

JULIUS OWUSU

CONTACT INFORMATION

Department of Economics
McMaster University
1280 Main Street West
Hamilton, ON L8S 4M4
Canada

Phone: [+1 2895017606](tel:+12895017606)
Email: owusuj4@mcmaster.ca
Website: www.juliusowusu.ca
Citizenship: Ghanaian, Canadian permanent resident

EDUCATION

Ph.D., Economics, McMaster University, Hamilton, Ontario, Canada *(expected) June 2023.*

Dissertation: *Causal inference and decision-making in the presence of interference.*

Committee: Youngki Shin (Chair), Jeffrey S. Racine, Michael Veall.

M.A., Business Economics, Brock University, St.Catharines Ontario, Canada *Sep 2017.*

B.A., Economics & Mathematics, University of Ghana, Legon, Ghana *May 2013.*

FIELDS

Primary: Econometrics.

Secondary: Labor Economics, Development Economics

RESEARCH INTEREST

Program evaluation methods in the presence of social interactions, Nonparametric Estimation and Inference, and Statistical decision making with applications to labor and development policies.

WORKING PAPERS AND WORK IN PROGRESS

1. Randomization Inference of Heterogeneous Treatment Effects Under Interference.

Abstract

I design tests of heterogeneous treatment effects (HTEs) when *units interact*. Specifically, I study valid randomization tests for heterogeneous treatment effects in the presence of network interference. I model clustered network interference into the potential outcomes framework using the concept of network exposure mapping. Then, I consider four non-sharp null hypotheses that represent different contrasts of homogeneous treatment effects in this setting. I encounter two main challenges: the null hypotheses are not sharp, and nuisance parameters are present. I explore potential solutions to these problems and study the factors that affect the power and size distortions of the proposed kernel-based goodness of fit tests in each instance. Finally, I present testable restrictions that guarantee improvements in the proposed test.

2. [A Nonparametric Test of Heterogeneous Treatment Effects under Interference.](#)

Job market paper

Abstract

Statistical inference of heterogeneous treatment effects (HTEs) is confounded when economic units interact because treatment effects may vary by pre-treatment variables, post-treatment variables (that measure the exposure to other units' treatment statuses), or both. It invalidates the standard hypothesis testing techniques used to infer HTEs. In this paper, I develop statistical inference methods to detect HTEs and disentangle the drivers of treatment effects heterogeneity in populations where units interact. Specifically, I incorporate clustered interaction (interference) into the potential outcomes model and propose kernel-based test statistics for the null hypotheses of (a) no HTEs by treatment assignment (or post-treatment exposure variables) for all pre-treatment variables values; and (b) no HTEs by pre-treatment variables for all treatment assignment vectors. Furthermore, to disentangle the source of heterogeneity in treatment effects, I recommend a multiple testing algorithm. Using a poissonization technique, I prove the asymptotic properties of the proposed test statistics. Also, I recommend bootstrap methods that better approximate the null distributions in finite-sample settings. Monte Carlo simulation evidence corroborates the theoretical findings in the paper. Finally, to gain practical insight, I illustrate the usage of the proposed tests in an empirical application using an experimental data set from a Chinese weather insurance program.

3. [Statistical Treatment Rules under Social Interaction](#) (with Seungjin Han and Youngki Shin). *Under review*

Abstract

In this paper we study treatment assignment rules in the presence of social interaction. We construct an analytical framework under the anonymous interaction assumption, where the decision problem becomes choosing a treatment fraction. We propose a multinomial empirical success (MES) rule that includes the empirical success rule of Manski (2004) as a special case. We investigate the non-asymptotic bounds of the expected utility based on the MES rule. Finally, we prove that the MES rule achieves the asymptotic optimality with the minimax regret criterion.

4. [csa2s1s: A Complete Subset Approach for Many Instruments using Stata](#) (with Seojeong Lee, Siha Lee and Youngki Shin). *Under review*

Abstract

We develop a Stata command `csa2s1s` that implements the complete subset averaging two-stage least squares (CSA2SLS) estimator in Lee and Shin (2021). The CSA2SLS estimator is an alternative to the two-stage least squares estimator that remedies the bias issue caused by many correlated instruments. We conduct Monte Carlo simulations and confirm that the CSA2SLS estimator reduces both the mean squared error and the estimation bias substantially when instruments are correlated. We illustrate the usage of `csa2s1s` in Stata by two empirical applications.

