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Undergraduate Studies:
BS, Economics and Finance, NYU – Leonard N. Stern School of Business, *Magna Cum Laude*, 2005

Graduate Studies:
Ph.D. Candidate in Business Economics, Harvard University
Thesis Title: *Trucks Without Bailouts: Equilibrium Product Characteristics for Commercial Vehicles*
Expected Completion Date: May 2015

References:
Professor Ariel Pakes (Chair)
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Professor Dennis Yao
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Teaching and Research Fields:
Fields: Industrial Organization, Applied Microeconomics.

Teaching Experience:
Fall, 2012 Industrial Organization I (EC2610), Harvard University, Teaching Fellow for Professor Ariel Pakes
Fall, 2011 Industrial Organization I (EC2610), Harvard University, Teaching Fellow for Professor Ariel Pakes

Honors, Scholarships, and Fellowships:
2011 & 2012 Certificate of Distinction in Teaching, Derek Bok Center for Teaching and Learning, Harvard University
2009-2014 Doctoral Fellowship, Harvard Business School

Research Experience and Other Employment:
2011-2013 Harvard University, Research Assistant for Ariel Pakes

(continued)

Research Experience and Other Employment (continued):

2009	Harvard Business School, Research Assistant for Dennis Yao
2006-2009	B&G Beverages Inc., Founder
2005-2006	Bank of America Merrill Lynch (formerly Bank of America Securities LLC) and Cronheim Companies, Investment Banking Analyst

Research

Job Market Paper:

"Trucks Without Bailouts: Equilibrium Product Characteristics for Commercial Vehicles"

In differentiated product markets, the entry and exit of individual product models—rather than of firms—often serve as the main equilibrating force. Market structure changes that lead to high prices also tend to encourage entry, partially offsetting the policy's effect on prices and purchases. Thus, accurately predicting changes from a merger or bankruptcy should incorporate this behavior. I develop a model of equilibrium product characteristics in oligopoly and show how inequalities can set identify the sunk costs of offering them. I apply these methods to a unique dataset of all US commercial vehicles from 1987 to 2012 and assess their importance in the context of the $85B bailout of the automotive industry in 2009. In the case where GM and Chrysler are liquidated rather than the rescued, estimated sunk costs are low enough to induce product entry by rivals, and that this has a dramatic effect on prices and purchases. For example, allowing for model-level entry and exit moderates markup increases by over two-thirds for the most affected products. It also moderates the drop in total output by about one-half. I also consider acquisitions as an alternative to liquidation. I show that while the policy choice, including the identity of the acquiring firm, matters a lot when model-level entry and exit are ignored, it matters little when they are accounted for.

Working Papers:

The Impact of Money on Science: Evidence from College Football"

(with Haris Tabakovic, Doctoral candidate, Harvard Business School)

Scientific discovery drives economic growth, but the high cost of research makes funding a limiting factor. Little is known about the causal impact of money on science, despite its importance for determining the socially-optimal level of R&D. This paper estimates the dollar elasticity of research output at American universities by using unexpected NCAA football outcomes to exogenously shift research budgets across schools and time. After constructing a novel dataset of historic team success, measured by vote tallies from the Associated Press Top 25 Poll, we show that unexpected within-season changes to this measure are strong predictors of non-federal research funding conducted at the school in the subsequent year. These changes do not predict federally-sponsored research in any period, lending further support for the instrument. The estimated dollar elasticities are 0.27 and 0.53 when the outcome measures are scholarly publications and their accrued citations, and are 1.72 and 3.13 when the outcome measures are new patent applications and their accrued citations, respectively. It costs the university, at the margin, about $1.6M in additional research funding to generate an idea worthy of filing a patent application. For each outcome, the instrumental variable results contrast sharply with the OLS estimates, which are significant but near zero and would lead policymakers to underinvest in research.

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"Two Period Approximations for Entry, Investment, and Positioning Games"
(with Richard Sweeney, Doctoral candidate, Harvard Kennedy School)
The forward-looking solution to many dynamic games involves storage of and an expectation over billions of states, which imposes unreasonable demands on agents and presents an intractable problem for researchers. This paper studies how well two-period approximate solutions perform relative to Markov Perfect (forward-looking) strategies in entry, investment, and positioning games. We begin by measuring performance as the proportion of the value earned under a Markov Perfect strategy that is captured by the approximate solution. This exercise informs firms as to how much value is lost when simple, computationally-cheaper strategies are used. It also informs economic modelers about when assuming approximate strategies is more or less appropriate. Next, we measure performance by how well outcomes of interest—e.g. the number and placement of firms, investment levels, et cetera—are predicted if firms actually play Markov Perfect strategies but the econometrician wrongly assumes they play approximate strategies. The results are informative for policymakers interested in understanding the dynamic effects of a policy change in settings where solving the full dynamic game is not possible. In each exercise, we show how performance varies with the discount rate, growth rate, number of competitors, and degree of mean reversion. [Results in process.]

"Signaling With Sales, Not For Sales"
Entrepreneurs frequently have private information about the products they develop but find it difficult to credibly disclose that information to potential investors because of their discretion over financial reporting. This paper shows how operational choices can be used by entrepreneurs to signal their type to potential investors even when important choice variables are unobservable. I model an industry where established firms face lower marginal costs at high volumes than startup firms and, for this reason, are potential acquirers of startup firms. Entrepreneurs have private information about the type of demand for their products. I show that even when price and advertising are unobservable and demand is unbounded, a separating equilibrium can exist where high type firms reveal themselves using discounts and promotions. I present evidence consistent with this signaling behavior using data on recent acquisitions in the consumer products industry. In the year leading up to an acquisition, acquired firms cut price and increase advertising relative to unacquired firms. Immediately following the acquisition, this behavior reverses.

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