

# STEPHEN P. KASTORYANO

## CURRICULUM VITAE

November, 2019

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### PERSONAL INFORMATION

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Date of Birth: 05.07.1984  
Nationality: Switzerland, United States  
Languages: English(nat.), French(nat.), Spanish, Dutch, German

### ACADEMIC APPOINTMENT

Assistant Professor in Empirical Econometrics, University of Mannheim  
(Hiatus due to sickness throughout 2016-2019)

2013 - 2019

### EDUCATION

Ph.D in Economics, U. of Amsterdam & VU. Amsterdam 2009 - 2013  
Title: *Essays in Applied Dynamic Microeconomics*  
M.Phil. & M.Sc. in Economics, Tinbergen Institute 2007 - 2009  
B.A. in Economics, Political Science & Mathematics, Northwestern University 2003 - 2006

### RESEARCH

**Research interests:** Applied Microeconomics, Causal Inference Methodology,  
Crime Economics, Labor Economics

**Job Market Paper:**

- Decomposing Causal Mechanisms in Duration Models with Unobserved Heterogeneity  
(with J. Beyhum)

**Publications:**

- Street Prostitution Zones and Crime, 2017, *AEJ: Economic Policy*  
(with P. Bisschop and B. van der Klaauw)

**Working papers and Research in progress:**

- Dynamic Evaluation of Job Search Assistance, *R&R Journal of Applied Econometrics*  
(with B. van der Klaauw)
- Identification and Estimation of Causal Mechanisms in a Dynamic IV-Mediation Model
- Statistical Detection of Tax Fraud using Auditing Announcements, a Machine Learning Approach
- Manipulation of Crime Statistics prior to US Mayor Elections

**References:**

Professor Bas van der Klaauw  
VU University Amsterdam  
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University of Mannheim  
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University of St. Gallen  
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### PROFESSIONAL AFFILIATIONS

- Institute for the Study of Labor (IZA) Research Affiliate 2011 - present
- Center for Econometrics and Empirical Evaluation (CEEE), Mannheim 2013 - 2019
- Fellow at the Netherlands Institute for the Study of Crime and Law Enforcement 2016

## **HONORS, AWARDS, FELLOWSHIPS**

- C. Willems Stichting Scholarship for visiting UCL
- Econometrics Games 2010: 2nd place worldwide with VU Amsterdam team
- NETSPAR M.Phil. Thesis award 2010
- Huygens Scholarship 2007- 2009

## **TEACHING EXPERIENCE**

- 2016: Ph.D. Advanced Econometrics II
- 2015: Ph.D. Advanced Econometrics II, B.Sc. Econometrics of Panel Data and Social Interactions,
- 2014: Ph.D. Advanced Econometrics II, Ph.D. Econometrics of Panel Data and Social Interactions, B.Sc. Econometrics of Panel Data and Social Interactions
- 2013: Ph.D. Econometrics of Panel Data and Social Interactions B.Sc. Econometrics of Panel Data and Social Interactions
- 2011: B.Sc. Thesis Seminar Economics
- 2009: Microeconomics I, U. of Amsterdam, Teaching assistant
- 2008: Microeconomics, Macroeconomics, Econometrics, VU. Amsterdam, teaching assistant for first year M.Sc. program

## **CONFERENCE PRESENTATIONS**

- 2015: 7th Annual Meeting on the Economics of Risky Behaviors IZA (Izmir), European Economic Association (Mannheim), International Association for Applied Econometrics Annual Conference (Thessaloniki)
- 2014: 68th European Meeting of the Econometric Society (Toulouse), Counterfactual Methods for Policy Impact Evaluation (Rome)
- 2013: LATAM workshop in econometrics (Sao Paulo), Institute for the Study of Labour (Bonn)
- 2012: 66th European Meeting of the Econometric Society (Malaga), IAB Workshop on Job Search Assistance, Monitoring and Sanctions (Nuremberg), VU Amsterdam Criminology (NSCR), Aarhus University, University of Mannheim
- 2011: IZA Summer School
- 2010: SOLE & EALE Joint Annual Meeting 2010, Econometric Society World Congress 2010, 3rd Joint IZA/IFAU Conference on Labor Market Policy 2010, Swiss Economists Abroad Conference 2010

## **REFEREE ACTIVITIES**

Review of Economic Studies, Journal of Business and Economics Statistics, Journal of Human Resources, Journal of Population Economics, Labour Economics, Empirical Economics.

## **Research Statement:**

### *Econometrics:*

My econometric research develops frameworks and models which allow a researcher to identify the causal effects of a so-called policy regime and of the actual implementation of a treatment. More specifically, I consider situation where individuals are randomized to a *policy regime* which dictates a stochastic propensity to future *treatment* among agents. I allow selection on unobservables and formulate novel assumptions to identify different causal mechanisms and characterize the affected agent subtypes (eg. compliers).

