Mihai Codreanu

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https://mihaicodreanu.github.io/ | Stanford University, CA

January 21, 2025

Dear Committee Members,

I am currently a fourth-year PhD student in Economics at Stanford University. I completed the labor, public, and IO field requirements, and also took classes in Economic History and Corporate Finance.[1] My interests are growingly related to empirical innovation research and the economics of science. My second-year paper (which won the Stanford Prize for Best Second-Year Research Paper in the Economics PhD) is on strengthening the relationship between firms and academia, and the effects on the quantity and direction of innovation. To answer this question, I use the special setting of the Stanford Research Park to shed light on the effects of industry-academia collaboration on: i) firms; ii) individual inventors; iii) professors.

As a former participant of the NBER Summer Meetings, I had the opportunity to see some of the intellectually stimulating environment at the NBER Innovation Research Boot Camp (IRBC). In the past few years, I have developed a growing interest in empirical innovation research and the economics of science, and I think I would learn more in the systematic classes in the IRBC syllabus. I talk more about why I would be so excited to participate and the potential impact on my research in my research letter.

To complete my application, I include an up-to-date CV, a list of all doctoral courses courses I have completed at Stanford (via transcript), and an essay describing my research agenda, a key element to my motivation to attend the IRBC. Professor Nick Bloom assured me he will complete my package by emailing a letter of recommendation in support of my application as instructed in the Boot Camp advert.

Sincerely,

Mihai Alexandru Codreanu

[1] My full list of completed courses is: the full Micro, Macro and Econometrics first-year sequence, Labor Economics (x2), Public Economics (x2), Industrial Organization (x3), Economic History second-year field course, Empirical Corporate Finance, The Economics of AI.

MIHAI A. CODREANU

EDUCATION

Ph.D. in Economics, Stanford University, 2021-current (GPA: 4.0+)
Course Fields: Labor, Public, Economic History, IO;

M.Phil. in Economics, Nuffield College, University of Oxford, 2019-21 (Distinction)
B.A. in Economics, University of Manchester, 2016-19 (First Class Honours, rank: 1st/3,904)

RESEARCH

- **Working Papers**:
  - "Rationalizing Firms' Forecasts" (w/ N. Bloom and R. Fletcher). Presented[‡]: NBER SI Entrepreneurship, AEA, EFA, EEA-ESEM, Columbia/Wharton MAD, WMS.
- **Work in Progress (selected)**:
  - *"Industry-Academia Ties & the Direction of Innovation: Evidence from Stanford Research Park" (w/ J. Bonney).* Presented: Wharton WINDS Conference. Awards: Best Stanford Second-Year Economics Paper. Draft available upon request. Media: HCP 70 Years Anniversary
  - *"The Innovation Effects of Vertical Integration: Competition and Human Capital" (w/ W. Xu).*
  - *"Mapping the Increasing Use of LLMs across Firms, Consumers, Academics, and International Institutions" (w/ W. Liang, Y. Zhang, et al.).*
  - *"Directed Technical Change. Evidence from WFH Technologies"* (w/ N. Bloom, S. Davis, Y. Zhestkova). Media: New Things Under the Sun, Time Magazine.

POLICY-ORIENTED WORK

- "Do Work Search Requirements Work?" (w/ T. Waters), IFS Working Paper (2023). Media: Guardian, Bloomberg, Yahoo! Finance, ITV, Evening Standard, Independent, Morning Star, Newschain, Daily Mail.
- *"What Can Previous Recessions Tell Us About the Covid-19 Downturn?"* (w/ B. Bell, S. Machin), LSE Briefing Note (2020). Media: Independent, Guardian, IER, LSE Blog, Evidence to UK Parliament.
- *"The changing generosity of the UK state pension system to the self-employed"* (with R. Crawford, J. Cribb, C. Emmerson), IFS Report (2020). Media: The Times (paywall), II (paywall), IFS Retirement Consortium.

WORK EXPERIENCE

Stanford University
Bloom Advising Group Organizer — *2022 - Present*
iRiSS Community College RA Mentor — *2023 - 2024*
Applied Seminar Series Organizer — *2023 - 2024*

Stripe.com
External Stanford Contractor — *2021 - Present*

UK Institute for Fiscal Studies (IFS)
Research Scholar; External Collaborator — *2020 - Present*
Summer Research Student — *Summer 2018, 2019*

London School of Economics (LSE)
CEP Collaborator; Occasional RA — *2020 - 2022*
Research Intern (CEP Labour Markets) — *Summer 2020*

[‡]All presentations were given by me, unless otherwise indicated.

