February 6, 2025

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National Bureau of Economic Research
1050 Massachusetts Ave.
Cambridge, MA 02138

To whom it may concern,

With this letter, I wish to submit my application to attend the Innovation Research Boot Camp (IRBC) at the National Bureau of Economic Research. I am applying to attend this workshop because I am interested in the macroeconomic implications of innovation as well as policies to mitigate the labor market externalities caused by innovation. I am currently a third-year student in the PhD program at the University of California, Los Angeles who is specializing in Macroeconomics, International Economics, and Industrial Organization. My ultimate goal is to conduct research at the university level, and I believe that attending this workshop would greatly enhance my dissertation and job market paper.

Beyond the core PhD coursework, my academic training at UCLA covered several topics crucial to the study of innovation. Prof Will Rafey provided my training in production function estimation including a series of papers by Ulrich Doraszelski on the role of technological change. Professors Jon Vogel and Daniel Haanwinckel furnished background on labor market dislocations which I hope to extend to labor market dislocations from innovation. Prof David Baqaee's course covered methods for decomposing innovation from misallocation in TFP using production networks. Finally, Prof Hugo Hopenhayen's course addressed modern firm dynamics and the role of networks in innovation.

In addition to academic training, I have work experience related to questions tied to innovation. While an RA at the Federal Reserve Bank of San Francisco, I co-authored an Economic Letter with Pete Klenow and Huiyu Li on the relationship between rising concentration and productivity growth in the United States. We concluded that IT improvements enabled efficient firms to expand into new markets and set the stage for the burst of productivity growth in the decade leading up to 2005. However, the expansion of large firms also intensified competition and cut into profits, discouraging them from innovating within markets. As an RA at the NBER, I worked on a project assessing a wage insurance program offered by the Department of Labor as part of Trade Adjustment Assistance. We found that the program improved both employment and earnings outcomes for treated workers and offers a promising avenue for redressing trade-induced labor market dislocations. During my PhD at UCLA, I worked as a consultant for the World Bank Group under the supervision of Ufuk Akcigit on a project studying the interaction between skills and innovation by combining global posting data from Lightcast with firm information in Orbis.

Finally, I am experienced with conducting independent economic research. I have co-authored an article on wage insurance in the *American Economic Association: Papers & Proceedings*. I am also co-authoring a paper with Nicolas Petrosky-Nadeau on the macroeconomic interaction between credit and labor markets. I have presented this project widely and it won the Best Paper award at SOCAE 2024.

Professor Hugo Hopenhayn from UCLA will serve as my reference. Please contact him at hopen@econ.ucla.edu should his reference be needed as part of my application. Thank you for your consideration.

Sincerely,

Theodore J. Naff

THEODORE NAFF

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EDUCATION

University of California, Los Angeles *2021-Present*
Doctorate of Philosophy in Economics
McGill University *2016*
Master of Arts in Economics
McGill University *2013*
Bachelor of Arts in Economics

PUBLICATIONS

1. Benjamin Hyman, Brian Kovak, Adam Leive, and Theodore Naff. Wage insurance and labor market trajectories. *American Economic Association: Papers & Proceedings*, 111:491–495, 2021
2. Peter Klenow, Huiyu Li, and Theodore Naff. Is rising concentration hampering productivity growth? *FRBSF Economic Letter*, 2019–28

WORK IN PROGRESS

1. **"State Dependent Dynamics in Credit and Labor Markets"**
   with Nicolas Petrosky-Nadeau
2. **"Optimal Wage Insurance"**
3. **"Optimal Currency Areas under Dollar Pricing"**

PRESENTATIONS

(⋆ scheduled; † by coauthor)

2025 Inter-Finance PhD Seminar, UEA 2025 Berlin⋆†
2024 UCLA (Macroeconomics Reading Group, Trade Proseminar, Macroeconomics Proseminar), UCI (All UC Student Search & Matching Conference, Southern California Applied Economics Conference), UChicago (Poster for MFR Summer Session), Philadelphia Fed (Poster for Macro Across Time and Space Conference), WUSTL (Economics Graduate Student Conference)
2023 UCLA (Macrofinance Reading Group, Networks Reading Group, Macroeconomics Reading Group, Trade Proseminar)
2022 UCLA (Macroeconomics Reading Group)
2021 ASSA 2021 Annual Meeting†

