

Causality and Programme Evaluation

Summer Semester 2018

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General Information

- Lectures: Weekly, Monday 10am–12noon.
- First lecture on 09 April 2018.
- Tutorials: Monday 14pm–16pm, starting 25 April 2018.
- Venues: Lectures Altendorfer Straße A-001 and tutorials in Altendorfer Straße A-114

Course Description

The course is intended to be a Master/Ph.D. level course in causal inference and program evaluation methodology. The focus will lie on using the potential outcomes framework for causal analysis as a general concept, and examine identification and estimation of treatment effects under different assumptions. The aim of the course is to familiarize students with standard methods currently used in empirical economics to answer causal questions. Students willing to write an applied master thesis at the chair of health economics are encouraged to participate in the course as it will provide them with a solid foundation for further empirical work.

Prerequisites

It is assumed that students have a solid background in basic probability theory and statistics, linear regression analysis of at least the level of Econometrics I and II taught at the University of Duisburg-Essen. Further knowledge of standard microeconomic methods such as models for binary choice or sample selection are helpful but not mandatory. Furthermore, you should be familiar with at least one standard statistical software package (such as Matlab, Gauss, Stata, S-Plus, R, SAS). The course is taught completely in English.

Evaluation

There will be several homework assignments. In addition, there will be a term-paper applying the methods discussed in class, which has to be submitted until the end of the semester. More information about the term paper will be given in class. The assignments will account for 20% of the final grade. Students are highly encouraged to take the term paper as basis of further research or a master thesis in applied economics.

Extensive Reading List

General Reference Texts

Smith, J., Sweetman, A., 2016. Viewpoint: Estimating the causal effects of policies and programs. *Canadian Journal of Economics/Revue canadienne d'économie* 49 (3), 871–905

Schlotter, M., Schwerdt, G., Woessmann, L., 2011. Econometric methods for causal evaluation of education policies and practices: A non-technical guide. *Education Economics* 19 (2), 109–137

Angrist, J., Pischke, J., 2009. *Mostly harmless econometrics: An empiricist's companion*. Princeton Univ Press

Imbens, G., Wooldridge, J., 2009. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47 (1), 5–86

Lecture 1: Introduction (9 April)

Smith, J., Sweetman, A., 2016. Viewpoint: Estimating the causal effects of policies and programs. *Canadian Journal of Economics/Revue canadienne d'économie* 49 (3), 871–905

Imbens, G., Wooldridge, J., 2009. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47 (1), 5–86

Lecture 2: Theories of Causation (17 April)

Essential

Imbens, G. W., 2010. Better LATE than nothing: Some comments on Deaton (2009) and Heckman and Urzua (2009). *Journal of Economic Literature* 48 (2), 399–423

Deaton, A., 2010. Instruments, randomization, and learning about development. *Journal of Economic Literature* 48 (2), 424–455

Optional

Angrist, J., Pischke, J., 2010. The credibility revolution in empirical economics: How better research design is taking the con out of econometrics. *The Journal of Economic Perspectives* 24 (2), 3–30

Lecture 3: Randomisation (23 April)

Essential

Duflo, E., Glennerster, R., Kremer, M., 2007. Using randomization in development economics research: A toolkit. *Handbook of development economics* 4, 3895–3962

Huber, M., 2013. Identifying causal mechanisms (primarily) based on inverse probability weighting. *Journal of Applied Econometrics*

Optional

Duwendack, M., Palmer-Jones, R. W., Reed, W. R., 2014. Replications in economics: A progress report. Tech. rep

Lecture 4: Difference-in-Differences I (30 April)

Essential

Lechner, M., 2011. The estimation of causal effects by difference-in-difference methods. *Foundations and Trends (R) in Econometrics* 4 (3), 165–224

Optional

Athey, S., Imbens, G. W., 2006. Identification and inference in nonlinear difference-in-differences models. *Econometrica*, 431–497

Abadie, A., Diamond, A., Hainmueller, J., 2010. Synthetic control methods for comparative case studies: Estimating the effect of California’s tobacco control program. *Journal of the American Statistical Association* 105 (490), 493–505

Bonhomme, S., Sauder, U., 2011. Recovering distributions in difference-in-differences models: A comparison of selective and comprehensive schooling. *Review of Economics and Statistics* 93 (2), 479–494

Mora, R., Reggio, I., 2012. Treatment effect identification using alternative parallel assumptions. *Universidad Carlos III Working Paper 12-33, Economic Series* (48)

Pischke, J.-S., Schwandt, H., 2014. Poorly measured confounders are more useful on the left than on the right. Tech. rep., Working Paper, London School of Economics

