Mihai Codreanu

mihaic@stanford.edu | mihai-alexandru-codreanu | 650-382-9194

www.mihaicodreanu.net | Stanford University, CA

January 31, 2023

Dear Committee Members,

I was very excited when Professor Nick Bloom, my second-year doctoral advisor, mentioned the opportunity to apply for the NBER Entrepreneurship Research Boot Camp (ERBC), that will be organized again in 2023.

I am currently a second-year PhD student in Economics at Stanford University, with the main focus of my research interests in entrepreneurship, firm dynamics/productivity, and innovation. As a result, I am on track to complete the labor, public, and IO field requirements, and also expect to take a heavy load in Corporate Finance. My interests are mostly related to empirical entrepreneurship research. In particular, I focus on the relationship between managerial expectations and firm behavior, directed technical change and patenting activity, and determinants of start-up growth. I have joint ongoing work with external organizations such as Stripe.com and Amazon Web Services (AWS). More about my ongoing and future research can be found in the attached research letter.

Participating in the ERBC would provide an exciting opportunity to learn more about the wide field of entrepreneurship from researchers with different backgrounds and gain novel insights on the research that I am currently developing. I am mostly thrilled by the combination of lectures, participation at the SI Entrepreneurship, and interaction inside and outside classrooms with like-minded professors and students in such a concentrated amount of time. Having presented in the NBER Entrepreneurship SI in 2022, and hearing the feedback from my seniors who participated in the ERBC, I know how valuable this experience can be for engaging with the brilliant community of entrepreneurship researchers and their cutting-edge research.

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 ERBC. 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

Application Essay

Motivation

In this statement, I describe my motivation to attend the ERBC, as well as my main areas of research, using 3 projects I am working on and a few ideas I plan on developing individually and with other graduate students in the next years. I am interested in empirical research, with a focus on firm formation and growth. As eluded in my cover letter, my research agenda is centered around entrepreneurship questions, and would benefit tremendously from the ERBC. In particular, a structured course on entrepreneurship could inform exciting new paths for my current projects and structure my future research. I am excited about the prospect of interacting with leading researchers enthusiastic about entrepreneurship, and learning about the research frontier and open questions I can potentially contribute answer in the future.

What excites me the most about the ERBC is the opportunity about meeting and discussing (about research and not only!) with other students interested in the field, as well as potentially developing new research projects. I have already experienced some of the benefits of this interaction at the Entrepreneurship SI 2022; in particular, I was impressed by the very high proportion of SI presenters and participants who have been through the Boot Camp themselves, a true measure of the success of this initiative.

Research Agenda

In "Rationalizing Entrepreneurs' Forecasts" we analyze, benchmark, and run RCTs on a panel of 7,463 U.S. entrepreneurs making incentivized sales forecasts. We assess accuracy using Stripe administrative data. At baseline, only 13% of entrepreneurs forecast their firm's sales in the next 3 months within 10% of the realized value, with 7.3% of the MSE attributable to bias and the remaining attributable to noise. On average, the entrepreneurs performance is worse than a random walk process, that would be correct 15% of the time in our sample.

Our first intervention rewards entrepreneurs up to $400 for accurate forecasts, our second requires respondents to review historical sales data, and our third provides forecasting training. Increased reward payments significantly reduce bias but have no effect on noise, despite inducing entrepreneurs to spend more time answering. The historical sales data intervention has no effect on bias but significantly reduces noise. Since bias is only a minor part of forecasting errors, reward payments have small effects on mean squared error, while the historical data intervention reduces it by 12.4%. The training intervention has negligible effects on bias, noise, and ultimately mean squared error. Our results suggest that while offering financial incentives make forecasts more realistic, firms may not fully realize the benefits of having easy access to past performance data. We also find that forecasting performance (for both own and hypothetical firm) is a strong predictor of sales, growth, and survival. Increased reward payments significantly reduce bias, while data usage significantly reduces noise and MSEs. Despite the theoretical consensus of the importance of accurate forecasts, managerial overconfidence is sometimes associated with increased firm innovation (Galasso and Simcoe, 2011; Hirshleifer et al., 2012), and corporate investment (Ben-David et al., 2013). The next step in the research agenda would be to analyze the extent misperceived expectations (and their heterogeneity) affect investment choices, innovation, and firm

performance.

