Skills for Economists to Deliver in the Tech Sector

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September 10, 2024

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What Economists Do in Amazon

- ► Convert business problems into research questions
- ► Conduct research and report business insights
- ► Use data to advise business decisions
- ► Communicate with stakeholders

Example of what I did in Amazon.

Skills Economists Already Have

- Data analysis: Econometrics, Statistics, and present results
- Research before asking questions
- Learning new tools and methods
- Systematic thinking based on economic frameworks
- Academic writing
- Project management

Non-traditional Skills Economists Need to Develop

- ▶ Machine learning models
- ▶ Non-academic writing: non-technical writing (2 to 6 pages, and sometimes less is more)
- ▶ Stakeholder management: communicate with non-economists (in non-condescending ways!)
- ▶ Engineering skills, e.g., Git (version control), convert estimations into production code (e.g., automatically run estimations periodically and output results)

Examples of Specific Hard Skills Needed in Tech Companies

- ▶ SQL: Write SQL queries or use dbplyr in R
- ▶ Python (or R): if you are still using Stata, switch to Python or R now! Try visual studio code for Python or R.
- ▶ Git: Write your code with version control in github; if you have coauthor, learn how to do code review.
- ▶ Learn basic linux commands for high performance computing (e.g., how to run your Python or R code, how to schedule a cron job)
- ▶ Most recent development in causal inference:
    1. Double machine learning (Chernozhukov et al., 2018)
    2. Causal forest (Wager and Athey, 2018)
    3. Surrogate index for evaluating long term impact (Athey et al., 2019)
    4. Recent development in DID (e.g., Callaway and Sant'Anna, 2021, 2024)
    5. Generalized Synthetic Control (Xu et al., 2021)

📄 Athey, S., R. Chetty, G. Imbens, and H. Kang. 2019. "The Surrogate Index: Combining Short-Term Proxies to Estimate Long-Term Treatment Effects More Rapidly and Precisely." No. w26463, National Bureau of Economic Research. Available at: http://www.nber.org/papers/w26463.pdf.

📄 Chernozhukov, V., D. Chetverikov, M. Demirer, E. Duflo, C. Hansen, and W. Newey. 2018. "Double/Debiased Machine Learning for Treatment and Structural Parameters." The Econometrics Journal 21(1):C1–C68.

📄 Callaway, B., and P.H.C. Sant'Anna. 2021. "Difference-in-Differences with multiple time periods." Journal of Econometrics 225(2):200–230.

📄 Callaway, B., A. Goodman-Bacon, and P.H.C. Sant'Anna. "Difference-in-Differences with a Continuous Treatment."

📄 Wager, S., and S. Athey. 2018. "Estimation and Inference of Heterogeneous Treatment Effects using Random Forests."

Journal of the American Statistical Association
113(523):1228–1242.

📄 Xu, Y. 2017. "Generalized Synthetic Control Method: Causal
Inference with Interactive Fixed Effects Models." Political
Analysis 25(1):57–76.