AWARDS AND SCHOLARSHIPS

McMaster Graduates COVID-19 Grant
Ontario Graduate Scholarship
McMaster Tuition Scholarship

Sep 2022.
Sep 2017- Sep 2018.
Sep 2017- Sep 2021.

McMaster Graduate Scholarship	Sep 2017- Sep 2021.
Productivity Partnership Grant	Sep 2018- Dec 2018.
Distinguished Graduate Student Award for MBE , Brock University	Sep 2017.
Brock University Graduate Fellowship	Sep 2015- Sep 2017.
Brock University International Tuition Scholarship	Sep 2015- Sep 2017.
Brock University Graduate Studies Entrance Scholarship	Sep 2015.

RESEARCH EXPERIENCE

Research Assistantships:

Prof. Seungjin Han Sep 2020- Dec 2020.
Wrote the R code for the simulation exercise in [Designing a Competitive Monotone Signaling Equilibrium](#).

Prof. Youngki Shin Sep 2019- Dec 2019.
Wrote part of the R code for the Monte Carlo simulation in [Complete Subset Averaging for Quantile Regression](#).

Prof. Youngki Shin Sep 2018- Sep 2019.
Wrote the R code for the Monte Carlo simulation in [Complete Subset Averaging with Many Instruments](#).

Assistant Survey Methodologist:

Statistics Canada, Ottawa, Ontario. Sep 2016- May 2017.

- Researched various imputation techniques for imputing missing survey data.
- Used SAS programming skills to impute various survey data to produce complete data sets for estimation.
- Applied advanced statistics and econometrics knowledge to identify appropriate techniques for the estimation of multiple business and environmental surveys.

TEACHING EXPERIENCE

Course Instructor:

Econometrics II, ECON 4G03/6G03, McMaster University Fall 2021.
(A combined undergraduate/graduate level course)

General Mathematics, MATH 101, University of Ghana Fall 2013.

Teaching Assistant:

Research Methods in Economics, ECON 4FF3, McMaster University Fall 2022.
Econometrics II, ECON 4G03/6G03, McMaster University Fall 2022.
Economic Policy Analysis I, ECON 773, McMaster University Winter 2022.
Introductory Microeconomics, ECON 1B03, McMaster University Winter 2022.
Econometrics I, ECON 3EE3, McMaster University Winter 2019.
Applied Econometrics, ECON 3E03, McMaster University Winter 2018, 2019.
Intermediate Macroeconomics II, ECON 2HH3, McMaster University Winter 2018.
Introduction to Macroeconomics, ECON 1BB3, McMaster University Summer 2018.
Intermediate Microeconomics I, ECON 2G03, McMaster University Fall 2017, Spring 2018.
Business Econometrics with Applications, ECON 2P91, Brock University Fall 2016.

Principles of Microeconomics, ECON 1P91, Brock University
Linear Algebra, MATH 351, University of Ghana
Abstract Algebra I, MATH 354, University of Ghana

Fall 2015.
Fall 2014.
Winter 2013.

JOURNAL REFEREEING

Canadian Journal of Economics 2020.

MENTORING

International Graduate Students Navigator, McMaster University Fall 2020 - Present.

- Assist and mentor new international graduate students.

Mentor in the Black Student Mentorship program, McMaster University Fall 2020 - Present.

- Mentor black students.

CONFERENCE PRESENTATIONS

Midwest Econometrics Group (MEG) 2022 Conference Forthcoming, October 2022.

CIREQ PhD Students' Conference 2022 (In-person) June 2022.

CEA 2022(Virtual and In-person) June 2022.

CEA 2021(Virtual) June 2021.

CEA 2020(Virtual) ¹ June 2020.

SKILLS AND COMPETENCIES

Computing: R, Stata (Do and Ado programming), MATLAB, Python, SAS, Unix, Gretl, Eviews.

Typesetting: LaTeX, Microsoft Word.

Languages: English (fluent), French (basic), Ghanaian languages: Twi, Ewe and Ga.

REFERENCES

Professor Youngki Shin
Department of Economics
McMaster University
1280 Main Street West
Hamilton, ON L8S 4M4
shiny11@mcmaster.ca

Professor Jeffrey S. Racine
Department of Economics
McMaster University
1280 Main Street West
Hamilton, ON L8S 4M4
racinej@mcmaster.ca

Professor Michael Veall
Department of Economics
McMaster University
1280 Main Street West
Hamilton, ON L8S 4M4
veall@mcmaster.ca

Last updated: September 26, 2022

¹Cancelled due to COVID-19