Microeconometrics
ä reading list

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1 Introduction

- Imbens, G. W. and Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, 47(1)
- Angrist, J. D. and Pischke, J.-S. (2010). The credibility revolution in empirical economics: How better research design is taking the con out of econometrics. *Journal of Economic Perspectives*, 24(2)
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- Varian, H. R. (2014). Big data: New tricks for econometrics. *Journal of Economic Perspectives*, 28(2)
- Athey, S. and Imbens, G. W. (2017b). The state of applied econometrics: Causality and policy evaluation. *Journal of Economic Perspectives*, 31(2)
- Abadie, A. and Cattaneo, M. D. (2018). Econometric methods for program evaluation. *Annual Review of Economics*, 10(1)
- Athey, S. and Imbens, G. W. (2019). Machine learning methods that economists should know about. *Annual Review of Economics*, 11(1)
- Imbens, G. W. (2020). Potential outcome and directed acyclic graph approaches to causality: Relevance for empirical practice in economics. *Journal of Economic Literature*, 58(4)

2 Causal Graph

- Pearl, J. (1995). Causal diagrams for empirical research. *Biometrika*, 82(4)
- Pearl, J. (2009). Causal inference in statistics: An overview. *Statistics Surveys*, 3
- Spirtes, P. (2010). Introduction to causal inference. *Journal of Machine Learning Research*, 11(54)
- Elwert, F. and Winship, C. (2014). Endogenous selection bias: The problem of conditioning on a collider variable. *Annual Review of Sociology*, 40(1)
- Pearl, J. and Bareinboim, E. (2014). External validity: From do-calculus to transportability across populations. *Statistical Science*, 29(4)
- Glymour, C., Zhang, K., and Spirtes, P. (2019). Review of causal discovery methods based on graphical models. *Frontiers in Genetics*, 10

3 Randomized Experiment

Method

- Harrison, G. W. and List, J. A. (2004). Field experiments. *Journal of Economic Literature*, 42(4)
- Deaton, A. (2010). Instruments, randomization, and learning about development. *Journal of Economic Literature*, 48(2)
- Kasy, M. (2016). Why experimenters might not always want to randomize, and what they could do instead. *Political Analysis*, 24(3)
- Wager, S., Du, W., Taylor, J., and Tibshirani, R. J. (2016). High-dimensional regression adjustments in randomized experiments. *Proceedings of the National Academy of Sciences*, 113(45)
- Athey, S. and Imbens, G. W. (2017a). The econometrics of randomized experiments. In Banerjee, A. V. and Duflo, E., editors, *Handbook of Economic Field Experiments*, volume 1 of *Handbook of Field Experiments*
- Baldassarri, D. and Abascal, M. (2017). Field experiments across the social sciences. *Annual Review of Sociology*, 43(1)
- Deaton, A. and Cartwright, N. (2018). Understanding and misunderstanding randomized controlled trials. *Social Science & Medicine*, 210

- Bouguen, A., Huang, Y., Kremer, M., and Miguel, E. (2019). Using randomized controlled trials to estimate long-run impacts in development economics. *Annual Review of Economics*, 11(1)
- Banerjee, A. V. (2020). Field experiments and the practice of economics. *American Economic Review*, 110(7):1937–1951
- Kasy, M. and Sautmann, A. (2021). Adaptive treatment assignment in experiments for policy choice. *Econometrica*, 89(1)

