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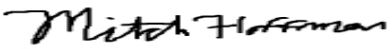
MITCHELL HOFFMAN
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To whom it may concern:

I wish to apply to the NBER Entrepreneurship Research Boot Camp. My research interests are in labor economics; behavioral economics; and contracts and organizations. I will complete my Ph.D. degree in Economics from the University of California, Berkeley in May 2012. I will join the faculty subsequently at the University of Toronto, Rotman School of Management.

I can be reached via email at hoffman@econ.berkeley.edu or by phone at 1-650-380-2822. Thank you for your consideration and I look forward to hearing from you.

Yours sincerely,



Mitch Hoffman

University of California
Berkeley
Haas School of Business

November 22, 2011

Dear Colleagues:

I am writing to urge you to have a close look at my student Mitchell Hoffman. Mitch is one of the top three students to come out of the economics department this year and one of the best students I've had since coming to Berkeley. I recommend him in the strongest possible terms to top economics departments, business schools, and public policy schools.

Mitch's work spans a number of fields (personnel economics, contract theory, and politics) as well as methodologies (empirics, experiments, and behavioral modeling). He's wonderfully broad and curious about a range of topics. He's problem driven rather than literature driven, which is refreshing in a young scholar. He's also amazingly productive and entrepreneurial—he's completed many projects without sacrificing quality during his time as a graduate student.

Mitch's drive and entrepreneurship—his willingness to take risks and create unusual research opportunities—is his most distinguishing feature as a scholar. There are few established professors with his uncanny ability to unlock new and unusual opportunities, much less graduate students. To my mind, this is his most differentiating feature from others on the market. As he matures, I have little doubt that Mitch will be thought of as one of the most innovative researchers in his cohort.

To get a flavor of how his drive and entrepreneurship translates into research, let me speak in some detail about Mitch's main line of research on training contracts. His job market paper studies how training contracts affect quit rates, productivity, and turnover in the trucking industry. The paper studies a fundamental economic question: who pays for training in competitive industries? The basic economic problem is that truckers need to be trained in operating vehicles. This training, however, is transferable, so an incumbent firm risks losing the benefits of its trained employees to rival firms choosing to free-ride. Now, the obvious solution would be to have the employees pay for training; however, most entry level truckers are severely credit constrained, so this potential solution is not feasible. A second-best solution is for the trucking firm to enter into a contract with the employee whereby they recover some or all of the training costs should the employee quit before a certain time.

The question itself is timeless: how to solve the twin problems of credit constraints and holdup using contractual instruments. The problem itself is very much in the Berkeley tradition dating back to the seminal work of Oliver Williamson. At the same time, Mitch uncovers a key behavioral feature, overconfidence, which affects the structure of the optimal contract. The marriage of optimal contracting with behavioral motives is also very much a Berkeley tradition dating back to the work of Akerlof and Rabin. Mitch's innovation is to tackle these twin problems with unique data and methods. Mitch procured the trucking data purely through his own drive and contacts. He then supplemented this dataset by conducting persuading other trucking firms to allow him to conduct surveys and field experiments. Importantly, from a policy perspective, he showed that it was possible to change the behavioral biases of workers, to debias them by exposing them to information about the overconfidence of others. The demonstration of the malleability of behavioral biases is, to my mind, both novel and extremely important in considering policy responses to the training problem. Finally, Mitch brings everything together in a state of the art structural model estimating optimal training contracts in a dynamic model setting where workers are overconfident.

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The trucking industry has been studied by economists who have been interested in learning about contract design in the real world. The existing work, however, has often failed to be convincing. By relying on cross-sectional government survey data and fairly unsophisticated econometrics, the extant literature is plagued with endogeneity problems.

Over the past year and half, Mitchell has been working with three large US trucking companies. This collaboration has produced a unique dataset consisting of detailed information both on company drivers and owner operators/ entrepreneurs. It is very unusual for researchers, particularly a grad student, to get access to firms' data like this. But, as I mentioned at the outset, Mitch has tremendous drive and entrepreneurship. These data are the fruits of those labors.

To identify the effects of training contracts, one would ideally want the firm to conduct an experiment where it randomly assigned some employees to the contracts while imposing no quit penalties on others. Of course, such experiments are rare in the real world. Mitch, however, benefits from the randomness of state bureaucracies to obtain a natural experiment mimicking the ideal. Specifically, a large, national trucking firm switched from a regime where it had no training contracts to one where it did. Such a switch required regulatory approval at the state level. While some states processed the request quickly, others were slower to process the request. As a result, there is essentially exogenous variation in the timing of the imposition of the training contract. This holds the key to identification of the effect of training contracts on turnover, productivity, and selection.

