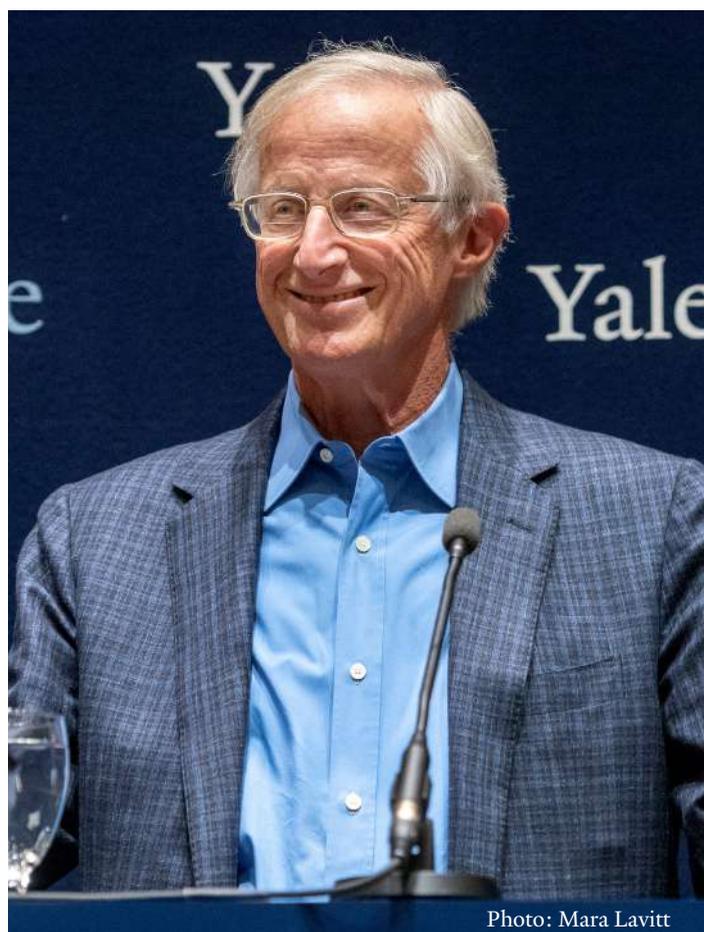


Photo: Mara Lavitt

From 1977 to 1979, Nordhaus was a member of the President's Council of Economic Advisers; from 1986 to 1988, he was provost of Yale University. He has served on several committees of the National Academy of Sciences on topics including climate change, environmental accounting, risk, and the role of the tax system in climate change.

His 1996 study of the economic history of lighting back to Babylonian times found that the measurement of long-term economic growth has been significantly underestimated. He returned to Mesopotamian economics with a study of the costs of the U.S. war in Iraq, published in 2002 before the war began, projecting a total cost as high as \$2 trillion. He directs the "G-Econ project," which provides the first comprehensive measures of economic activity at a geophysical scale.

Nordhaus is current or past editor of several scientific journals and has authored many books, among them “Invention, Growth and Welfare, Is Growth Obsolete?”; “The Efficient Use of Energy Resources”; “Reforming Federal Regulation”; “Managing the Global Commons”; “Warming the World”; and (jointly with Paul Samuelson) the classic textbook “Economics,” whose 19th edition was published in 2009. His book on economic modeling of climate change, “A Question of Balance,” was selected by Choice magazine as an Outstanding Academic Title of 2008. His most recent book, “The Climate Casino: Risk, Uncertainty, and Economics for a Warming World,” was published in 2013.

Nordhaus was the first chair of the Advisory Committee for the Bureau of Economic Analysis and of the American Economic Association Committee on Federal Statistics. In 2004 he was awarded the prize of “Distinguished Fellow”

by the American Economic Association (AEA). He served as president of the AEA for 2014–2015 term.

Nordhaus is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences. He is on the research staff of the National Bureau of Economic Research and the Cowles Foundation for Research at Yale and has been a member and senior adviser of the Brookings Panel on Economic Activity, Washington, D.C., since 1972. He served as the chair of the Board of Directors of the Boston Federal Reserve Bank from 2014 to 2015.

He received the BBVA Foundation’s 2017 Frontiers of Knowledge Award for his work on climate change.

Nordhaus lives in downtown New Haven with his wife, Barbara, an assistant clinical professor for social work at the Yale Child Study Center.

HOMEcoming FOR ECONOMETRIC SOCIETY



The Cowles Foundation for Research in Economics has announced that the Econometric Society will return to Yale after more than 32 years. The business and editorial offices will once again operate under the auspices of 30 Hillhouse Avenue.

Seen as one of the most prestigious learned societies in the field of economics, the Econometric Society was founded in January 1930 by Yale economist Irving Fisher, Norwegian economist Ragnar Frisch, and Princeton economist Charles F. Roos. In 1933, the Society’s journal, *Econometrica*, was created with financial backing from Alfred Cowles, founder of the Cowles Commission for Research in Economics (subsequently known as the Cowles Foundation). The business and editorial offices were initially part of the Cowles Commission, located in Colorado Springs, Colorado, with Alfred Cowles B.A. ‘13 serving as the Society’s first secretary, treasurer, and circulation manager.

The Society administrative offices followed the Cowles Commission when it moved to Chicago in 1939, and eventually to New Haven in 1954 when the Commission relocated to Yale. It was also at this time that the Cowles Commission changed its name to the Cowles Foundation. In 1975, the Society offices moved from Yale to Northwestern University, where they were housed for 30 years. In 2007, the Econometric Society offices moved to New York University where they have remained until now.