Application

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- Krueger, A. B. (1999). Experimental estimates of education production functions. *The Quarterly Journal of Economics*, 114(2)
- Sacerdote, B. (2001). Peer effects with random assignment: Results for dartmouth roommates. *The Quarterly Journal of Economics*, 116(2)
- Bertrand, M. and Mullainathan, S. (2004). Are emily and greg more employable than lakisha and jamal? A field experiment on labor market discrimination. *American Economic Review*, 94(4)
- Miguel, E. and Kremer, M. (2004). Worms: Identifying impacts on education and health in the presence of treatment externalities. *Econometrica*, 72(1)
- Ho, D. E. and Imai, K. (2006). Randomization inference with natural experiments. *Journal of the American Statistical Association*, 101(475)
- Kling, J. R., Liebman, J. B., and Katz, L. F. (2007). Experimental analysis of neighborhood effects. *Econometrica*, 75(1)
- Gerber, A. S., Green, D. P., and Larimer, C. W. (2008). Social pressure and voter turnout: Evidence from a large-scale field experiment. *American Political Science Review*, 102(1)
- Jensen, R. T. and Miller, N. H. (2008). Giffen behavior and subsistence consumption. *American Economic Review*, 98(4)
- Shadish, W. R., Clark, M. H., and Steiner, P. M. (2008). Can nonrandomized experiments yield accurate answers? A randomized experiment comparing random and nonrandom assignments. *Journal of the American Statistical Association*, 103(484)

- Bandiera, O., Barankay, I., and Rasul, I. (2009). Social connections and incentives in the workplace: Evidence from personnel data. *Econometrica*, 77(4)
- Dupas, P. (2011). Do teenagers respond to HIV risk information? Evidence from a field experiment in kenya. *American Economic Journal: Applied Economics*, 3(1)
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- Bond, R. M., Fariss, C. J., Jones, J. J., Kramer, A. D. I., Marlow, C., Settle, J. E., and Fowler, J. H. (2012). A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415)
- Crepon, B., Duflo, E., Gurgand, M., Rathelot, R., and Zamora, P. (2013). Do labor market policies have displacement effects? Evidence from a clustered randomized experiment. *The Quarterly Journal of Economics*, 128(2)
- Banerjee, A., Duflo, E., Glennerster, R., and Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics*, 7(1)
- Caria, S., Gordon, G., Kasy, M., Quinn, S., Shami, S., and Teytelboym, A. (2020). An adaptive targeted field experiment: Job search assistance for refugees in jordan. *CESifo Working Paper No. 8535*

4 Treatment Effects under Unconfoundedness

Method

- Imbens, G. W. (2004). Nonparametric estimation of average treatment effects under exogeneity: A review. *The Review of Economics and Statistics*, 86(1)
- Chernozhukov, V., Chetverikov, D., Demirer, M., Duflo, E., Hansen, C., and Newey, W. (2017). Double/debiased/neyman machine learning of treatment effects. *American Economic Review*, 107(5)
- Liu, L., Mukherjee, R., and Robins, J. M. (2020). On nearly assumption-free tests of nominal confidence interval coverage for causal parameters estimated by machine learning. *Statistical Science*, 35(3)
- Semenova, V. and Chernozhukov, V. (2020). Debiased machine learning of conditional average treatment effects and other causal functions. *The Econometrics Journal*, 24(2)

- Farrell, M. H., Liang, T., and Misra, S. (2021). Deep neural networks for estimation and inference. *Econometrica*, 89(1)

5 Heterogeneous Treatment Effects

Method

- Athey, S. and Imbens, G. (2016). Recursive partitioning for heterogeneous causal effects. *Proceedings of the National Academy of Sciences*, 113(27)
- Grimmer, J., Messing, S., and Westwood, S. J. (2017). Estimating heterogeneous treatment effects and the effects of heterogeneous treatments with ensemble methods. *Political Analysis*, 25(4)
- Wager, S. and Athey, S. (2018). Estimation and inference of heterogeneous treatment effects using random forests. *Journal of the American Statistical Association*, 113(523)
- Athey, S., Tibshirani, J., and Wager, S. (2019). Generalized random forests. *The Annals of Statistics*, 47(2)
- Kunzel, S. R., Sekhon, J. S., Bickel, P. J., and Yu, B. (2019). Metalearners for estimating heterogeneous treatment effects using machine learning. *Proceedings of the National Academy of Sciences*, 116(10)
- Oprescu, M., Syrgkanis, V., and Wu, Z. S. (2019). Orthogonal random forest for causal inference. *36th International Conference on Machine Learning, ICML 2019*
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- Knaus, M. C., Lechner, M., and Strittmatter, A. (2021). Machine learning estimation of heterogeneous causal effects: Empirical monte carlo evidence. *The Econometrics Journal*, 24(1)
- Nie, X. and Wager, S. (2021). Quasi-oracle estimation of heterogeneous treatment effects. *Biometrika*, 108(2)