Mitch structurally estimates a model where both the worker and the firm learn about the worker's productivity over time. Separations occur when sufficient evidence arises that the employee's productivity in the trucking sector lies below his or her outside option, which obviously jumps at key milestones in the training contract. This model is able to explain turnover patterns in the data including non-monotonic quit hazard rates early on in an employee's tenure with the firm.

One key finding in the model is that training contracts mainly determine effort rather than selection. At first glance, this seems curious. Surely, workers entering into these contracts will anticipate the likelihood of breach and adjust their behavior accordingly. To resolve this puzzle, Mitch pairs his data with surveys on overconfidence administered contemporaneously to the truckers. Here, he finds strong and persisting overconfidence in worker productivity. Indeed, even after having been on the job for a considerable period of time, workers continue to mis-forecast their productivity. Because of endemic overconfidence, selection effects are muted—few workers anticipate breaching the contract since all expect to be highly productive. The addition of behavioral factors to help explain "blind spots" in the classical model is characteristic of Mitch's approach.

By recovering the structural parameters of the model, Mitch is able to conduct credible counterfactual exercises on proposed policies. For instance, the recent economic downturn has led to proposals for increased subsidization of worker retraining programs. One manifestation of this is to highly subsidize external training centers for truckers to obtain training. Mitch shows that there is virtually no benefit to such programs—essentially, they simply crowd out employer-provided training while worsening turnover.

In addition to the trucking paper, Mitch has already completed two other papers toward dissertation, one of which is forthcoming in Review of Economics and Statistics. In that paper, he used data on Holocaust rescues to estimate behavioral models of other-regarding behavior in what is arguably the highest possible stakes environment—life or death. The idea, the data acquisition (which was difficult and labor intensive), and the execution were entirely Mitch's doing. With works like *Nudge* already influencing the public policy debate, Mitch's paper shows that, even when the stakes are at their highest, behavioral factors like altruism remain important factors in explaining behavior. He started this paper while in his first year of grad school, so having already published it speaks to his speed, diligence, and good nose for problems.

In this same vein, his other completed paper, which is joint work with me, studies other regarding behavior with non-standard subject pools. An influential paper out of the University of Chicago suggests that other regarding behavior seen in the lab is unimportant for policy since in competitive industries, such behavior will be selected out. Our goal was to test this hypothesis. Mitch's entrepreneurship was instrumental in creating this paper. Specifically, Mitch was able to arrange our running experiments at industry conferences for domain name owners and adult entertainment industry professionals. While one might have expected selection in these two groups to

favor individuals lacking other regarding preferences, we found the opposite—domainers and members of the pornography industry made significantly more other-regarding choices than Berkeley undergraduates, who we put through the same set of experiments.

Mitch has also recently completed a working paper on how individuals value information that might be useful for making decisions. Decision theory suggests that willingness to pay for information should depend on prior beliefs about the likelihood of making the "right" choice and the precision of the new information in terms of its likelihood of overturning these priors. If individuals systematically undervalue information, they will acquire too little and end up making poor decisions. This is especially important for key lifetime decisions that what health insurance to buy or how much to invest for retirement. Mitch conducted field experiments with professionals in various industries and found systematic undervaluation of information.

On a personal note, working with Mitch has been a pleasure. He has great drive. He's friendly. He's "coachable" in the sense that he's eager to learn and adjust his research as he develops new ideas and techniques.

In short, he's a wonderfully innovative researcher with tremendous "option value." I recommend him highly.

Sincerely,



John Morgan
Gary and Sherron Kalbach Professor of Business Administration
Haas School of Business and Department of Economics
University of California, Berkeley

Application for Entrepreneurship Research Boot Camp
Mitchell Hoffman

I am an economist with training in labor economics; behavioral economics; and contracts and organizations. Going forward, most of my research will focus on organizational economics.

I would like to attend the bootcamp because of my interest in topics at the intersection of organizational economics and entrepreneurship. I think it would be an excellent way to learn about the core papers and issues in entrepreneurship while getting to meet professors and students working in the area.

Here are two projects at the intersection of these two fields.