TEACHING

University of California, Los Angeles Sept. 2022 - Present
Teaching Assistant *Los Angeles, CA*

Dev. of Econ. Institutions in W. Europe (U)	M. Giorcelli	Fall 2022

McGill University Sept. 2014 - Dec. 2015
Teaching Assistant *Montreal, QC*

Advanced Economic Theory (U)	F Alvarez-Cuadrado	Fall 2015
Microeconomic Analysis & Applications (U)	E. Choudhury	Winter 2015
Macroeconomic Theory (U)	D. Barczyk	Fall 2014

RESEARCH ASSISTANCE

University of California, Los Angeles — June 2022 - Present
Graduate Research Specialist — *Los Angeles, CA*

"Mussa Puzzle Redux"	O. Itskhoki
"The Labor Market Impact of Shareholder Power"	T. von Wachter
"Financing Unemployment Insurance"	T. von Wachter
"The Role Job Advertising in Online Platforms"	D. Haanwinckel

World Bank Group — June 2023 - Dec. 2024
Consultant — *Los Angeles, CA*

"Skill & Innovation Dynamics"	U. Akcigit, R. Jaef & T. Kleineberg
"The Welfare & Productivity Effects of BRT in Amman"	T. Kleineberg
"Skill & Employment Concentration across Cities of the World"	M. Lebrand & T. Kleineberg

National Bureau of Economic Research — Aug. 2019 - Aug. 2021
Research Specialist — *Cambridge, MA*

"Wage Insurance for Displaced Workers"	B. Kovak, B. Hyman & A. Leive

Federal Reserve Bank of San Francisco — Jul. 2017 - Jul. 2019
Research Associate — *San Francisco, CA*

"Significance Bands"	O. Jorda
"The Asymptotic Distribution of Estimators with OSD"	H. Li
"A Sufficient Statistics Approach for Macroeconomic Policy"	R. Barnichon
"Extrapolative Expectations & the Equity Premium"	T. Mertens
"Tying Down the Anchor"	T. Mertens
"Efficiency in Sequential Labor and Goods Markets"	N. Petrosky-Nadeau

McGill University — Sept. 2014 - Aug. 2016
Research Assistant — *Montreal, QC*

"Evaluating Long-Term-Care Policy Options, Taking the Family Seriously"	D. Barczyk

HONOURS & AWARDS

Best Macroeconomics Paper	SOCAE	2024
Doctoral Travel Grant	UCLA	2024
Lewis L. Clarke Graduate Fellowship	UCLA	2024
Travel Grant	UChicago MFR	2024
Graduate Research Summer Mentorship Fellowship	UCLA	2024
Graduate Research Mentorship Fellowship	UCLA	2023-24
Travel Grant	Stanford Big Data Initiative	2023, 2024
Travel Grant	Princeton Initiative	2023
University Fellowship	UCLA	2021-22
Grad Excellence Award in Economics	McGill University	2016
First-Class Honours with Distinction	McGill University	2013

SERVICE

Lead Organizer: Southern California Applied Economics Conference (SOCAE)	2025
Reviewer: European Association of Young Economists Annual Meeting	2024
Reviewer: Southern California Applied Economics Conference (SOCAE)	2023-24
Graduate Student Organizer: North American Meeting of the Econometric Society	2023
First Year Mentor: UCLA	2022-25
Officer: UCLA Graduate Economics Association	2022-23
Coordinator: World Congress of the Econometric Society (Montreal)	2015

TECHNICAL STRENGTHS & LANGUAGES

Advanced Knowledge	MATLAB WITH CVX PACKAGE, STATA, LaTeX
Intermediate Knowledge	R, JAVA, PYTHON, SAS, SQL
Basic Knowledge	JULIA, MATHEMATICA, LYX, VBA

DATABASES: LEHD, LBD, LightCast, CPS, SIPP, BLS, BEA, CRSP/Compustat, Orbis, Bloomberg, HRS, IMF, WID, UN Comtrade

LANGUAGES: *English* (Native speaker), *French* (Professional Proficiency)