6 High-dimensional Methods

Method

- Fan, J. and Li, R. (2001). Variable selection via nonconcave penalized likelihood and its oracle properties. *Journal of the American Statistical Association*, 96(456)
- Zou, H. (2006). The adaptive lasso and its oracle properties. *Journal of the American Statistical Association*, 101(476)
- Belloni, A., Chernozhukov, V., and Wang, L. (2011). Square-root lasso: pivotal recovery of sparse signals via conic programming. *Biometrika*, 98(4)
- Belloni, A., Chen, D., Chernozhukov, V., and Hansen, C. (2012). Sparse models and methods for optimal instruments with an application to eminent domain. *Econometrica*, 80(6)
- Belloni, A. and Chernozhukov, V. (2013). Least squares after model selection in high-dimensional sparse models. *Bernoulli*, 19(2)
- Zhang, C.-H. and Zhang, S. S. (2014). Confidence intervals for low dimensional parameters in high dimensional linear models. *Journal of the Royal Statistical Society. Series B (Statistical Methodology)*, 76(1)
- Belloni, A., Chernozhukov, V., and Hansen, C. (2014a). High-dimensional methods and inference on structural and treatment effects. *Journal of Economic Perspectives*, 28(2)
- Belloni, A., Chernozhukov, V., and Hansen, C. (2014b). Inference on treatment effects after selection among high-dimensional controls. *The Review of Economic Studies*, 81(2)
- Belloni, A., Chernozhukov, V., and Wang, L. (2014c). Pivotal estimation via square-root lasso in nonparametric regression. *The Annals of Statistics*, 42(2)
- Lockhart, R., Taylor, J., Tibshirani, R. J., and Tibshirani, R. (2014). A significance test for the lasso. *The Annals of Statistics*, 42(2)
- Chernozhukov, V., Hansen, C., and Spindler, M. (2015). Post-selection and post-regularization inference in linear models with many controls and instruments. *American Economic Review*, 105(5)
- Taylor, J. and Tibshirani, R. J. (2015). Statistical learning and selective inference. *Proceedings of the National Academy of Sciences*, 112(25)
- Belloni, A., Chernozhukov, V., Hansen, C., and Kozbur, D. (2016). Inference in high-dimensional panel models with an application to gun control. *Journal of Business & Economic Statistics*, 34(4)

- Hansen, B. (2016). Efficient shrinkage in parametric models. *Journal of Econometrics*, 190(1)
- Lee, J. D., Sun, D. L., Sun, Y., and Taylor, J. E. (2016). Exact post-selection inference, with application to the lasso. *The Annals of Statistics*, 44(3)
- Belloni, A., Chernozhukov, V., Fernandez-Val, I., and Hansen, C. (2017). Program evaluation and causal inference with high-dimensional data. *Econometrica*, 85(1)
- Abadie, A. and Kasy, M. (2019). Choosing among regularized estimators in empirical economics: The risk of machine learning. *The Review of Economics and Statistics*, 101(5)
- Dukes, O. and Vansteelandt, S. (2021). Inference for treatment effect parameters in potentially misspecified high-dimensional models. *Biometrika*, 108(2)
- Heiler, P. and Mareckova, J. (2021). Shrinkage for categorical regressors. *Journal of Econometrics*, 223(1)