Entrepreneurship in the Trucking Industry

Are more productive people more likely to become entrepreneurs? Answering this question has proven difficulty due to limitations of data and economic modeling. I overcome these limitations using a structural model of the transition to entrepreneurship estimated with rich personnel and survey data from the US trucking industry. I take advantage of the facts that (i) Many truckers eventually go in to business for themselves as owner-operators and (ii) Trucking is an industry where productivity (miles driven per week) is easily measured. I analyze a discrete-choice dynamic programming problem where workers choose whether to exit trucking, stay as a company driver, or become an entrepreneur, and use it to analyze how different governmental policies affect entrepreneurial transitions.

Trucking is one America's largest industries, employing over 3.2 million people, and is one of the few American blue-collar industries with a strong future job outlook (Bureau of Labor Statistics, 2010). Also unique among blue-collar industries is that a large number of workers in the trucking industry are self-employed; over 10% of all trucks are owned by their drivers (Hubbard, 2000). These so-called "owner-operators" own their own trucks, buy their own gas, and decide which loads to take. Who decides to become an owner-operator, and at what point do drivers make this transition? Which theories of occupational choice and entrepreneurship are most relevant for explaining the transition to becoming an entrepreneur? Specifically, how much selection is there on worker productivity? How do policies by firms or government affect the decision to become an owner-operator?

To answer these questions, I develop and estimate a discrete-choice dynamic programming model of the transition to entrepreneurship in the US trucking industry. Drivers begin their work lives as company drivers. Every period, workers decide (i) Whether to remain as a company driver, (ii) To quit the trucking industry, or (iii) To become an owner-operator. Workers differ in their productivity, but productivity is unknown and gradually revealed over time. Using weekly productivity realizations, workers form expectations of their future productivity and earnings, and use this information in making their decisions. My model builds off prior work in labor economics analyzing occupational choice, particularly the seminal work of Keane and Wolpin (1997). In addition, it draws heavily from my concurrent work (Hoffman, 2012) where I analyze how trucking industry contracts regulating training affect young workers' stay-or-leave decisions. The model from Hoffman (2012) is enriched to allow workers the decision to enter entrepreneurship.

Entrepreneur Beliefs and Terms in Venture Capital Contracts **(with Sharat Raghavan)**

How do the beliefs of entrepreneurs affect venture capital contracts? Venture capital is a critical means by which entrepreneurs finance new ventures and a growing empirical literature examines the terms of venture capital contracts (e.g. Kaplan and Stromberg, 2003, among many others).

While most work in economics assumes that entrepreneurs hold rational beliefs, a growing literature in economics and psychology suggests that agents tend to be overconfident about their relative and absolute abilities. Indeed, overconfidence has been termed the most fundamental bias in the psychology of decision-making (DeBondt and Thaler, 1995). If entrepreneurs are overconfident about the likelihood success of their ventures, this will affect their preferences over debt and equity as well as various contractual terms.

We will take advantage of Sharat's prior research in venture capital as well as his broad industry contacts to survey entrepreneurs about their beliefs of venture success. We will use an online survey, most likely on SurveyMonkey.com. The goal is then to correlate entrepreneur's beliefs about a particular project's success and/or their overall disposition toward overconfidence with the terms employed in particular venture capital deals.

These insights have been applied in studying CEOs and their investment behavior, beginning with the seminal work of Malmendier and Tate (2005). Instead of studying how overconfidence affects investments, this project will study how overconfidence affects contractual form.

Mitchell H. Hoffman

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Education

2007-2012 (exp.)	Ph.D. Economics, University of California, Berkeley
	References: David Card, Stefano DellaVigna, John Morgan, Steven Tadelis
2003-2007	B.A. Economics (with honors), Yale University

Fields

Labor Economics; Behavioral Economics; Contracts & Organizations

Research

Job Market Paper

Training Contracts, Worker Overconfidence, and the Provision of Firm-Sponsored General Training, November 2011

Training by firms is a central means by which workers accumulate human capital, yet firms may be reluctant to train if workers can quit and use their gained skills elsewhere. "Training contracts" that impose a penalty for premature quitting can help alleviate this inefficiency. This paper studies training contracts in the U.S. trucking industry where they are widely used, focusing on data from one leading firm. Exploiting two plausibly exogenous contract changes that introduced penalties for quitting, I confirm that training contracts significantly reduce quitting. To analyze the optimal design of training contracts and their welfare consequences, I develop and estimate a structural learning model with heterogeneous beliefs that accounts for many key features of the data. The estimation combines weekly productivity data with weekly subjective productivity forecasts for each worker and reveals a pattern of persistent overconfidence whereby many workers believe they will achieve higher productivity than they actually attain. If workers are overconfident about their productivity at the firm relative to their outside option, they will be less likely to quit and more likely to sign training contracts. Counterfactual analysis shows that workers' estimated overconfidence increases firm profits by over $7,000 per truck, but reduces worker welfare by 1.5%. Banning training contracts decreases profits by $4,600 per truck and decreases retention by 25%, but increases worker welfare by 4%. Despite the positive effect of training contracts on profits, training may not be profitable unless some workers are overconfident.