University of Oxford
Research Assistant *2019-20*
Nuffield College Fundraising Student Team *2019*

University of Manchester
Undergraduate Peer TA (ECON20110 Econometrics) *2018-19*
Various Part-Time Jobs (IT Services, student ambassador, etc.) *2016-19*

Romanian Government, Ministry of Public Finance
Research Intern (Macroeconomic Research and Analysis Unit) *Summer 2017*

WORKSHOPS, EXTERNAL CONFERENCES & PRESENTATIONS

2024: AEA, Wharton WINDS (PhD student conference), WEAI, ERMAS, ACLEC (runner-up best poster)

2023: EFA, WMS, EEA-ESEM, ERMAS, CFXS (online), AEA (poster)

2022: NBER SI Entrepreneurship, Wharton/Columbia MAD, EEA-ESEM, ERMAS

SCHOLARSHIPS & PRIZES

NBER I3 Fellowship *2025*
William R. Hewlett SGF Fellowship *2024-26*
Best Young Romanian Economist Paper (ERMAS) *2022, '24*
Best 2nd Year Stanford Economics Paper (Sean Buckley Memorial Award) *2023*
Clarendon Scholarship *2019-21*
Inaugural Nuffield College Corden Scholarship *2019-21*
Manchester Graduation OAAA (top student, Faculty of Humanities) *2019*
Top Student, Manchester Economics Examinations *2017, '18, '19*

RESEARCH GRANTS

Freeman Spogli Europe Center Grant Competition *2024*
Stanford Institute for Research in Social Sciences Data Grant *2024*
GRO (Graduate Research Opportunity) Grant *2024*
Ratiu Foundation Research Grant *2020*

OTHER INFORMATION, SKILLS & QUALIFICATIONS

Refereeing	Management Science
Technical	Stata, MATLAB, Python, R, C/C++, SQL
Languages	Romanian (native), English (bilingual), French (advanced)
Qualifications	UK ONS Secure Environment Accredited Researcher
Citizenship	Romania (European Union)
Residency	UK (indefinite leave to remain, settled status), US (student visa)
Hobbies	Badminton (Stanford Club Team, 2023-present), Tennis (& related lower back PT)

Research Letter

I would be excited to attend the IRBC because it would give me the opportunity to engage with research at the frontier of innovation. From what I have heard from past participants, the IRBC not only organizes incredible lectures but also gives the chance to meet, discuss, and develop research with other like-minded PhD students and researchers. Another reason I want to attend is that, while innovation has been briefly covered in my field courses (Labor, Public, IO, CF), I would benefit from a more systematic course in this area. This would help both with my current projects and with future research I am considering. I am going to talk now about 2 projects that are particularly relevant that would benefit from the IRBC.

In my second year paper, John Bonney (another PhD student from Stanford) and I analyze the effects of strengthening industry-academia ties on innovation. We focus on the Stanford Research Park (SRP), the world's first university science park. We aim to empirically investigate three aspects: the impact of a firm's presence in the SRP on its long-run outcomes; the relationship between inventors' coursework and patenting; and the effect of heightened exposure to firms on professors' research. Our preliminary approach combines newly digitized mid-20th century data on public and private R&D-focused companies, SRP affiliates' Stanford coursework, and professors' electrical engineering publications. We first estimate that park tenants file 15 additional patents annually. Tenant patents also yield around 15 excess citations each and span much broader patent classes. Firm inventors who concurrently take Stanford courses are more likely to produce innovations relative to co-workers. Keywords from contemporaneous coursework are more likely to appear in their patents. During the same time period, Stanford's electrical engineering professors begin to publish more often, and a language analysis reveals that their research becomes closer in content to the inventions of SRP firms. I am now working on a bunch of other outcomes (such as the impact on firms product innovation) as well as understanding the implications of my findings on other research parks and the economics of innovation and agglomeration. This latter part would most benefit from IRBC.

I also recently become interested in the Economics of AI. In a paper with a team of computer science students, we conduct a systematic analysis of LLM-writing across consumer complaints, corporate communications, firm new job postings, and governmental press releases from January 2022 to September 2024. We put together a dataset combining more than 2.3 million texts, and use a novel population-level statistical framework to measure the prevalence of LLM-modified content. Our analysis reveals a rapid and widespread adoption of LLM writing following ChatGPT release in November 2022. In a financial consumer complaint dataset, we estimate that by the end of 2024 over 17% of writing was generated using LLMs. In a sample of corporate press releases, we can attribute up to 20% of the writing to LLMs. In a sample of company job postings, around 6% of the writing was generated by LLMs, but up to 15% for young and small firms. Analyzing UN press releases also reveals increasing LLM usage: almost 15% of writing. I would be interested to learning more about the literature on the impact of technology disruption on workers as well as cutting edge work on AI to learn how to use the types of estimates for future work.

I also have a series of newer projects on topics related to research parks, researcher productivity and innovation more generally. Without going into further explanations, they would benefit a lot from learning more about the research frontier at the IRBC. I would be very excited to participate!