“It is a great pleasure to bring them back,” said Larry Samuelson, director of the Cowles Foundation, who is also a fellow of the Econometric Society.

The Society is a self-supporting, non-profit organization and operates on behalf of its members. It does not receive grants or aid from any outside organization, however, it does accept gifts from individual donors. To date, the Society has approximately 670 fellows (28 whom are Yale-affiliated), and more than 6320 members.



First *Econometrica* issue, January 1933; insert Alfred Cowles

TOBIN CENTER FOR ECONOMIC POLICY

A new center and building for the Department of Economics



ENHANCING YALE'S ROLE IN INFORMING DATA-DRIVEN DISCUSSION OF PUBLIC POLICY

Yale has announced the formation of a new research enterprise, the Tobin Center for Economic Policy at Yale, named for the late James Tobin, iconic faculty member and Nobel laureate. The center will advance rigorous, evidence-based research intended to define and inform policy debate.

Alumni, parents, and friends of the University have contributed more than \$60 million to establish the Tobin Center, including an anonymous lead gift of \$30 million. Anita and Josh Bekenstein '80, and Amandine and Stephen Freidheim '86, are among the top donors making gifts to endow the center and fund construction of a new building to house it.

"The Tobin Center will enhance Yale's vital role in informing data-driven discussions of public policy," said President Peter Salovey '86 Ph.D. "I am very grateful to our donors for supporting Yale's emphasis on the importance of using empirical

approaches in the social sciences to address the greatest challenges of today."

The Tobin Center will convene faculty members, students, and visiting experts, provide research grants, and communicate its findings to a broad audience that includes policy makers and the public. The center will have a faculty director, executive director, and a cadre of faculty fellows drawn from departments and schools across the university.

The establishment of the Tobin Center is part of a strategic investment to build Yale's strength in data-driven economic policy. It will also address a need in the United States for non-partisan, policy-relevant research by first-rate academic economists.

Yale's Department of Economics is consistently ranked among the world's best in econometrics, economic theory, industrial organization, international trade, and the study of developing

economies. The new center will draw on these strengths and build further capabilities in domestic policy analysis. It will also invite the participation of Yale's social sciences departments in the Faculty of Arts and Sciences, the Schools of Law, Management, Forestry, and Public Health, and other university resources. This broad foundation will position the Tobin Center as a leading voice on critical issues like healthcare, education, tax reform, environmental economics, and other concerns that affect the daily lives and well-being of millions of people in the United States.

"Our students go on to be leaders in public policy and other areas to serve all sectors of society. The center's internationally renowned faculty members will teach our young scholars to think critically about diverse aspects of local and global communities and to apply rigorous analysis to address policy questions," Salovey said.



“The Tobin Center will enhance Yale’s vital role in informing data-driven discussions of public policy.”

- **President Peter Salovey**

A managing director at Bain Capital, Josh Bekenstein was appointed a successor trustee to the Yale Corporation in 2013. “It is extremely rewarding to Anita and me to support Yale’s top priorities, and establishing this new economic center at Yale will position the University to have an impact on domestic policy issues, an important role for Yale,” said Bekenstein.

Stephen Freidheim, the founder of Cyrus Capital and a former student of Tobin, said, “Professor Jim Tobin had a profound impact on me. He devoted his energy and vast intellect to applying economics to the betterment of people and society. He was both brilliant and compassionate. The application and implementation of thoughtfully structured economic theories by great Yale professors and students is a bedrock of Yale’s history in economics and has had a far broader positive impact on the welfare of society, our university, and so many individuals.

This center celebrates Yale’s proud history, and I hope it will more firmly cement Yale as the world’s

leading university on applying rigorous, academic economic thought to real-world issues. It will be a profound, enduring, and growing hallmark of the study of economics at Yale going forward.”

Ben Polak, University Provost, will appoint a faculty planning committee in fall 2018, and the center will roll out its activities beginning in spring 2019.

To realize the proposed building, the University will select an architect this summer and start design work; the facility is expected to open in 2022.

Plans for the new building will include faculty offices and space for research fellows, graduate students, and undergraduate researchers, along with convening spaces for workshops and other events. The goal is a state-of-the-art facility that can support a vibrant community of scholars conducting data-driven domestic policy analysis.

Polak describes the mission of the center as setting the agenda for the economics profession: “By founding the Tobin Center, we are saying that a world-class



“By founding the Tobin Center, we are saying that a world-class economics department should contribute to domestic policy.”

- **Provost Ben Polak**



“With the Tobin Center, Yale can provide new opportunities for faculty members to conduct ‘big idea’ research on crucial issues.”

- **FAS Dean Tamar Gendler**

economics department should contribute to domestic policy. We will be throwing empirical light on the issues, suggesting and testing ideas, and finding what works and what does not.

“It will benefit the University as a whole,” Polak added. “A great university thrives in engagement with the great policy debates of its era.”

Tamar Gendler, Dean of the Faculty of Arts and Sciences, said, “With the Tobin Center, Yale can provide new opportunities for faculty members to conduct ‘big idea’ research on crucial issues, with an aim toward communicating their research findings to those who develop and implement public policy. The center will energize the many brilliant minds at Yale who already look at policy-relevant questions through an economic lens. At the same time, it will help to attract leading scholars to join the faculty across a range of disciplines.”