7 Matching

Method

- Abadie, A. and Imbens, G. W. (2006). Large sample properties of matching estimators for average treatment effects. *Econometrica*, 74(1)
- Ho, D. E., Imai, K., King, G., and Stuart, E. A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis*, 15(3)
- Sekhon, J. S. (2009). Opiates for the matches: Matching methods for causal inference. *Annual Review of Political Science*, 12(1)
- Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical sciences*, 25(1)
- Abadie, A. and Imbens, G. W. (2011). Bias-corrected matching estimators for average treatment effects. *Journal of Business & Economic Statistics*, 29(1)
- Diamond, A. and Sekhon, J. S. (2013). Genetic matching for estimating causal effects: A general multivariate matching method for achieving balance in observational studies. *The Review of Economics and Statistics*, 95(3)
- Imbens, G. W. (2015). Matching methods in practice: Three examples. *The Journal of Human Resources*, 50(2)

- Otsu, T. and Rai, Y. (2017). Bootstrap inference of matching estimators for average treatment effects. *Journal of the American Statistical Association*, 112(520)
- Athey, S., Imbens, G. W., and Wager, S. (2018). Approximate residual balancing: debiased inference of average treatment effects in high dimensions. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 80(4)
- Abadie, A. and Spiess, J. (2020). Robust post-matching inference. *Journal of the American Statistical Association*, 1(13)
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- Rosenbaum, P. R. (2020). Modern algorithms for matching in observational studies. *Annual Review of Statistics and Its Application*, 7(1)

Application

- Dale, S. B. and Krueger, A. B. (2002). Estimating the payoff to attending a more selective college: An application of selection on observables and unobservables. *The Quarterly Journal of Economics*, 117(4)
- Harding, D. J. (2003). Counterfactual models of neighborhood effects: The effect of neighborhood poverty on dropping out and teenage pregnancy. *American Journal of Sociology*, 109(3)
- Jalan, J. and Ravallion, M. (2003). Does piped water reduce diarrhea for children in rural india? *Journal of Econometrics*, 112(1)
- Black, D. and Smith, J. (2004). How robust is the evidence on the effects of college quality? Evidence from matching. *Journal of Econometrics*, 121(1)
- Arceneaux, K., Gerber, A. S., and Green, D. P. (2006). Comparing experimental and matching methods using a large-scale voter mobilization experiment. *Political Analysis*, 14(1)
- Colak, G. and Whited, T. (2007). Spin-offs, divestitures, and conglomerate investment. *Review of Financial Studies*, 20(3)

8 Propensity Score Methods

Method

- Rosenbaum, P. R. and Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1)
- Hahn, J. (1998). On the role of the propensity score in efficient semiparametric estimation of average treatment effects. *Econometrica*, 66(2)
- Hirano, K. and Imbens, G. W. (2001). Estimation of causal effects using propensity score weighting: An application to data on right heart catheterization. *Health Services and Outcomes Research Methodology*, 2(3)
- Ichimura, H. and Taber, C. (2001). Propensity-score matching with instrumental variables. *American Economic Review*, 91(2)
- Dehejia, R. H. and Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *The Review of Economics and Statistics*, 84(1)
- Hirano, K., Imbens, G. W., and Ridder, G. (2003). Efficient estimation of average treatment effects using the estimated propensity score. *Econometrica*, 71(4)
- Bang, H. and Robins, J. M. (2005). Doubly robust estimation in missing data and causal inference models. *Biometrics*, 61(4)
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- Abadie, A. and Imbens, G. W. (2016). Matching on the estimated propensity score. *Econometrica*, 84(2)
- Benkeser, D., Carone, M., Laan, M. J. V. D., and Gilbert, P. B. (2017). Doubly robust nonparametric inference on the average treatment effect. *Biometrika*, 104(4)
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- Ning, Y., Sida, P., and Imai, K. (2020). Robust estimation of causal effects via a high-dimensional covariate balancing propensity score. *Biometrika*, 107(3)