In "Directed Technical Change: The Case of Work from Home Patents during Covid-19 and Beyond" we examine the text of U.S. patent applications to assess the effects of a large, sudden, surprise shift in work arrangements. We are motivated by a logic similar to Acemoglu (1998) which stresses a higher proportion of skilled workers incentivizes development of skill-complementary technologies. We find that the share of new WFH patent applications is up around 50% in the first year after February 2020, 75% in the second year, and more than double in the last 3 months of 2022. We are currently assessing the effects on WFH pre-pandemic patent holders, use microdata to understand the behavior of investment/R&D decisions, and examine the possible negative effects on other technologies that were not developed due to redirected resources (human capital, financial capital, etc.).

In "The Effects of Business Loans and Technology Support on the Growth of U.S. Online Start-ups" we will focus on examining the growth determinants of U.S. online start-ups, a growing contributor to overall innovation activity and growth (Klenow, 2022). With the help of two large U.S. technology companies we randomize access to loans, cloud computing credits, and technology information. We will check the performance of these companies on a wide variety of metrics (sales, growth, input choices, R&D investment, etc.), treatment effects heterogeneity, and possible channels through which the effect may take place using both administrative data, webscraping, and surveying.

Other research ideas for my dissertation include measuring the effects of big multinational companies (e.g., big tech FAANG) on entrepreneurship and innovation in the short and long-run. On one hand, they can provide increased human capital accumulation to their employees (Haltiwanger et al., 2018). On the other hand, they hire some of the best graduates, including individuals with entrepreneurial qualities, and (re-)direct their efforts away from potentially disruptive innovation projects. We plan to use matched employer-employee administrative data from Norway and office and job openings at the sub-industry and detailed geographical level to inform a structural model and quantify the relative importance of these channels. I am also interested (at both a theoretical and empirical level) in the effects of the rise in concentration (Autor et al., 2017) on the nature of innovation. For example, the increased number of acquisitions by big companies (Cunningham et al., 2021) could potentially re-direct the incentives on new start-up owners to focusing on complementarity with a big company so they can get acquired, instead of traditionally substituting these technologies. I am currently assessing methods of collecting systematic data on start-up formation and acquisition, classifying the type of businesses in terms of complementarities with the industry leader, and finding exogenous predictors of their mark-up power and concentration level in the sub-market to correlate with the shifts in start-up formation behavior.

References

Acemoglu, D. (1998), 'Why do new technologies complement skills? directed technical change and wage inequality', *The Quarterly Journal of Economics* **113**(4), 1055–1089.
URL: *https://doi.org/10.1162/003355398555838*

Autor, D., Dorn, D., Katz, L. F., Patterson, C. and Reenen, J. V. (2017), 'Concentrating on the fall of the labor share', *American Economic Review* **107**(5), 180–185.
URL: *https://doi.org/10.1257/aer.p20171102*

Ben-David, I., Graham, J. R. and Harvey, C. R. (2013), 'Managerial Miscalibration*', *The Quarterly Journal of Economics* **128**(4), 1547–1584. Publisher: Oxford Academic.
URL: *https://academic-oup-com.stanford.idm.oclc.org/qje/article/128/4/1547/1850166*

Bloom, N., Codreanu, M., Davis, S. and Zhestkova, Y. (2023), 'Directed technical change: Work from home patents during covid-19 and beyond', *Stanford Working Paper* (January 2023).
URL: *https://drive.google.com/file/d/14CFYvRO6Xf8ioszqOEr8EcFfVeELzbXR/view*

Bloom, N., Codreanu, M. and Fletcher, R. (2023), 'Rationalizing entrepreneurs' forecasts', *Stanford Working Paper* (January 2023).
URL: *https://drive.google.com/file/d/184q_DfVknPqxxtP–jstAUF_R94i6RCa/view*

Codreanu, M., Bloom, N., Muhaj, D. and Yuan, D. (2023), 'The effects of business loans and technology support on the growth of u.s. online start-ups', *Work-In-Progress, AEA Pre-Registered Research* (January 2023).
URL: *https://www.socialscienceregistry.org/trials/10695*

Cunningham, C., Ederer, F. and Ma, S. (2021), 'Killer acquisitions', *Journal of Political Economy* **129**(3), 649–702.
URL: *https://doi.org/10.1086/712506*

Galasso, A. and Simcoe, T. S. (2011), 'CEO overconfidence and innovation', *Management Science* **57**(8), 1469–1484.
URL: *https://doi.org/10.1287/mnsc.1110.1374*