(continued page 19)

Q&A WITH STEPHEN FREIDHEIM, TOBIN CENTER DONOR



Stephen C. Freidheim is one of the lead donors for the new Tobin Center for Economic Policy. Steve is a long-time supporter of the Department of Economics. He received his B.A. in Economics in 1986 from Yale University and wrote his senior thesis with Jim Tobin. Steve is the Chief Investment Officer and founder of Cyrus Capital Partners, an investment advisory firm with offices in New York and London. He chairs the Executive Committee of the Board at the Peterson Institute for International Economics, he is a Board Member of the Council on Foreign Relations, and he serves on the Yale University Council. Dirk Bergemann spoke with him about the new Tobin Center.

Dirk Bergemann: As one of the lead donors, what was your motivation to support the creation of the Tobin Center?

Stephen Freidheim: I love the idea of a center within the Economics Department that focuses on practical and applied economics. A lot of opinions exist on a whole variety of issues, but rigorous analysis is too often absent from the discourse. I think Yale's history of rigorous fact-based analysis within its Department of Economics can and should be leveraged throughout many more areas. I also think that Tobin is a perfect embodiment of this ideal, because he took the study of economics and applied it to making society better.

DB: What do you see as some of the big pressing issues for economic policies over the next five to ten years?

SF: Opportunities for strong, rigorous fact-based analysis are available in many fields, including environmental policy, public policy, health care, energy policy, and the list goes on. Debate can get very emotional, and often political; yet, there are real economics behind issues in this area. This discourse can need an analytical rudder. Whether it be on global warming, or it be on fossil fuels, there are real economic variables to be considered.

DB: Regarding the activities of the Tobin Center, what is your hope or expectation on what the center can add to the Economics department or to the University?

SF: Yale's Economics Department is one of the best in the world, and I think the Tobin Center will extend Yale's lead as the top economics department amongst peer universities. The department will greatly benefit and be advantaged by bringing economics into the studies of political science, environmental studies, architecture, hard sciences, etc—all of which is truly exciting. I'd add that, as exciting as the opportunity set is, it is the department that chooses the joint research programs. I think it is important that there is complete independence and academic integrity, which must be upheld.

DB: While an undergraduate at Yale, did you take any courses taught by Tobin or interact with him personally?

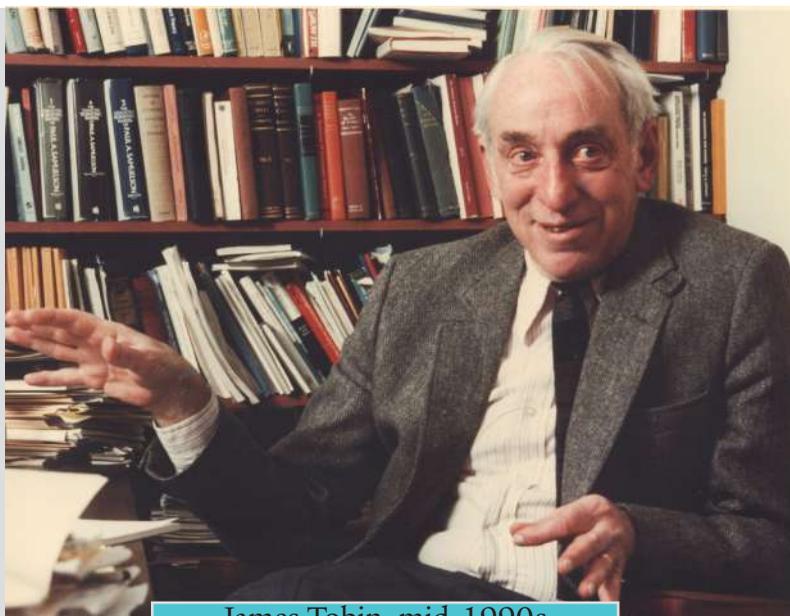
SF: Yes, I was in Professor Tobin's Macroeconomics class, and then he was my thesis adviser, so I got to know him very well. I was fortunate that he loved to teach and spend time with his students. Over time I got a glimpse into his brilliant mind and got to know him as an individual. I came to respect both his vast intellect, and him as a wonderful man.

DB: What was your senior thesis about?

SF: I wrote my thesis in the mid-80's during a period of vast and rapid breakthrough technological change, particularly in the service sector (the rollout of the 1G cell network, the ubiquity of the pager and the personal computer, etc.). My thesis analyzed these breakthrough technologies and we attempted to evaluate and quantify the impact on productivity going forward. The existing econometric models were better at assessing productivity gains in the manufacturing sector. We essentially concluded that the productivity gains in the U.S. that we expected to see were likely to far exceed what the econometric models of the time would capture.

DB: How has your economics degree helped you in your professional life?

SF: Two things. One, is how to think through problems. Critical thinking is a foundational pillar of the study of economics at Yale and more universally of a liberal arts education at Yale. How to think through issues; how to break them down, deconstruct, and reconstruct them. This critical and analytical approach is how I learned to think at Yale and essentially how I've addressed problem resolution in my career. Understand the issues, break them down into their individual components, reconstruct them. In my job looking at distressed companies, we often do exactly that. We literally break down the companies into individual building blocks; access each block; keep, discard, or replace each block; then rebuild the company back into a stronger and more sustainable enterprise.



James Tobin, mid-1990s

The second has much more to do with the lasting influence that Tobin, the man, had on me. Jim had completely dedicated his brilliant mind to develop economic theories to be applied to better society. He wanted to reduce the human misery caused by severe economic cycles, like the Great Depression, which he had personally witnessed. Increasingly in my career, I think about the importance of having a positive impact on society. I think about this in my career, my company, and my life. Supporting Yale is certainly an easy and definitively good way to make society better. This is an important reason that being part of The Tobin Center has been so rewarding personally.