REFERENCES

Oleg Itskhoki	itskhoki@fas.harvard.edu	617-495-2144
Lee Ohanian	ohanian@econ.ucla.edu	310-825-0979
Hugo Hopenhayn	hopen@econ.ucla.edu	310-206-8896
Ariel Burstein	arielb@econ.ucla.edu	310-206-6732

Theodore Naff: Relevant Coursework

Course Title	School	Professor
Topics in International Economics (Macro)	UCLA	Burstein
Labor Economics II	UCLA	Haanwinckel
Mathematical Theory in Industrial Organization	UCLA	Hackmann
Topics in Industrial Organization (Market Power)	UCLA	Rubens
Topics in Monetary Economics (Networks)	UCLA	Baqaee
Topics in International Economics (Macro)	UCLA	Itskhoki
Topics in International Economics (Trade)	UCLA	Fajgelbaum
Topics in Industrial Organization (Firm Dynamics)	UCLA	Hopenhayn
Monetary Economics II	UCLA	Weil & Atkeson
Industrial Organization, Price Policies, and Regulation	UCLA	Rafey
International Trade Theory	UCLA	Vogel
Monetary Economics I	UCLA	Bigio
Econometrics III	UCLA	Matzkin
Macroeconomic Theory: International Macroeconomics	UCLA	Burstein & Itskhoki
Game Theory w/ Asymmetric Information	UCLA	Board
Econometrics II	UCLA	Santos
Macroeconomic Theory: Business Cycles	UCLA	Weil & Atkeson
Game Theory & Information Economics	UCLA	Meyer-ter-Vehn
Econometrics I	UCLA	Hahn
Macroeconomic Theory: Dynamics & Growth	UCLA	Hansen & Ohanian
Microeconomic Theory	UCLA	Obara
Labor Economics	MIT	Pathak & Acemoglu
Econometrics	MIT	Angrist
International Economics (Finance)	UC Berkeley	Gourinchas
Advanced Topics in Convex Optimization	CU Boulder	Becker
Special topics in econometrics	McGill	Dufour
Econometrics: Time Series Analysis	McGill	Davidson
Models for Financial Economics	McGill	Davidson
International Economics (Macro)	McGill	Van Long
Advanced Monetary Theory	McGill	Ruge-Mercia
International Economics (Trade)	McGill	Van Long
Macroeconomic Theory I	McGill	Alvarez-Cuadrado
Microeconomic Theory I	McGill	Li
Applied Computational Economics	McGill	Barczyk

I am applying to attend the Innovation Research Boot Camp (IRBC) at the NBER because I wish to better address certain questions concerning innovation in my dissertation. In particular, my current research seeks to develop a theory for optimal wage insurance for workers who are structurally displaced on account of trade or innovation.

In a 2024 blog post, the Managing Director of the IMF, Kristalina Georgieva, estimated that approximately 40% of jobs worldwide are exposed to AI (rising to 60% in advanced economies). While AI promises to fundamentally reshape the American economy, this new technology also presages significant dislocations in the labor market [1]. For American workers who experienced structural job loss through a mass layoff in the 1980s, von Wachter, Song and Manchester [5] document that such workers suffer earnings losses of between $15-20,000 per year (30-40% of median income) which persist for more than 20 years. In my current research, I propose a theory of optimal wage insurance which aims to address persistent, long run earnings risk from structural job loss based upon a real-world instance of wage insurance called Re-employment Trade Adjustment Assistance (RTAA) for workers subject to trade shocks. In previous work, Hyman et al. [2] and Hyman, Kovak and Leive [3] document substantial employment and earnings improvements among participants in the RTAA program. My project seeks to understand how the program could be generalized and optimally used to smooth earnings through periods of structural change.

