

# Thomas C. Blake

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CONTACT      tomblake@gmail.com    (650) 924-1822    <http://www.tomblake.net>

## EXPERIENCE      **Director of Data Science, Amazon Search, 2024-Present**

Lead data science, economics, and engineering organization at Amazon Search. The team designs and executes experiments, builds econometric and machine learning (and hybrid) models, metric, and leverages observational data for causal inference on policy relevant parameters.

- Build datasets that capture the complexity of shopping in the world's largest online marketplace
- Develop new measures of shopping efficiency and user experience
- Measure the causal impact of high dimension features in highly contextual space

## **Senior Manager for Search Economics and Data Science, Amazon Search, 2019-2024**

Lead data science and economics team that designs and executes experiments, builds econometric and machine learning (and hybrid) models, metric, and leverages observational data for causal inference on policy relevant parameters.

- Build system to track all experiments on search page (>1K per year), complete with full set of heterogeneous treatment effects. Compile reporting and alarming on adverse impacts to behavioral and business metrics.
- Create model to value the results of relevance to long term business and engagement outcomes.
- Prepare studies for C-suite executives on using search for optimization strategies

## **Manager, Search Economist 2017-2019**

- Brought an economic lens on shopping to Amazon Search.
- Exploring customer sensitivity to pricing, and product diversity through a series of customer facing tests in featured ranking and recommendations.
- Develop surrogate modeling on observational and, novelistically historical experimental data, to score short term tests with long term outcomes.

## **eBay Economics Team Lead and Senior Research Scientist, eBay Inc, 2015-2017**

Used economics and data modeling (ML, econometrics) to inform management of a billion dollar market. Insights and models shape product design, market policies, pricing, marketing, and finance. A few examples of work to date:

- Created new product features inspired by behavioral economics that raised conversion rates for eBay's bargaining platform (Best Offer)
- Demand estimation algos for optimizing return on targeted price subsidies, to automate manual deals curation by merchants
- Estimating the benefits and costs of shipping forecasts for conversion gains balanced against the derived consequences of late delivery
- Optimal taxation models for platform pricing calibrated with elasticity estimates
- Implemented machine learning heterogeneous treatment effects modeling for targeted advertising engine

## **Economist, eBay Research, 2012 - 2015**

Partnered with teams ranging from product engineering to marketing to use economics and econometrics to inform business objectives and generate economic research. Some examples of my impact:

- Designed innovative experiments to measure causal (incremental) returns to marketing in areas of paid search, display, affiliates, deals promotions, and even TV. Results were used to retarget more profitable ad demographics and raise profitability.
- Executed large scale cross-channel test to calibrate a Media Mix Model for optimal balancing of marketing spend
- Created a machine learning econometric estimator (a propensity score estimator with a random forest first stage) for estimating the value of a rewards program

- Leveraged bargaining theory to guide offers on eBay’s Best Offer feature which was proved to increase conversion rates
- Used NLP and machine learning to mine text in negotiated communications for forecasting conversion success odds (see working paper on my website)
- Modeled AB testing on a platform (marketplace) and created heuristics for understanding the bias that creates in results (see publications below)
- Estimated costs of searching for items in e-commerce (see publications below)

**Graduate Student Instructor and Research Assistant, 2008-2012**

Coded structural econometric models, scraped and compiled novel datasets, and taught undergraduate microeconomics, international trade and industrial organization.

**Senior Forensic Accountant, Hemming Morse LLC, 2004-2008**

Computed economic damages for billion dollar litigation in the areas of contract breach, intellectual property, and false claims

EDUCATION

University of California, Davis  
Ph.D. Economics, June 2012  
M.A. Economics, June 2008

University of California at San Diego  
B.A. Mathematics and Economics, June 2003, *cum laude*

PUBLICATIONS

“Disappointment or Regret? Evidence from an Online Marketplace” (with Matt Backus, Dimitriy Masterov and Steve Tadelis) *Journal of the European Economic Association*, Forthcoming.

“Price Salience and Product Choice” (with Sarah Moshary, Kane Sweeney, and Steve Tadelis) *Marketing Science*, Forthcoming.

“Sequential Bargaining in the Field: Evidence from Millions of Online Bargaining Interactions” (with Matt Backus, Brad Larsen and Steve Tadelis) *The Quarterly Journal of Economics*, Volume 135, Issue 3, August 2020, Pages 1319–1361.

“Cheap Talk, Round Numbers, and the Economics of Negotiation” *Journal of Political Economy*, 2019, vol. 127, no. 4 (with Matt Backus, and Steve Tadelis)

“Consumer Heterogeneity and Paid Search Effectiveness: A Large Scale Field Experiment” (with Chris Nosko and Steve Tadelis) *Econometrica* 83.1 (2015): 155-174

“Returns to Consumer Search: Evidence from eBay” *Proceedings of the 2016 ACM Conference on Economics and Computation (EC ’16)*. ACM, New York, NY, USA, 531-545. DOI (with Chris Nosko and Steve Tadelis)

“Is Sniping A Problem for Online Auction Markets?” (with Matt Backus, Dimitriy Masterov and Steve Tadelis) *Proceedings of the 24th International Conference on the World Wide Web*, 2015.

“Why Marketplace Experimentation is Harder than it Seems: The Role of Test-Control Interference” (with Dominic Coey) *Proceedings of the 15th ACM Conference on Economics and Computation*, 2014.

“Commuting Costs and Geographic Sorting in the Housing Market” *Real Estate Economics*, 2016. doi:10.1111/1540-6229.12159.

INVITED  
TALKS

**2022** NYU Stern 11th Conference on Consumer Search and Switching Cost **2021** NBER Winter IO Series, paper discussant. Harvard Business School, guest lecture. **2020** Stanford University, guest lecture. **2018** Stanford GSB, guest lecture. UC Davis Economics Alumni conference. **2016** ACM Conference on Economics and Computation (EC16) **2015** UC Berkeley-IOfest, International Industrial Organization Conference, University of California, Davis IO Seminar, Econometric Society World Congress, UC Berkeley Simons Institute **2014** Santa Clara University, Elance-oDesk Research Seminar **2013** Adobe Research, University of California, Davis **2012** University of Tennessee, Bureau of Economic Analysis, U.S. Treasury Office of Micro-economic Analysis, Federal Trade Commission, U.S. Census Bureau, Federal Communications Commission, Federal Reserve Bank of Kansas City, Federal Reserve Bank of Philadelphia, University of California, Merced, Western Economics Association International, **2011** Stanford Environmental and Energy Policy Analysis Center; UC Davis Microeconomics Brownbag Series; UC Davis ITS Seminar; **2010** University of California Transportation Center Annual Conference; UC Davis Microeconomics Brownbag Series; UC Davis Economics Department Special Seminar on Advanced Tools for Data Collection from the Deep Web

PROFESSIONAL  
ACTIVITIES

**Member** American Economics Association, National Association of Business Economists **Conference Program Committees** ACM Conference on Economics and Computation, Amazon Machine Learning Conference (Economics Area Chair) **Referee** Review of Economic Studies, American Economic Review, Journal of Political Economy, Quantitative Marketing and Economics, Journal of Law, Economics and Organization, International Journal of Research in Marketing, Journal of Economic Behavior & Organization, Regional Science and Urban Economics.

OTHER  
SKILLS

Graduate training in finance, 4 years experience in accounting