DB: The Tobin Scholars is one of the activities that you support as well, correct?

SF: Yes! The Tobin Scholars is an idea that was developed with David Swensen (who also studied under Jim Tobin). We really did it together. I wanted to do something for my 25th reunion to honor this great man and Yale professor. I was delighted that it also created a bit of a revival on campus for Jim, his lasting ideas, and his ideals.

DOUGLAS DIAMOND RECEIVES WILBUR CROSS MEDAL

Douglas Diamond (Ph.D. '80), Merton H. Miller Distinguished Service Professor of Finance, Booth School of Business, University of Chicago, was a recipient of this year's [Wilbur Lucius Cross Medal](#) for his outstanding achievements and contribution to society. The medal is an honor presented annually by the Yale Graduate School Alumni Association to a small number of outstanding alumni, recognizing distinguished achievements in scholarship, teaching, academic administration, and public service.

"The totality of his work has had an enormous influence, not only in the academic research community, but in the public sphere of bank regulations," said Department of Economics Chair, Dirk Bergemann.



The Department of Economics and the Cowles Foundation sponsored a lecture where Professor Diamond gave a talk, "Flexibility and Industry Liquidity and Finance Cycles." The medal was presented at a gala dinner at the Yale Center for British Art.

Professor Diamond, who specializes in the study of financial intermediaries, financial crises, and liquidity, earned two master's degrees from Yale in 1976 and 1977. He later went on to receive a Ph.D. in Economics from Yale in 1980. He has been on the faculty at the University of Chicago's Booth School of Business since 1979.

ECONOMICS ALUM ON THE BOARD OF TRUSTEES

With the announcement of the new Yale Board of Trustees, including Senior Trustee, Catharine Bond Hill '85 Ph.D., the Economics Alumni News was inspired to ask Dr. Hill and current board member Paul Joskow, '72 Ph.D., why they choose to study economics and how the discipline has influenced them in their careers.



Catharine Bond Hill '85 Ph.D.

WHY DID YOU DECIDE TO STUDY ECONOMICS?

HILL: I always loved math, but also found policy issues intriguing. When I took my first economics course, I immediately knew I'd found a field that matched my interests.

JOSKOW: I really didn't know much about economics before I was an undergraduate at Cornell, but I took an introductory microeconomics course that I really liked. I decided I wanted to become a professor because I worked as a research assistant for a Cornell professor and for a consulting firm during a couple of summers. I liked research, I liked teaching, and I liked the lifestyle of being a professor. Professor Alfred Kahn was my undergraduate advisor and he made economics interesting, even exciting.

WHAT ECONOMICS CLASS DID YOU ENJOY THE MOST AS A STUDENT AND WHY?

HILL: This is a hard one. So many were really amazing. Bill Nordhaus, Bill Brainard, Herb Scarf, Jim Tobin, and Paul Krugman all come to mind. I remember Tobin's class because, although it was scheduled for the standard hour and fifteen minutes, he'd go as long as he wanted (always longer than scheduled) and no one objected! I remember a certain simplicity and elegance to Scarf's classes. Rather than volume, he had a set of core principles that he wanted us to understand deeply, and he somehow managed to accomplish that class after class. Don Brown was our DGS in those days, and although I never took a course from him, he was important to our cohort of students. He paid attention to how we were doing and his door was always open.

JOSKOW: I had a lot of good professors: Richard Nelson, Al Klevorick, Jim Tobin, David Cass, Bill Parker, and Marc Nerlove. I took microeconomics, rather than macroeconomics, with Tobin and my TA was Janet Yellen. It was a terrific class; I really enjoyed it. I also liked, very much, the first graduate course in industrial organization taught by Richard Nelson and John McGowan.

HOW HAS YOUR ECONOMICS DEGREE HELPED YOU IN YOUR PROFESSIONAL LIFE?

HILL: I followed the academic route and started as a faculty member at Williams College in the Economics Department. From there, I moved to the Provost's Office. That is a position at Williams, but also at many other colleges and universities, that attracts economists. And, in turn, the provost position is great training for becoming a college president, with both academic and financial responsibilities.

My current job, managing Ithaca S + R, is focused on improving higher education attainment in the US, through research and advising. My economics training, and much of my research work and administrative experiences over the last two decades, are key to this work.

JOSKOW: After I got my Ph. D. at Yale in 1972, I came to MIT as an assistant professor and I've spent basically my whole career at MIT. I have taught many different undergraduate economics courses; the two-semester core industrial organization sequence, and supervised the industrial organization lunch and workshop. I have been lucky to teach the graduate industrial organization courses with Dick Schmalensee, Jean Tirole, and Nancy Rose, all of whom became co-authors of research papers and books. I have enjoyed supervising many Ph.D. students. I've also published about 150 papers and six books. In 2008, I became the president of the Alfred P. Sloan Foundation and remained in that position for 10 years before returning to MIT this last January.

WHAT ADVICE DO YOU HAVE FOR UNDERGRADUATE OR PERSPECTIVE GRADUATE STUDENTS WANTING TO PURSUE AN ECONOMICS DEGREE?

HILL: Take the classes that you find really interesting. If it is economics, great! An economics major at the undergraduate level prepares you for all different kinds of paths after college. And, if you go on to get a Ph.D., again, it will prepare you well for a variety of opportunities, from an academic path to all kinds of options in the private sector.