Application

- Dehejia, R. H. and Wahba, S. (1999). Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs. *Journal of the American Statistical Association*, 94(448)
- Smith, J. A. and Todd, P. E. (2001). Reconciling conflicting evidence on the performance of propensity-score matching methods. *American Economic Review*, 91(2)
- Smith, J. A. and Todd, P. E. (2005). Does matching overcome LaLonde's critique of nonexperimental estimators? *Journal of Econometrics*, 125(1)
- Chan, D., Ge, R., Gershony, O., Hesterberg, T., and Lambert, D. (2010). Evaluating online ad campaigns in a pipeline: Causal models at scale. In *Proceedings of ACM SIGKDD 2010*

9 Ensemble Methods

Method

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- Ando, T. and Li, K.-C. (2014). A model-averaging approach for high-dimensional regression. *Journal of the American Statistical Association*, 109(505)
- Moral-Benito, E. (2015). Model averaging in economics: An overview. *Journal of Economic Surveys*, 29(1)
- Kitagawa, T. and Muris, C. (2016). Model averaging in semiparametric estimation of treatment effects. *Journal of Econometrics*, 193(1)

- Ando, T. and Li, K.-C. (2017). A weight-relaxed model averaging approach for high-dimensional generalized linear models. *The Annals of Statistics*, 45(6)
- Steel, M. F. J. (2020). Model averaging and its use in economics. *Journal of Economic Literature*, 58(3)

10 Instrumental Variables

Method

- Bound, J., Jaeger, D. A., and Baker, R. M. (1995). Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. *Journal of the American Statistical Association*, 90(430)
- Angrist, J. D., Imbens, G. W., and Rubin, D. B. (1996). Identification of causal effects using instrumental variables. *Journal of the American statistical Association*, 91(434)
- Angrist, J. D., Graddy, K., and Imbens, G. W. (2000). The interpretation of instrumental variables estimators in simultaneous equations models with an application to the demand for fish. *The Review of Economic Studies*, 67(3)
- Angrist, J. D. and Krueger, A. B. (2001). Instrumental variables and the search for identification: From supply and demand to natural experiments. *Journal of Economic Perspectives*, 15(4)
- Abadie, A. (2003). Semiparametric instrumental variable estimation of treatment response models. *Journal of Econometrics*, 113(2)
- Kleibergen, F. and Zivot, E. (2003). Bayesian and classical approaches to instrumental variable regression. *Journal of Econometrics*, 114(1)
- Newey, W. K. and Powell, J. L. (2003). Instrumental variable estimation of nonparametric models. *Econometrica*, 71(5)
- Hall, P. and Horowitz, J. L. (2005). Nonparametric methods for inference in the presence of instrumental variables. *Annals of Statistics*, 33(6)
- Murray, M. P. (2006). Avoiding invalid instruments and coping with weak instruments. *Journal of Economic Perspectives*, 20(4)
- Chernozhukov, V., Imbens, G. W., and Newey, W. K. (2007). Instrumental variable estimation of nonseparable models. *Journal of Econometrics*, 139(1)

- Frolich, M. (2007). Nonparametric IV estimation of local average treatment effects with covariates. *Journal of Econometrics*, 139(1)
- Horowitz, J. L. and Lee, S. (2007). Nonparametric instrumental variables estimation of a quantile regression model. *Econometrica*, 75(4)
- Conley, T. G., Hansen, C. B., McCulloch, R. E., and Rossi, P. E. (2008). A semi-parametric bayesian approach to the instrumental variable problem. *Journal of Econometrics*, 144(1)
- Kuersteiner, G. and Okui, R. (2010). Constructing optimal instruments by first-stage prediction averaging. *Econometrica*, 78(2)
- Darolles, S., Fan, Y., Florens, J.-P., and Renault, E. (2011). Nonparametric instrumental regression. *Econometrica*, 79(5)
- Horowitz, J. L. (2011). Applied nonparametric instrumental variables estimation. *Econometrica*, 79(2)
- Bollen, K. A. (2012). Instrumental variables in sociology and the social sciences. *Annual Review of Sociology*, 38(1)
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- Gagliardini, P. and Scaillet, O. (2012a). Nonparametric instrumental variable estimation of structural quantile effects. *Econometrica*, 80(4)
- Gagliardini, P. and Scaillet, O. (2012b). Tikhonov regularization for nonparametric instrumental variable estimators. *Journal of Econometrics*, 167(1)
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- Chesher, A. and Rosen, A. M. (2013). What do instrumental variable models deliver with discrete dependent variables? *American Economic Review*, 103(3)
- Newey, W. K. (2013). Nonparametric instrumental variables estimation. *American Economic Review*, 103(3)
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- Kasy, M. (2014). Instrumental variables with unrestricted heterogeneity and continuous treatment. *The Review of Economic Studies*, 81(4)