In future work, I propose to augment a standard model of optimal unemployment insurance (*e.g.* Shimer and Werning [4]) with firms who can substitute robots for workers who specialize in routine tasks. Non-routine tasks would be complementary with the introduction of robots. Structural unemployment would then be induced by a reduction in the cost of robots for a random segment of the routine task space which makes it profitable for firms to substitute robots for routine labor. In this new framework, unemployment insurance would be unable to achieve efficiency due to the additional friction and wage insurance would be required as an additional policy lever. In particular, wage insurance would improve upon the existing allocation by incentivizing firms to offer on-the-job training through wage compression. Next, I would seek to examine how much welfare is improved under the existing program by calibrating the model to the RTAA level of subsidy and duration. Finally, as the main contribution, I aim to show how welfare would be enhanced under an optimal program based upon a sufficient statistics approach. I would then employ the variation from the RTAA program to estimate the relevant elasticities and draw normative conclusions about how an optimal system should be implemented in practice.

As noted above, this new form insurance depends crucially on the firm's willingness to offer re-training to existing workers. By attending the IRBC, I hope to gain a better understanding of how wage insurance might be used to redress the labor market dislocations from innovation at old firms as well as how it might affect new firm's incentives to innovate due to a ready supply of labor.

References:

[1] **Acemoglu, Daron.** 2021. *Redesigning AI.* MIT Press.
[2] **Hyman, Benjamin, Brian Kovak, Adam Leive, and Theodore Naff.** 2021. "Wage Insurance and Labor Market Trajectories." *American Economic Association: Papers & Proceedings*, 111: 491–495.
[3] **Hyman, Benjamin G, Brian K Kovak, and Adam Leive.** 2023. "Wage Insurance for Displaced Workers."
[4] **Shimer, Robert, and Iván Werning.** 2007. "Reservation wages and unemployment insurance." *The Quarterly Journal of Economics*, 122(3): 1145–1185.
[5] **von Wachter, Till, Jae Song, and Joyce Manchester.** 2009. "Long-Term Earnings Losses due to Mass Layoffs During the 1982 Recession."

UNIVERSITY OF CALIFORNIA, LOS ANGELES **UCLA**

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February 7, 2025

RE: Letter of Recommendation

To Whom It May Concern:

This is a letter of recommendation for Theodore Naff, one of my graduate students at UCLA that is applying to your Innovation Summer Camp. I've known Theo for over two years. I am his co-advisor, and he has taken two of my graduate classes and participated in a reading group on networks. Theo is one our best students in our program. He combines strong applied and macro structural modelling training and skills and is currently working on the design of optimal unemployment insurance for displaced workers. I think Theo is a great fit for your program and he would greatly benefit from attending. I recommend him in the strongest terms. I will briefly discuss his research project on unemployment insurance for displaced workers.

The standard forms of unemployment insurance are designed to cope with temporary income losses in the transition between jobs. Over the last thirty years, a wide variety of workers across occupations, skill types, and industries have experienced substantial and persistent earnings losses due to displacements because of structural change, automation, and other forces. The persistent nature of the losses and the need to reinsert themselves in the labor market, poses a very different set of challenges when considering social insurance policies. This is particularly relevant looking into the potential future displacements as a consequence of innovation and in particular with the development of AI applications.

Theo has been working on this problem on two different fronts. On the one end, documenting the impact of an existing program of wage insurance (RTAA) using data from LEHD. More recently, using the administrative Trade Activity Participant Report (TAPR) data for RTAA participants He has shown that wage insurance takers have higher post-program earnings than other program participants except those with pre-separation earnings in 90th percentile. On the other end, Theo is considering the design of an optimal insurance scheme from a normative perspective. Wage insurance programs, as the one implemented by RTAA, have not been studied in this area. In recent work Theo augments the standard model of optimal unemployment insurance to include a wage insurance program and derive a sufficient statistic for welfare. His future work in this area considers integrating this analysis in a quantitative framework to assess the impact of structural changes, including the potential effects of AI.

To summarize, Theo is a one of our best students, smart, creative, and very well trained in both applied and structural modeling. His work, is extremely relevant to examine the implications of innovation on displacements and the design of policies to mitigate its consequences. This is of utmost relevance, given the past and future impacts of structural change and automation. In addition, I should also say that Theo is highly motivated and has excellent communication skills, so I am sure he will contribute to the enrichment of your program. I recommend him in the strongest terms.

Please feel free to contact me at hopen@econ.ucla.edu or at +1 (310) 206-8896 if you have any questions.

Yours sincerely,



Hugo A. Hopenhayn
Professor of Economics
UCLA