The dynamic potential outcomes frameworks I have been developing build on several strands of literature in econometrics and statistics: 1. the IV-LATE potential outcomes framework (Imbens and Angrist, 1994; Heckman and Vytlacil, 2005), 2. the mediation analysis literature (Robins and Greenland 1992; Imai, Keele and Yamamoto, 2010), 3. the dynamic treatment effects literature (Robins, 1986; 1997; Abbring and van den Berg, 2003; 2005). The econometric identification issues I consider are always motivated by policy relevant empirical problems.

The first paper on this research agenda is my **JOB MARKET PAPER “Decomposing Causal Mechanisms with Duration Outcomes”** with Jad Beyhum. This paper presents an econometric framework which identifies the causal effects of a treatment policy regime and of the actual implementation of treatment when the outcome of interest is a duration variable. We consider a situation in which agents are randomized to a policy regime upon entering an initial state that prescribes a stochastic propensity to future treatment. Thereafter, at different moments in time and depending upon their policy regime, surviving agents are randomized to actually receive treatment. Our dynamic potential outcomes framework provides non-parametric identification of: the ex-ante effect of the policy regime on the duration to exit, which may include placebo-type information effects, the ex-post baseline effect of actually receiving treatment on the duration to exit within a given policy regime, and the additional ex-post interaction effect of the policy regime and actually receiving treatment. We also extend our discussion to allow for dynamic information accumulation due to the past history of unobserved intermediate variables in a hazard model, which weakens several proportionality assumptions usually imposed. We further present an estimation procedure and present simulation results. Lastly we illustrate the framework using data from the experimental design of the US National Job Corps Study which includes duration measures for employment and crime outcomes. In this setting we decompose the different causal effects of the Job Corps program on the probability of arrest operating via employment.

The second paper on this research agenda is **“Identification and Estimation of Causal Mechanisms in a Dynamic IV Model with Selection on Unobservables”**. For this paper, the identification results have been derived but I am still looking for a dataset to provide an empirical application. The outcome in this paper can be discrete or continuous. I first consider the setting where a treatment is initially tested unexpectedly in the population and then rolled out generally. I allow agents to change their selection into treatment in the new regime based on unobservables and characterize a new decomposition of causal effects for complier sub-types. I then consider a second setting where the policy maker changes an existing policy regime thereby changing the propensity to receive treatment. Identifying the parameters of interest in this setting requires different assumptions than in the duration setting since we can not exploit information from variation on the time dimension. I therefore develop a new assumption which has as a special case the IV-LATE exclusion restriction assumption on potential outcomes. As such, I show that IV-LATE is a special case in this dynamic setting. Since the framework imposes some monotonicity conditions, I also propose tests on these conditions.

Both of these papers build on work from a paper **“Dynamic Evaluation of Job Search Assistance”** jointly written with Bas van der Klaauw and which has been asked for a revise and resubmit by the Journal of Applied Econometrics. The paper evaluates a job search assistance program for unemployment insurance recipients where the assignment to the program is dynamic. The novel feature of this study is that we use administrative data from a unique institutional environment in which we know the variables determining assignment to the job search assistance program. This provides a background on which we discuss dynamic treatment effects framework from different methodological perspectives. We can also compare empirical results from different dynamic discrete-time evaluation models and continuous-time duration models.

### *Empirical Microeconomics*

Besides developing these new frameworks, I also have several purely empirical papers. One published, and two in progress. All of these touch on different aspects of crime economics. Given their focus on fraud detection and optimal policy, the two papers in progress lend themselves well to analysis using modern Machine Learning methods. This is the direction I intend to take with both of them.

The first empirical paper which is published in *AEJ : Policy*, titled **“Street Prostitution Zones and Crime”** with Paul Bisschop and Bas van der Klaauw, has received some media attention in the Netherlands and in the US (Vox.com, Nature, Cato institute). This paper studies the effects of legal street prostitution zones on registered and perceived crime. It is one of only two existing causal studies on the effect of legalizing prostitution. In addition, this paper is the first to discuss the influence of different types of regulation systems in combination with legalization. Using a unique setting in the Netherlands our most important result is that opening a tippelzone decreases registered sexual abuse and rape by about 30% – 40% in the first two years. For cities which enforced licensing in tippelzones, we also find reductions in drug-related crime and long-term effects on sexual assaults.