Leland Stanford Jr. University
Stanford, CA 94305
USA

Graduate Unofficial Transcript - Detailed

Name : Codreanu,Mihai
Student ID : 06507174

Print Date: 01/21/2025

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* Worksheet - For office use by authorized Stanford personnel *
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--------- Academic Program ---------

Program : Economics
09/20/2021 : Economics (PhD)
Active in Program

Terminal Graduate Registrant, 01/05/2025 -

--------- Transfer Credits ---------

Applied Toward Economics
Transfer Credit from University of Oxford
Quarter Units Posted: 45.00

Total Quarter Units Posted: 45.00

Allowable Transfer Credit subject to restrictions.

--------- Beginning of Academic Record ---------

2021-2022 Autumn

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	210	LEC	MACROECONOMICS I Martin Schneider; Monika Piazzesi	3.00	3.00	A
ECON	246	LEC	LABOR ECONOMICS I Alessandra Voena; Luigi Pistaferri	4.00	4.00	A
ECON	270	LEC	INTERMEDIATE ECONOMETRICS I Han Hong; Joseph Romano	3.00	3.00	A-

GR Term GPA	3.910	Term Totals	10.00	10.00
GR Cum GPA	3.910	Cum Totals	10.00	10.00

2021-2022 Winter

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	211	LEC	MACROECONOMICS II Martin Schneider; Monika Piazzesi	3.00	3.00	A
ECON	242	LEC	PUBLIC ECONOMICS II Petra Persson; Rebecca Diamond	3.00	3.00	A
ECON	247	LEC	LABOR ECONOMICS II Nicholas Bloom	4.00	4.00	A+

GR Term GPA	4.120	Term Totals	10.00	10.00
GR Cum GPA	4.015	Cum Totals	20.00	20.00

2021-2022 Spring

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	204	LEC	MICROECONOMICS III Matthew Jackson	4.00	4.00	A+
ECON	212	LEC	MACROECONOMICS III Patrick Kehoe; Pete Klenow	3.00	3.00	A+
ECON	272	LEC	INTERMEDIATE ECONOMETRICS III: METHODS FOR APPLIED ECONOMETRICS Guido Imbens	3.00	3.00	A

GR Term GPA	4.210	Term Totals	10.00	10.00
GR Cum GPA	4.080	Cum Totals	30.00	30.00

2021-2022 Summer

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	239D	INS	DIRECTED READING Nicholas Bloom	1.00	1.00	CR

GR Term GPA	0.000	Term Totals	1.00	1.00
GR Cum GPA	4.080	Cum Totals	31.00	31.00

2022-2023 Autumn

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	241	LEC	PUBLIC ECONOMICS I Caroline Hoxby	5.00	5.00	A
ECON	257	LEC	INDUSTRIAL ORGANIZATION 1 Jose Ignacio Cuesta; Liran Einav Paulo Somaini	5.00	5.00	A+

GR Term GPA	4.150	Term Totals	10.00	10.00
GR Cum GPA	4.097	Cum Totals	41.00	41.00

2022-2023 Winter

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	229	LEC	TOPICS IN ECONOMIC HISTORY Ran Abramitzky	5.00	5.00	A
ECON	258	LEC	INDUSTRIAL ORGANIZATION IIA Ali Yurukoglu; Liran Einav	5.00	5.00	A+

GR Term GPA	4.150	Term Totals	10.00	10.00
GR Cum GPA	4.108	Cum Totals	51.00	51.00

Information must be kept confidential and must not be disclosed to other parties without the written consent of the student.

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Student ID : 06507174

2022-2023 Spring

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	239D	INS	DIRECTED READING Nicholas Bloom	4.00	4.00	A
ECON	260	LEC	INDUSTRIAL ORGANIZATION III Liran Einav; Shoshana Vasserman	3.00	3.00	A-
ECON	295	LEC	THE AI AWAKENING: IMPLICATIONS FOR THE ECONOMY AND SOCIETY Erik Brynjolfsson	3.00	3.00	A

GR Term GPA	3.910	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	61.00	61.00	

2022-2023 Summer

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	239D	INS	DIRECTED READING Nicholas Bloom	2.00	2.00	CR

GR Term GPA	0.000	Term Totals	2.00	2.00	
GR Cum GPA	4.075	Cum Totals	63.00	63.00	

2023-2024 Autumn

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	300	SEM	THIRD-YEAR SEMINAR Alessandra Voena; Ravi Jagadeesan	3.00	3.00	S
ECON	341	SEM	PUBLIC ECONOMICS AND ENVIRONMENTAL ECONOMICS SEMINAR Caroline Hoxby; Lawrence Goulder Mark Duggan; Michael Boskin Petra Persson	2.00	2.00	S
ECON	345	SEM	LABOR ECONOMICS SEMINAR Alessandra Voena; Caroline Hoxby Isaac Sorkin; Luigi Pistaferri Mark Duggan; Nicholas Bloom Thomas MaCurdy	2.00	2.00	S
FINANCE	630	CAS	EMPIRICAL CORPORATE FINANCE Juliane Begenau	3.00	3.00	+