Haltiwanger, J. C., Hyatt, H. R., Kahn, L. B. and McEntarfer, E. (2018), 'Cyclical job ladders by firm size and firm wage', *American Economic Journal: Macroeconomics* **10**(2), 52–85.
URL: *https://doi.org/10.1257/mac.20150245*

Hirshleifer, D., Low, A. and Teoh, S. H. (2012), 'Are overconfident CEOs better innovators?', *The Journal of Finance* **67**(4), 1457–1498.
URL: *https://doi.org/10.1111/j.1540-6261.2012.01753.x*

Klenow, P. (2022), 'Stanford lecture materials', *Stanford Universiy Resources* .

MIHAI A. CODREANU

Links: | | | | |

You can also find me on my new personal website, where I regularly update my work: **mihaicodreanu.net**

EDUCATION

Ph.D. in Economics, Stanford University
Expected Completion: June 2027.

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)

FIELDS OF INTEREST

Stanford Ph.D. fields (completed & expected): **Labor, Public, IO, Corporate Finance**
Research interests: **Firm dynamics, Innovation, Entrepreneurship, Human capital development**

RESEARCH

- **Working Papers**:

"Rationalizing Entrepreneurs' Forecasts" (with N. Bloom and R. Fletcher).

Presented[‡]: NBER SI Entrepreneurship, EEA-ESEM, Columbia/Wharton MAD Conference.
Useful links: latest Working Paper version, latest slide deck, summarizing thread.

"Directed Technical Change: Work from Home Patents During Covid-19 and Beyond" (with N. Bloom, S. Davis and Y. Zhestkova).

Useful links: latest Working Paper version.

- **Work in Progress**:

"The Effects of Business Loans and Technology Support on the Growth of U.S. Online Start-ups" (lead-author, with N. Bloom, D. Muhaj, and D. Yuan).

"From Schoolmates to Business Partners: The Labor Market Effects of Going to a More Selective School Revisited" (with E. Krkoska).

"The Human Capital, Labor, and Fiscal Impacts of Introducing Work-Search Requirements for Single Parents" (with T. Waters). IFS Working Paper (forthcoming), feeding into IFS-Deaton Review of Inequality.

POLICY-ORIENTED WORK

- **Academic Briefing Notes**:

"What can previous recessions tell us about the Covid-19 downturn?" (with B. Bell, S. Machin), LSE CEP Covid Briefing Note 7, August 2020. Selected media: The Independent, The Guardian, LSE Blog.

"The changing generosity of the UK state pension system to the self-employed" (with R. Crawford, J. Cribb, C. Emmerson), IFS Report R182, October 2020. Selected media: The Times (paywall), IFS Presentation.

WORK EXPERIENCE

Amazon Web Services
Research Collaborator *2022 - Present*

Stripe.com
Graduate Researcher (external Stanford contractor) *2021 - Present*

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

UK Institute for Fiscal Studies (IFS)
Research Scholar *2021 - Present*
External Collaborator (Income, Work and Welfare sector) *2020-21*
Summer Research Student (Income, Work and Welfare sector) *Summer 2019*
Summer Research Student (Public Finance sector) *Summer 2018*

The CORE Project
External Advisor *2022 - 2023*

London School of Economics (LSE)
Center for Economic Performance Collaborator *2021 - 2022*
Occasional RA (Steve Machin, Brian Bell) *2020-21*
Research Intern (CEP Labour Markets) *Summer 2020*

University of Oxford
Research Assistant (Hamish Low, Abi Adams-Prassl) *2019-20*
Nuffield College Fundraising Student Team *2019*

University of Manchester
Undergraduate Peer TA (ECON20110 Econometrics) *2018-19*
Various part-time jobs (IT Services, private tutor, etc.) *2016-19*

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

EXTERNAL CONFERENCES & PRESENTATIONS

2023: American Economic Association ASSA, Poster Session (New Orleans, LA)

2022: Columbia Business School, Wharton/Columbia MAD Conference (New York City, NY), Stripe Data Science Seminar Series (New York City, NY), NBER Summer Institute, Entrepreneurship (Boston, MA), ERMAS Annual Congress (Cluj-Napoca, Romania), EEA-ESEM Annual Congress, Contributed Sessions (Milano, Italy)