JOSKOW: I think it's important for undergraduates to take all the basic economics courses; microeconomic and macroeconomic theory, and econometrics. It's also important to take a lot of mathematics and statistics because those subjects are very important for graduate school and research. I advise my undergraduate students to take a couple of years off after they get their degrees and to get a job working in the economics industry as a research assistant. Good places to work at are the Federal Reserve Board, one of the regional Federal Reserve Banks, the IMF, Antitrust Division of the Department of Justice, Resources for the Future, Brookings, or for a professor at a research university. After this experience students can then apply for a Ph.D. program if they really learn that they love doing economics research. Ph.D. programs are hard work, and it really is important for undergrad students to get a good grasp, not only for learning the tools to get in touch with the field, but to see if they really love it, because otherwise it can be a real drag.



Paul Joskow '72 Ph.D.

DO YOU THINK YOUR ECONOMICS DEGREE HELPS YOU IN FULFILLING YOUR RESPONSIBILITIES AS A MEMBER OF THE BOARD OF TRUSTEES? IF YES, IN WHAT WAYS?

HILL: Ron Ehrenberg, a higher education economist, wrote a paper on the overrepresentation of economists in higher education leadership positions, and speculated on explanations. He rejects the notion that economists are particularly good at balancing budgets or investing endowments well, although some are in fact good at this, and instead comes down on the side of understanding opportunity costs and trade-offs. Decision making in higher education almost always comes down to doing some things and not others, and economists understand this.

JOSKOW: My economics education certainly helps. However, what I think is more important than my economics education is my experience at a fine research university and service on the boards of several for-profit and non-profit organizations. I think my experience at MIT as a professor, head of the economics department, and director of a research center, gives me a good perspective on the issues that come to the Yale Corporation. My experience on the boards of other organizations gives me a good perspective of the governance responsibilities of a Yale trustee.

JOE FEST 2018

A conference in honor of Joe Altonji's 65th birthday was held in early September. The two-day event paid tribute to Altonji '75 M.A., hosting nearly 120 colleagues including several of his current and former students. A dozen presenters gave talks on labor economics, with many antidotes and much reminiscing in between.



Joe Altonji (center) with his current and former students

FACULTY APPOINTMENTS



Marina Halac

The department welcomes six new faculty members for the upcoming academic year. All are world-class scholars who bring a diverse background of scholarship and research to Yale.

Marina Halac was appointed Professor of Economics. Her research is in contract theory and game theory with much of her work focusing on the provision of incentives. She was the 2016 recipient of the Elaine Bennett Research Prize, which is awarded biennially by the American Economic Association to recognize outstanding research by a woman. She has a Licentiate in Economics from Universidad del Cema, Argentina, and received her Ph.D. in Economics from the University of California, Berkeley.



Kaivan Munshi

Kaivan Munshi was appointed Professor of Economics. His research career has been devoted to the analysis of communities and their interaction with economic activity. His professorship begins in the fall 2019. He holds a Ph.D. from MIT, a M.S., M.C.P. from the University of California, Berkeley.



Guillermo Noguera

Guillermo Noguera is joining the Department of Economics as a Senior Lecturer. His research is in international trade, with a focus on understanding the causes and consequences of the cross-border fragmentation of production. He has a Licentiate in Economics from Universidad del Cema, Argentina, and has received his Ph.D. in Economics from the University of California, Berkeley.

Gerard Padró i Miquel joins the department as a Professor of Economics with a joint appointment in the Department of Political Science. His interests include the political economy of developing countries, political and economic history, and civil war and conflict, and has published work on the ethnic underpinnings of dictatorships and civil war. He holds a Ph.D. in Economics from MIT, and an M.Sc. in Econometrics and Mathematical Economics from LSE.



Gerard Padró i Miquel

Sönje Reiche will join the Economics Department as a Senior Lecturer in the Fall of 2019. She works on problems in Information Economics, Mechanism Design and Contract Theory, with her current work focusing on the Economics of Advice. She holds a Ph.D. and M.Sc. in Economics from the LSE, and an M.Sc. in Mathematics from the University of Bonn.



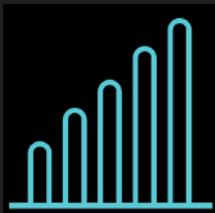
Sönje Reiche

Anna Sanktjohanser will join the department as an Assistant Professor in the fall 2019 after first serving as a Cowles Foundation Postdoctoral Fellow this year. She is currently a postdoctoral fellow at the Toulouse School of Economics where she is working on bargaining and reputation. She received a Ph.D. in Economics from the University of Oxford in 2017.



Anna Sanktjohanser

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GRADUATE
COURSES

FACULTY IN THE NEWS



JOSEPH ALTONJI

Joseph Altonji was awarded the [2018 IZA Prize](#) in Labor Economics to recognize his seminal contributions to the economic analysis of labor supply, family economics, and discrimination. A conference was held in honor of his 65th birthday in early September.



PINELOPI KOUJIANOU GOLDBERG

Pinelopi Koujianou Goldberg, the Elihu Professor of Economics at Yale, has been named [chief economist of the World Bank](#). Her term begins this fall at which time she will be on extended leave during her appointment.



SAM KORTUM

Samuel Kortum won the [2018 Onassis Prize](#) in International Trade for his research on the impact of technology on global trade. The prize is awarded to the world's foremost academics to honor outstanding academic achievements that have had international significance.

Merton J. Peck Prize Recipients



Amand Berry Booser Chalioti Frick Hawkins Humphries Koker Peters Samuelson Swensen Takahashi Tsyvinski

Thirteen Economics faculty have been selected to receive the Merton J. Peck Prize for excellence in undergraduate teaching. As the award's inaugural year, the prize covers both sustained excellence in teaching over the past decade, as well as more recent teaching efforts. The distinguished faculty members are: Marnix Amand, Steven Berry, Michael Booser, Evangelia Chalioti, Mira Frick, William Hawkins, John Eric Humphries, Tolga Koker, Michael Peters, Larry Samuelson, David Swensen, Dean Takahashi, and Aleh Tsyvinski.