- Kitagawa, T. (2015). A test for instrument validity. *Econometrica*, 83(5)
- DiTraglia, F. J. (2016). Using invalid instruments on purpose: Focused moment selection and averaging for GMM. *Journal of Econometrics*, 195(2)
- Chetverikov, D. and Wilhelm, D. (2017). Nonparametric instrumental variable estimation under monotonicity. *Econometrica*, 85(4)
- Mogstad, M. and Torgovitsky, A. (2018). Identification and extrapolation of causal effects with instrumental variables. *Annual Review of Economics*, 10(1)
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- Gold, D., Lederer, J., and Tao, J. (2020). Inference for high-dimensional instrumental variables regression. *Journal of Econometrics*, 217(1)
- Goldsmith-Pinkham, P., Sorkin, I., and Swift, H. (2020). Bartik instruments: What, when, why, and how. *American Economic Review*, 110(8)
- Chen, X., Christensen, T., and Kankanala, S. (2021). Adaptive estimation and uniform confidence bands for nonparametric IV. *arXiv:2107.11869 [econ, stat]*

Application

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- Angrist, J. D. and Krueger, A. B. (1991). Does compulsory school attendance affect schooling and earnings? *The Quarterly Journal of Economics*, 106(4)
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- Angrist, J. D. and Evans, W. N. (1998). Children and their parents' labor supply: Evidence from exogenous variation in family size. *American Economic Review*, 88(3)
- Acemoglu, D., Johnson, S., and Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review*, 91(5)
- Card, D. (2001). Estimating the return to schooling: Progress on some persistent econometric problems. *Econometrica*, 69(5)

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- Abadie, A., Angrist, J., and Imbens, G. (2002). Instrumental variables estimates of the effect of subsidized training on the quantiles of trainee earnings. *Econometrica*, 70(1)
- Edin, P.-A., Fredriksson, P., and Aslund, O. (2003). Ethnic enclaves and the economic success of immigrants - evidence from a natural experiment. *The Quarterly Journal of Economics*, 118(1)
- Black, S. E., Devereux, P. J., and Salvanes, K. G. (2005). The more the merrier? The effect of family size and birth order on children's education. *The Quarterly Journal of Economics*, 120(2)
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- Autor, D. H., Dorn, D., and Hanson, G. H. (2013). The china syndrome: Local labor market effects of import competition in the united states. *American Economic Review*, 103(6)
- Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., and Walters, C. R. (2016). Stand and deliver: Effects of boston's charter high schools on college preparation, entry, and choice. *Journal of Labor Economics*, 34(2)
- Bai, Y. and Jia, R. (2016). Elite recruitment and political stability: The impact of the abolition of china's civil service exam. *Econometrica*, 84(2)
- Shue, K. and Townsend, R. R. (2017). How do quasi-random option grants affect CEO risk-taking? *The Journal of Finance*, 72(6)
- Acemoglu, D. and Restrepo, P. (2020). Robots and jobs: Evidence from US labor markets. *Journal of Political Economy*, 128(6)

- Manacorda, M. and Tesei, A. (2020). Liberation technology: Mobile phones and political mobilization in africa. *Econometrica*, 88(2)

11 Difference-in-Differences

Method

- Bertrand, M., Duflo, E., and Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly Journal of Economics*, 119(1)
- Abadie, A. (2005). Semiparametric difference-in-differences estimators. *The Review of Economic Studies*, 72(1)
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