Another paper that I have been working on for a while is “**Statistical Detection of Tax Fraud using Auditing Announcements, a Machine Learning Approach**”. This paper builds on a huge enterprise I started during my PhD where I collected very detailed tax data from the Dutch tax authorities. In this paper I use unexpected tax-auditing announcements by the tax authorities to detect unusual tax evasion and avoidance behaviour. The unexpected nature of these auditing announcements allows me to evaluate how different types of taxpayers respond to an increased probability of auditing in financial assets, property holdings and debts. Current results indicate not only substantial tax evasion but also strategic substitutions and reallocations of income in response to these announcements. These results created quite a stir when presented to the tax authorities and for a long time it was unclear whether I would be able to finish this project. Fortunately, I have recently convinced them to let me pick it up again. In addition, thanks to developments of the past few years, I returned to one of my initial ideas for the paper which is to use machine learning methods to: i) as agnostically as possible categorize heterogenous effects of the announcements, ii) provide an optimal policy ranking for auditing based on the predicted evasion amount and the probability of being an evader.

A final empirical paper I am working on is “**Manipulation of Crime Statistics prior to US Mayor Elections**”. This paper gathers panel data to investigate whether crime statistics in quarters leading up to mayor elections in the US show significant variations from expected trends. In particular, we look at whether these fluctuations in reported crime rates depend on the predicted voting margins reported in local news prior to the elections. Results indicate not only decreases in specific media drawing crime categories such as homicide, but we also find a sharp up tick in crime reporting following the elections. Moreover, we find some of the reduction in media grabbing crime reports to coincide with increases in reports of close, but less media grabbing, overlapping crime categories.

## References

- Abbring, J.H., and G.J. van den Berg (2003), “The nonparametric identification of treatment effects in duration models”, *Econometrica* 71(5): 1491–1517.
- Abbring, J.H. and G.J. van den Berg (2005), “Social experiments and instrumental variables with duration outcomes”, *Tinbergen Institute Discussion Paper* 2005-047/3.
- Heckman, J.J., E.J. Vytlacil (2005), “Structural equations, treatment effects and econometric policy evaluation”, *Econometrica* 73(3), 669—738.
- Imai, K., L. Keele, and T. Yamamoto (2010), “Identification, inference and sensitivity analysis for causal mediation effects”, *Statistical Science* 25: 51–71.
- Imbens, G., J. Angrist, (1994), “Identification and estimation of local average treatment effects”, *Econometrica*, 62(2): 467-475.
- Robins, J.M. (1986), “A new approach to causal inference in mortality studies with sustained exposure periods – application to control of healthy worker survivor effect”, *Mathematical Modelling* 7(9-12): 1393-1512.
- Robins, J.M. (1997), “Causal inference from complex longitudinal data”, in M. Berkane (eds.), *Latent Variable Modelling and Applications to Causality. Lecture Notes in Statistics (120)*, Springer-Verlag, 69–117, New York.
- Robins, J. M., and S. Greenland (1992), “Identifiability and Exchangeability for Direct and Indirect Effects”, *Epidemiology*, 3(2): 143–155.

## **Teaching Statement & Evaluations:**

I take my teaching very seriously and feel it is an important responsibility. I am comfortable teaching anything in econometrics and most fields of microeconomics. Listed below are the courses I have taught and my overall teaching evaluation grades. It is worth noting that I did not have the possibility to take over any existing classes which meant that I developed every lecture from scratch. I see my strength as someone who can bridge econometric theory and empirical econometrics, and I try to emphasize this in my classes. When I present a proof I want it to be rigorous, but I also want to make sure students understand the economic meaning of the maths. I like to think that my classes at all levels compel students to think deeper about the economic meaning behind econometric assumptions, in particular when it comes to identification. Whenever possible, I also make a large fraction of the grade in my classes depend on empirical programming assignments. Although this means I spend additional time on corrections, I believe empirical assignments are essential to building intuition for new econometric methods.

### *Teaching Evaluations:*

Grade scale from 1-5 with 1.0 being the best possible grade.

- B.A. Lecture: Econometrics of panel data and social interactions:
  - Spring 2013: 1.58
  - Spring 2014: 1.86
  - Autumn 2015: 2.21
- B.A. Block Seminar: Difference-in-Difference
  - Spring 2015: 1.57
- Ph.D. Lecture: Econometrics of panel data and social interactions:
  - Spring 2013: 2.00
  - Autumn 2013: 1.71
  - Autumn 2014: 2.20
- Ph.D. Lecture: Junior Research Dialogue in Applied Econometrics:
  - Autumn 2014: no grade
  - Spring 2015: no grade
  - Autumn 2015: no grade
- Ph.D. Lecture: Advanced Econometrics II
  - Spring 2014: 2.89
  - Spring 2015: 2.92
  - Spring 2016: 1.14

### *PhD examiner:*

- Pia Unte, “Essays on Development Economics”, University of Mannheim