The award honors Joe Peck who was the Thomas DeWitt Cuyler Professor of Economics. A distinguished scholar of industrial organization and a most able administrator, Peck was a devoted teacher and mentor of Yale undergraduate and graduate students.



MARK ROSENZWEIG

Mark Rosenzweig, Economic Growth Center Director, was honored with a [two-day symposium](#) last November for his distinguished career at Yale. The event welcomed Professor Rosenzweig's coauthors, colleagues, former graduate students, and family members, 15 of whom gave formal talks.



LARRY SAMUELSON

Larry Samuelson, the Cowles Foundation Director and A. Douglas Melamed Professor of Economics, has been named a coeditor of a new American Economic Association journal called the [American Economic Review: Insights](#). Publication is expected sometime in 2019.



ROBERT SHILLER

Robert Shiller, the Sterling Professor of Economics and Nobel laureate, was one of three honorees to receive a [Gold Honor Medal](#) from the National Institute of Social Sciences. He was also awarded the 2017 [Truman Medal](#) for Economic Policy and the [Kiel Institute's Global Economy Prize](#).

Since emerging a decade ago, Bitcoin and other digitally based cryptocurrencies have captured the imaginations of tech wizards, Wall Street bankers, and investors of all stripes.

Proponents argue that cryptocurrencies, which are decentralized and function outside the control of governments, could someday replace national currencies as the primary means of exchange. Skeptics believe that virtual currencies amount to smoke and mirrors and expect their value to crater.

In a new study, Yale economist Aleh Tsyvinski and Yukun Liu, a Ph.D. candidate in the Department of Economics, provide the first-ever comprehensive economic analysis of cryptocurrency and the blockchain technology upon which it is based.

Tsyvinski, the Arthur M. Okun Professor of Economics at Yale, described their work and findings to Yale News. An edited transcript follows.

What got you interested in studying cryptocurrency?

There is a lot of mystique surrounding cryptocurrency. It's a new instrument, but what exactly is it? Is it an asset or just a fad? There is obviously broad interest in cryptocurrency because many people are investing in it. Everybody from your local bartender to Goldman Sachs executives is talking about it, but most of the research on cryptocurrency comes from a computer-science perspective. A comprehensive economic analysis is, however, lacking.

We've done something very simple. We said: Let's use textbook finance tools to help us better understand cryptocurrency. We looked at three major cryptocurrencies: Bitcoin, Ripple, and Ethereum. We wanted to identify their basic properties. We

examined whether they behaved like other asset classes, specifically stocks, traditional currencies, and precious metal commodities. We also gauged their potential for benefiting or disrupting various industries.

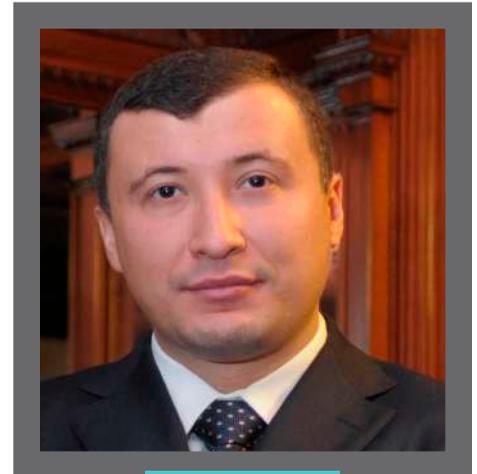
What did you learn about cryptocurrency's basic properties?

We documented a high return but with a lot of volatility. Does the high return compensate for the high volatility? This is called the Sharpe ratio, which measures the performance of an asset by adjusting for risk. Surprisingly, we found that cryptocurrency's Sharpe ratio shows that the return is higher than the risk implied by its volatility. It's higher than the Sharpe ratio for stocks and bonds, but not drastically so. There have been asset classes and trading strategies with Sharpe ratios that are either the same or similar to cryptocurrency's. So if you just look at return versus volatility, cryptocurrency looks more or less normal.

Does cryptocurrency behave like other asset classes?

In my introduction to macroeconomics course, I teach my students that money has several functions. It can act as a unit of account, which is a function of traditional currency. Money can also be a way to store value, which is how gold and other precious metals function. You put it in a safe, and tomorrow you can use it for something else. Does cryptocurrency serve one of these two functions? Or is it a bet on blockchain technology dramatically disrupting several industries, which is to say: Does it behave like stocks?

To answer these questions, we looked at whether cryptocurrency returns can be explained by the same factors that drive returns of stocks, currencies, or precious metal commodities. For stocks, we examined 155 potential risk



Aleh Tsyvinski

factors in the finance literature and found that almost none of them account for the returns of cryptocurrencies. They are not like stocks.

We also found no similarities between the behavior of cryptocurrency and five major traditional currencies – the Euro, Australian dollar, Canadian dollar, Singaporean dollar, and the British pound. Finally, we saw no link between the behavior of cryptocurrency and gold, silver, or platinum. Our findings cast doubt on the popular narratives that cryptocurrencies derive their value from either serving as a unit of account, such as the usual currencies, or as a store of value, such as precious metals.

If cryptocurrency does not behave like these traditional assets, then is it possible to predict its performance?