Puhani, P. A., 2012. The treatment effect, the cross difference, and the interaction term in nonlinear difference-in-differences? models. *Economics Letters* 115 (1), 85–87

Lecture 5: Difference-in-Differences II (7 May)

Essential

Brewer, M., Crossley, T., Joyce, R., 2013. Inference with difference-in-differences revisited

Optional

Wooldridge, J., 2006. Cluster-sample methods in applied econometrics: An extended analysis. Unpublished manuscript

Bertrand, M., Duflo, E., Mullainathan, S., 2004. How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics* 119 (1), 249–275

Donald, S., Lang, K., 2007. Inference with difference-in-differences and other panel data. *The Review of Economics and Statistics* 89 (2), 221–233

Lecture 6: Instrumental Variables I (14 May)

Essential

Angrist, J., Pischke, J., 2009. Mostly harmless econometrics: An empiricist's companion. Princeton Univ Press [Chapter 4]

Optional

Huber, M., Mellace, G., 2012. Relaxing monotonicity in the identification of local average treatment effects. Tech. rep., University of St. Gallen, School of Economics and Political Science

Fiorini, M., Stevens, K., 2014. Assessing the monotonicity assumption in iv and fuzzy rd designs. Tech. rep

de Chaisemartin, C., 2014. Tolerating defiance? local average treatment effects without monotonicity. Warwick Economics Research Paper Series (1020)

De Chaisemartin, C., D'Haultfoeuille, X., et al., 2012. Late again with defiers. PSE Working Paper Series no. 2012-23

Lecture 7: Instrumental Variables II (28 May)

Essential

Angrist, J., Pischke, J., 2009. Mostly harmless econometrics: An empiricist's companion. Princeton Univ Press [Chapter 4]

Optional

Joo, J., LaLonde, R., 2014. Testing for selection bias

Lecture 8: Marginal Treatment Effects (4 June)

Essential

Cornelissen, T., Dustmann, C., Raute, A., Schönberg, U., 2016. From late to mte: Alternative methods for the evaluation of policy interventions. Labour Economics 41, 47–60

Optional

Carneiro, P., Heckman, J. J., Vytlacil, E., 2011. Estimating marginal returns to education. The American economic review 101 (6), 2754

Heckman, J. J., Vytlacil, E., 2005. Structural equations, treatment effects, and econometric policy evaluation. Econometrica 73 (3), 669–738

Heckman, J. J., 2010. Building bridges between structural and program evaluation approaches to evaluating policy. Journal of Economic Literature 48 (2), 356–398

Lecture 9: Regression Discontinuity Design I (11 June)

Essential

Imbens, G., Lemieux, T., 2008. Regression discontinuity designs: A guide to practice. Journal of Econometrics 142 (2), 615–635

Optional

Card, D., Pei, Z., Lee, D. S., Weber, A., 2014. Local polynomial order in regression discontinuity designs. Tech. rep

Lecture 10: Regression Discontinuity Design II (18 June)

Essential

Lee, D., Lemieux, T., 2010. Regression discontinuity designs in economics. Journal of Economic Literature 48 (2), 281–355

Optional

Böckerman, P., Kanninen, O., Suoniemi, I., 2014. A kink that makes you sick: the effect of sick pay on absence in a social insurance system

Yanagi, T., 2014. The effect of measurement error in the sharp regression discontinuity design

Lecture 13: Quantile Treatment Effects (25 June)

Essential

Frölich, M., Melly, B., 2010. Estimation of quantile treatment effects with stata. *Stata Journal* 10 (3), 423

Optional

Abadie, A., Angrist, J., Imbens, G., 2002. Instrumental variables estimates of the effect of subsidized training on the quantiles of trainee earnings. *Econometrica* 70 (1), 91–117

Frandsen, B. R., Frölich, M., Melly, B., 2012. Quantile treatment effects in the regression discontinuity design. *Journal of Econometrics* 168 (2), 382–395

Stacy, B., 2014. Left with bias? quantile regression with measurement error in left hand side variables

Lecture 11: Unconfoundedness I (2 July)

Imbens, G., Wooldridge, J., 2009. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47 (1), 5–86

Lecture 12: Unconfoundedness II (9 July)

Imbens, G., Wooldridge, J., 2009. Recent developments in the econometrics of program evaluation. *Journal of Economic Literature* 47 (1), 5–86

Lecture 14: Programme Evaluation and Big Data (16 July)

Athey, S., Imbens, G. W., 2017. The state of applied econometrics: Causality and policy evaluation. *Journal of Economic Perspectives* 31 (2), 3–32