Publications

Does Higher Income Make You More Altruistic? Evidence from the Holocaust, *Review of Economics and Statistics*, August 2011, Vol. 93, pp. 876-887.

Working Papers

Overconfidence at Work and the Evolution of Beliefs: Evidence from a Field Experiment, November 2011

A robust finding in experimental psychology and economics is that people tend to be overconfident about their ability. However, much less is known about whether overconfidence can be reduced or eliminated, particularly in field settings. This paper provides new evidence using data from the workplace. A field experiment with a large trucking firm shows that workers tend to systematically overpredict their productivity and that their overconfidence is unaffected by whether workers receive financial incentives of different sizes for accurate guessing. Randomly informing workers about other workers' overconfidence reduces overconfidence in the short-run, but

the effect fades within two weeks. Neither the incentives or information treatments have any effect on worker satisfaction or search behavior. Using long-term survey data from a second firm, I show that experience reduces overconfidence, but only quite slowly. Although workers at both firms exhibit aspects of Bayesian updating, overconfidence appears to be sticky and difficult to change.

How is Information (Under-) Valued? Evidence from Framed Field Experiments, July 2011. -Revise and Resubmit, *The Economic Journal*

Rational endogenous information acquisition plays a key role in many economic models. This assumption may be violated, however, if agents are overconfident about their knowledge. Using a novel field experiment implemented with businesspeople expert subjects, I show that overconfidence is associated with a lower demand for information, but that overconfidence is unlikely to provide a full explanation for suboptimal information investment. Even if the value of information is adjusted to account for subjects' overconfidence and subjects' tendency to sometimes misuse information, subjects still underpay for information.

Who's Naughty? Who's Nice? Social Preferences in Online Industries (with John Morgan), July 2011. -Submitted

Teaching and Research Assistance

Business Strategy (MBA), Spring 2011, Teaching Assistant for Gregory LaBlanc.

Summer 2010, Summer Associate at RAND Corporation, research with Beth Asch and Jim Hosek on structural modeling of military turnover.

Summer 2008, Research Assistant for David Card.

Visits

Fall 2009 Price Theory Scholar, University of Chicago GSB

Honors, Awards, & Fellowships

2011-2012 Kauffman Foundation Dissertation Award
2011 Initiative for Computational Economics participant
2011 Graduate Division Summer Award
2010-2011 Dean's Normative Time Fellowship, UC Berkeley
2008-2010 National Science Foundation IGERT Fellowship
2008-2009 Department of Homeland Security Graduate Fellowship (declined)
2007-2011 UC Berkeley Departmental Fellowship

Research Grants

2011 National Science Foundation Dissertation Completion Award
2011 Net Institute Grant
2011 Burch Center for Tax Policy and Public Finance Research Grant
2011 Center for Equitable Growth Research Grant
2011 Center of Evaluation for Global Action Small Grant
2010 Burch Center for Tax Policy and Public Finance Research Grant
2010 Center for Equitable Growth Research Grant
2009 Institute for Business and Economic Research Project Grant, UC Berkeley
2009 Russell Sage Foundation Behavioral Small Grant

Invited Presentations (Outside of UC Berkeley)

2011: Stanford Institute on Theoretical Economics, North American Summer Meeting of the Econometric Society, University of Chicago Micro Lunch, Chicago-Argonne Initiative for Computational Economics (poster), Midwest Political Science Association.

2010: RAND Labor and Population Brownbag, Washington University Graduate Conference, Economic Science Association (Tucson).

2009: Yale Whitebox Advisors Conference, University of Chicago Micro Lunch, University of Chicago Labor Working Group.

Miscellaneous

Reviewer for: *American Economic Review*; *Journal of the European Economic Association*; *Journal of Law, Economics, and Organization*; *Industrial Relations*

US Citizen