While we discovered that cryptocurrency behaves differently than traditional asset classes, we also found that investors can better understand cryptocurrencies by applying common asset pricing tools to factors specific to them. We show that some of the factors people use to predict the performance of traditional asset classes can be used to meaningfully predict cryptocurrency's behavior.

The first is called the momentum effect, which basically means that when an asset increases in value, it will tend to rise even higher. That is a feature of just about every known asset class, and we found that it strongly affects cryptocurrency. To take advantage of momentum effect, we have designed a simple strategy that says an investor should buy Bitcoin if its value increases more than 20% in the previous week. This strategy generates outstanding returns and a very high Sharpe ratio.

The second factor strongly influencing cryptocurrency is the measure of investor attention. We asked the following: If there is an abnormally high number of mentions of the cryptocurrencies we studied in either Google search or on Twitter, will their returns go up? It turns out that they will. At the same time, we found that negative investor attention, such as an increase in the use of the search phrase “Bitcoin hack,” will generate negative returns for cryptocurrencies.

Were there potential factors you thought would predict cryptocurrency’s behavior but do not?

Yes. The first was the cost of mining, which is the price of producing cryptocurrency. We were surprised to see that it does not predict cryptocurrency returns. The second is the price-to-“dividend” ratio, which is one of the most important factors in assessing stocks. Is the price of this stock too high compared to the earnings or the fundamental? Cryptocurrency obviously does not pay dividends, but one can still study a similar metric. We found that a proxy for a price-to-dividend ratio — asking whether the price of a cryptocurrency is too high for its fundamental — does not predict cryptocurrency returns.

The same thing is true for volatility, which is actually quite surprising. One would have thought that the more volatility, the higher the return

to compensate that. That is not the case. Neither high nor low volatility strongly predicts cryptocurrency returns.

What are the chances that Bitcoin or other cryptocurrencies will completely collapse in value?

It is reasonable to consider the probability, in the view of the markets, that the value of Bitcoin will fall to zero and become useless. Our calculation is 0.3%. If you are completely risk neutral, then based on the historical performance of cryptocurrency, you would assign a probability of 0.3% that its value will drop to zero. For comparison, we also calculated the crash probabilities for traditional currencies. Their crash probabilities are several degrees of magnitudes smaller. For example,



Euro is about 0.009%, the Australian dollar is about 0.003%, and the Canadian dollar is about 0.005%.

What did you learn about cryptocurrency’s potential to change or disrupt industries?

People speculate that cryptocurrency could disrupt all kinds of industries, from music to finance to supply chains. We took 354 industries in the United States and 137 industries in China, and we asked the following question: Are the returns on the stocks in those industries affected by cryptocurrency?

We were trying to assess what the market thinks of cryptocurrency. People talk about which industries could be affected, but we were not asking a hypothetical question about what people think will happen.

We sought to understand how the market perceives which industries could be affected by cryptocurrency.

We created an index of the potential disruption of cryptocurrency to every major industry. For example, we found that the healthcare and consumer goods industries have significant and positive exposures to Bitcoin returns, while the finance, retail, and wholesale industries have no exposure to Bitcoin at all. Most surprisingly, we found evidence that the market perceives Ethereum technology as a potential disruptor in the financial industry. We don’t give explanations, we just document this behavior, but one explanation may be that Ethereum is essentially based on smart contracts, distinguishing it from Bitcoin, which is intended to function as an alternative method of payment.

Based on your analysis, how much Bitcoin should a typical investor hold?

Keep in mind that we’re not offering investment advice, but it is a very basic question that one would ask about any asset class, and we approach the question at the end of our study. When you invest in your retirement, Vanguard or whatever platform you use will suggest how to best allocate your portfolio. We did the same for cryptocurrency. If you as an investor believe that Bitcoin will perform as well as it has historically, then you should hold 6% of your portfolio in Bitcoin. If you believe that it will do half as well, you should hold 4%. In all other circumstances, if you think it will do much worse, then you should still hold 1%. Of course, one has to remember that, as with any other assets, past performance is not a guarantee of future returns. Maybe cryptocurrency will completely change its behavior, but currently the market does not think it will.

YALE ECON STUDENTS PLACE AT FED CHALLENGE

Six Yale Economics undergraduate students took part in the 1st District College Fed Challenge competition last November held at the Federal Reserve Bank of Boston, which hosted more than 20 college and university teams from around New England. Competing for the first time in several years, Yale's team made it to the final round of five schools and received an honorable mention. The competition is designed for undergraduate students to analyze economic and financial conditions and formulate a monetary policy recommendation, modeling the Federal Open Market Committee. The team was advised by Economics Senior Lecturer, **William English**.



From left to right - tournament official, Bill English, Sienna Gough, Lydia Wickard, Michael Mei, Will McGrew, David Rubio, Rohit Goyal (Photo: Deb Bloomberg)

WOMEN IN ECONOMICS



This year saw the creation of the **Women in Economics** undergraduate organization which stemmed from a national campaign to raise awareness of underrepresented women in the field of economics. The goal of the group is to support women pursuing a degree in economics and to introduce more undergraduate women to the field, and is dedicated to building a broad, supportive, and engaged community within the department. During its inaugural year, the group showcased a wide variety of fields within economics, brought together undergraduates, graduate students, and faculty by hosting “bluebooking” events for perspective students and graduate panel discussions, and hosted renowned women in the discipline, including Dr. Rohini Pande from the Harvard Kennedy School.

VIDEO PROMOTES DEPARTMENT

The Department of Economics premiered a new video called, “Why Choose Yale Economics?” targeting potential majors and students of interest. The five-minute video shows interviews with economics majors, alumni, and faculty members to highlight the many paths students can take majoring in economics. What’s more, the video puts to rest some of the stereotypical career paths economics is thought to foster by showing how pervasive economics is in other fields and industries.