GR Term GPA	0.000	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	73.00	73.00	

2023-2024 Winter

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	345	SEM	LABOR ECONOMICS SEMINAR Alessandra Voena; Caroline Hoxby Isaac Sorkin; Luigi Pistaferri Mark Duggan; Nicholas Bloom	8.00	8.00	S
PHYSWELL	21	ACT	BADMINTON: INTERMEDIATE Jin Hong Yan	1.00	1.00	S
PHYSWELL	29	ACT	TENNIS: ADVANCED Matthew Thornton	1.00	1.00	S

GR Term GPA	0.000	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	83.00	83.00	

2023-2024 Spring

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	300	SEM	THIRD-YEAR SEMINAR Alessandra Voena; Ravi Jagadeesan	6.00	6.00	S
ECON	345	SEM	LABOR ECONOMICS SEMINAR Alessandra Voena; Caroline Hoxby Isaac Sorkin; Luigi Pistaferri Mark Duggan; Nicholas Bloom	3.00	3.00	S
PHYSWELL	50	ACT	SWIMMING: BEGINNING Laura Gross	1.00	1.00	S

GR Term GPA	0.000	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	93.00	93.00	

2023-2024 Summer

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	239D	INS	DIRECTED READING Nicholas Bloom	10.00	10.00	CR

GR Term GPA	0.000	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	103.00	103.00	

2024-2025 Autumn

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	239D	INS	DIRECTED READING Nicholas Bloom	10.00	10.00	CR

GR Term GPA	0.000	Term Totals	10.00	10.00	
GR Cum GPA	4.075	Cum Totals	113.00	113.00	

2024-2025 Winter

Course		Cmpt	Title	Attempted	Earned	Grade
ECON	802	T/D	TGR DISSERTATION Nicholas Bloom	0.00	0.00	

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Student ID : 06507174

* Worksheet - For office use by authorized Stanford personnel *
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GR Term GPA	0.000	Term Totals	8.00	0.00
GR Cum GPA	4.075	Cum Totals	121.00	113.00

END OF TRANSCRIPT

Graduate Career Totals

Cum GPA	4.075	Cum Totals	121.00	113.00

--------- Non-Course Milestones ---------

Candidacy Qualifying Process -
Plan: ECON-PHD
Completed - 11/01/2023

Candidacy Form - Doctoral Candidacy Form
Plan: ECON-PHD
Completed - 09/14/2023

Dissertn Read Committee Approv -
Plan: ECON-PHD
Completed - 01/07/2025

University Oral Exam (doct) -
Plan: ECON-PHD
Not Completed

Doctoral Dissertation -
Plan: ECON-PHD
Not Completed

Advisor Requirement - 2nd Year Paper Advisor
Nick Bloom
Plan: ECON-PHD
Completed - 09/26/2023

Advisor Requirement - Thesis Advisor
Plan: ECON-PHD
Completed - 11/19/2024

Paper - Second Year Paper
Plan: ECON-PHD
Completed - 09/26/2023

Paper - History Paper
Plan: ECON-PHD
Completed - 11/19/2024

Teaching Requirement -
Plan: ECON-PHD
Not Completed

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Dear Ben and Heidi,

Just to say Mihai Codreanu is truly amazing. He would be the best student in this area for some time (probably I would go back to Mike Webb for the last Stanford student of Mihai's quality in innovation I've worked with). He is super engaged, curious and reads a ton. He will actively ask questions in class, talk to faculty etc. I had him first in my Econ 247 class in the second year and he was the most active student back then. He also will pay attention in class so the value added for him will be really high.

As a signal of his quality I have two papers with Mihai right now - one about to come out as an NBER WP which he actually presented in the NBER Innovation Summer meetings about 3 years ago (the project with Stripe), and another on patents and directed technical change. He also has his own fascinating paper using the creation of Stanford Research Park as an RCT on the impact of university ties. This started when he found a dataset in some dusty library archives which Fredrick Terman's notes on a (somewhat random) "yes"/"no" on firms joining the park, including all his comments and his own personal investment decisions. So, he is also a great fit on subject.

Finally, Mihai comes from a low-income (first-gen) background. He grew up in Romania and was the first to go to college in his family. He did this entirely be scholarships - getting a scholarship to Manchester UK and then a scholarship to Oxford. So, he's very focused and hard-working, and will be a huge positive externality onto everyone else with his enthusiasm and benefit a ton.

Perhaps mostly importantly, thanks as always for doing this - a huge service to the students and our profession :-)

Best,

Nick

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Nicholas Bloom

Professor of Economics, Stanford

http://web.stanford.edu/~nbloom/