SCHOLARSHIPS & AWARDS

ERMAS Prize for Best Paper by a Young Romanian Economist *2022*
Stanford Graduate Student Funding *2021*
Ratiu Foundation Research Grant *2020*
Oxford University Clarendon Scholarship *2019*
Inaugural Nuffield College Max Corden Scholarship *2019*
Manchester Graduation OAAA (top student in Faculty of Humanities) *2019*
Top student, University of Manchester Economics Examinations *2017, '18, '19*
Honorific UN-Romania Ambassador of Equality of Opportunity *2017*

OTHER INFORMATION, SKILLS & QUALIFICATIONS

Technical	Stata, MATLAB, Python, R, C/C++, SQL
Languages	Romanian (native), English (bilingual), French (advanced)
Qualifications	UK ONS Secure Environment Accredited Researcher (2021-26)
Workshops	NBER Digitization Tutorial 2023
Professional	Member of the European Economic Association (EEA)
Citizenship	Romania (European Union)
Residency	UK (indefinite leave to remain, settled status), US (F-1 visa)

Leland Stanford Jr. University
Stanford, CA 94305
USA

Graduate Unofficial Transcript - Detailed

Name : Codreanu,Mihai
Student ID : 06507174

Print Date: 01/30/2023

****

* Worksheet - For office use by authorized Stanford personnel *

****

--------- Academic Program ---------

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

--------- 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	0.00	
ECON	258	LEC	INDUSTRIAL ORGANIZATION IIA Ali Yurukoglu; Liran Einav	5.00	0.00	

GR Term GPA	0.000	Term Totals	10.00	0.00
GR Cum GPA	4.097	Cum Totals	51.00	41.00

Graduate Career Totals

Cum GPA	4.097	Cum Totals	51.00	41.00

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

Candidacy Qualifying Process -
Plan: ECON-PHD

Candidacy Form - Doctoral Candidacy Form
Plan: ECON-PHD

Dissertn Read Committee Approv -
Plan: ECON-PHD

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

Leland Stanford Jr. University
Stanford, CA 94305
USA

Graduate Unofficial Transcript - Detailed

Name : Codreanu,Mihai
Student ID : 06507174

University Oral Exam (doct) -
Plan: ECON-PHD

Doctoral Dissertation -
Plan: ECON-PHD

Advisor Requirement - 2nd Year Paper Advisor
Plan: ECON-PHD

Advisor Requirement - Thesis Advisor
Plan: ECON-PHD

Paper - Second Year Paper
Plan: ECON-PHD

Paper - History Paper
Plan: ECON-PHD

Teaching Requirement -
Plan: ECON-PHD

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

END OF TRANSCRIPT

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

DEPARTMENT OF ECONOMICS
LANDAU BUILDING
579 SERRA MALL
STANFORD, CA 94305
NBLOOM@STANFORD.EDU
(650) 725-7836

STANFORD
UNIVERSITY



January 27th 2023

Dear Ent Bootcamp Committee,

Recommendation Letter for Mihai Codreanu

Mihai would be a fantastic person to have in the Entrepreneurship bootcamp for a few reasons.

First Mihai is very motivated and driven. He came from not a great background in Romania – neither of his parents went to university and were not at all wealthy – and worked very hard to get into Manchester university in the UK (it had a scholarship program for low-income Eastern European students) and then into the Stanford graduate program. From this background he would benefit massively from the networking and exposure to the NBER Bootcamp crowd. Meeting the academics and the rest of the cohort would be incredible for him - this is not something he has had much before and would be eye-opening and impactful for him.

Second, he is very engaged and focused in class. He was in my Econ 247 graduate labor class last year and paid attention throughout, asked tons of questions and was keen and engaged. He's a genuine econ-nerd and really into the subject. Having taught in bootcamp for many years I love having these folks in the group as they make teaching way better – questions are excellent – and keep other students engaged as the class is much more lively.

I have a few papers with him and he also presented in the NBER Entrepreneurship group last year as a PhD student, so academically he is superb. But in many ways this is the least important reason for taking him. The most important reasons is I think he would benefit massively – before Stanford he had no exposure to elite economics circles – and would provide huge positive spillovers onto the rest of the group with his massive enthusiasm.

As always many thanks for running this – the program is incredible and I really appreciate all the hard work. The list of bootcamp alumni really superb. I think placement from this program is better than maybe pretty much any phd program around the world, which I am sure is great treatment and selection effects :-)

Yours Sincerely,

Nicholas Bloom

Nicholas Bloom