The video is the creation of two recent Yale College graduates, Wayne Zhang (‘19) and Briana Burroughs (‘18). The year-long project was the brainchild of Economics Professor and Director of Undergraduate Studies (DUS), Ebonya Washington, who also had oversight of the project from start to finish.

The video can be viewed on the Yale Department of Economics [YouTube channel](#).



Professor Ebonya Washington advises a student in the video

TOBIN SCHOLARS

Four economics majors were given the [2017 Tobin Scholar Prize](#) for their outstanding performance in economic core theory courses. The recipients are Jason Gaitonde, Morse College; Justin Katz, Ezra Stiles College; Joyce Koltisko, Berkeley College; and Yicong Shen, Grace Hopper College.

The annual prize was established in 2012 and is awarded up to four senior majors in Economics or Economics and Mathematics who have excelled in core theory courses in economics courses. The award's namesake, James Tobin, was a prominent member of the Department of Economics at Yale from 1950 to 2002, and the recipient of the Nobel Prize in Economics in 1981.



Left to right - Steve Freidheim, Bill Brainard, Joyce Koltisko, David Swensen, Jason Gaitonde, Tony Smith, Yicong Shen, Dirk Bergemann, and Justin Katz (Photo Harold Shapiro)

2018 HERB SCARF SUMMER RESEARCH ASSISTANTS



30 undergraduate students worked as Herb Scarf Summer RAs for a handful of faculty-sponsored projects this summer. The RAs not only gained practical experience working with faculty, but also went to STATA training, attended presentations by guest faculty members, and took part in social events. The RAs presented their work during their last week of the program. A complete list of projects can be found at <https://economics.yale.edu/undergraduate/sro>

BY THE NUMBERS 2017-18

136

ECONOMICS
DEGREES GRANTED

18

ECONOMICS & MATH
DEGREES GRANTED

4046

ECONOMICS
COURSE ENROLLMENT

GRADUATE STUDIES NEWS

2018-19 ARVID ANDERSON FELLOWS



Carvalho Monteiro



Greaney



Vong



Wagner

The [Carl Arvid Anderson Fellowship Prize](#) was awarded to **Luis Fabiano Carvalho Monteiro** (Macroeconomics), **Brian Greaney** (Macroeconomics and International Trade), **Allen Vong** (Game Theory), and **Katherine Wagner** (Public Finance, Energy and Environment, and Macroeconomics). The cash prize is awarded annually to one or more pre-doctoral or post-doctoral students who are relieved of teaching responsibilities for one term allowing them to devote time to dissertation research. The prize was established in 1982 by the award's namesake, Carl Arvid Anderson, with the fellowship's purpose to foster the advancement of economic research.

RAYMOND POWELL PRIZE

The Raymond Powell Prize is awarded to graduate students for excellence in teaching performance. The prize was awarded to **Soumitra Shukla** and **Conor Walsh** for the 2017-18 academic year. Candidates are nominated by faculty members based on their performance as teaching assistants in economics courses, and the winners are selected based on teaching evaluations from students and input from faculty.



Shukla



Walsh

GEORGE TRIMIS PRIZE



The George Trimis Prize is awarded to Economics Ph.D. recipients who demonstrate exceptional academic achievement. The 2018 prize for Distinguished Dissertation was awarded to **Ana Reynoso** for her dissertation entitled "Essays on the Impact of Policy on Marriage Markets."

The prize was established in May 2003 in memory of George Trimis, a Ph.D. student in Economics, who lost his battle with cancer. It is given in recognition of the extraordinary example he set for the department. George Trimis was awarded the first prize before his death.



GRADUATE DEGREES GRANTED 2017-18

Ph.D.: 12

M.Phil: 23

M.A.: 19

ACTIVELY ENROLLED GRAD STUDENTS

133 Ph.D. Students

34 IDE Students

(Continued from page 7)

Alan Gerber, Dean of the Social Sciences Division in the Faculty of Arts and Sciences, notes that the Tobin Center is part of a university-wide effort to use big data to illuminate important questions. “We are beginning to realize the promise of computational breakthroughs to accelerate intellectual exploration in the social sciences,” Gerber said. “We have faster computers, larger data sets, and new techniques for querying them. Pattern recognition and machine learning allow us to extract meaning from large troves of data, and natural language processing enables us to analyze large bodies of text.”

To make the most of these developments, Yale recently reorganized its statistics department as the new Department of Statistics and Data Science, a process, Gerber notes, that involved some outstanding faculty hires and a new undergraduate major. “Across the

social sciences, we continue to look at ways that approaches to data can change research and teaching,” he said. “The Tobin Center builds on this work.”



“We continue to look at ways that approaches to data can change research and teaching; The Tobin Center builds on this work.”

**- FAS Dean of Social Science
Alan Gerber**

Operations of the Tobin Center will be modeled on other successful academic centers within the Economics department, such as the Cowles Foundation and the Economic Growth Center. The center will disburse targeted funds to affiliated faculty, with the research goal of analyzing policy options and, based on that analysis, making policy recommendations. Students, recent graduates, and postdoctoral fellows will take part in this research. The center will disseminate research findings through workshops and seminars, white papers, conferences, academic journals, and the center’s website.

The Tobin Center will be a significant presence on campus, organizing policy lectures and other public events. “We want Yale research to find its way into the real world,” Polak said. “The Tobin Center will convene top faculty and students around these questions, and their ideas will be readily available to policy makers.”

