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Personal Information:
9 Nov 1992, Male, Singaporean

Undergraduate Studies:
Banking and Finance, University of London, Singapore, 2016

Masters Level Work:
Masters in Applied Economics, Singapore Management University, 2019

Graduate Studies:
Singapore Management University**,** starting year to present (2019-2024)
Thesis Title: Essays in Weak Identification
Expected Completion Date: May 2024

Thesis Committee and References:

Zhang Yichong (Chair)
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School of Economics
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Teaching and Research Fields:
Primary fields: Econometric Theory
Secondary fields: Weak Identification, Dimensionality Asymptotics

Teaching Experience:

1. Teaching assistant (TA) for ECON611 Econometrics I (PhD level), 2022-2024, Singapore Management University. Instructor: Zhang Yichong
2. TA for ECON 107 Introduction to Econometrics (Undergraduate), 2023-2024, Singapore Management University. Instructor: Chow Hwee Kwan
3. TA for ECON 217 Macroeconomics of Income Distribution (Undergraduate), 2021-2022, Singapore Management University. Instructor: Ho Kong Weng
4. TA for COR 2100 Economics and Society (undergraduate), 2021-2022, Singapore Management University. Instructor: Ho Kong Weng
5. Taught the Masters of Science in Economics programme's Math camp, 2020, Singapore Management University

Research Experience:

Research assistant for Chow Hwee Kwan, Singapore Management University, 2018

Professional Activities:

Referee for Econometric Theory

Conference and Seminar Presentations:

1. Presented at SH3 Conference on Econometrics, Singapore Management University, 2023
2. Attended Volatility Conference, Singapore Management University, 2023
3. Attended the 17th International Symposium on Econometric Theory and Applications (SETA), 2023
4. Attended MPSS (Monash-Princeton-SJTU-SMU) Conference in Econometrics, 2023

Honors, Scholarships, and Fellowships:

1. Roberto S. Mariano Top MAE Student Award, 2019
2. Association of Chartered Certified Accountants (ACCA) Silver award, 2016

Publications:

1. A Conditional Linear Combination Test with Many Weak Instruments, with Zhang Yichong and Wang Wenjie, **Journal of Econometrics**, forthcoming

Research Papers:

"A Valid Anderson-Rubin Test under Both Fixed and Diverging Number of Weak Instruments" (Job Market Paper)

Abstract: The conventional and jackknife Anderson-Rubin (AR) Tests are developed separately to conduct weak-identification-robust inference when the number of instrumental variables (IVs) are fixed or diverging to infinity with the sample size, respectively. These two tests compare distinct test statistics with distinct critical values. To implement them, researchers first need to take a stance on the asymptotic behaviour of the number of IVs, which is ambiguous when this number is just moderate. Instead, in this paper, we propose two analytical weak-identification-robust AR tests, both of which control asymptotic size whether the number of IVs are fixed or diverging. We further analyze the power properties of these uniformly valid AR tests under both cases.

"A Conditional Linear Combination Test with Many Weak Instruments"

Abstract: We consider a linear combination of jackknife Anderson-Rubin (AR), jackknife Lagrangian multiplier (LM), and orthogonalized jackknife LM tests for inference in IV regressions with many weak instruments and heteroskedasticity. Following I.Andrews (2016), we choose the weights in the linear combination based on a decision-theoretic rule that is adaptive to the identification strength. Under both weak and strong identifications, the proposed test controls asymptotic size and is admissible among certain class of tests. Under strong identification, our linear combination test has optimal power against local alternatives among the class of invariant or unbiased tests which are constructed based on jackknife AR and LM tests. Simulations and an empirical application to Angrist and Krueger's (1991) dataset confirm the good power properties of our test.

Computer Skills:

R Programming
Matlab
Stata
LaTeX

Languages:

English (Fluent)
Chinese (Fluent)

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Gender: Female
Citizenship: Chinese

Undergraduate Studies:
Renmin University of China, Beijing, China
B.A. in Economics, School of Economics, 2013 - 2017

The University of Manchester, Manchester, UK
Exchange student, course work in Economics, 09/2014 – 02/2015

Masters Level Work:
Tufts University, Massachusetts, US
M.S. in Economics, School of Arts and Sciences, 2017 – 2019

Graduate Studies:
Singapore Management University, 2019 to present
Expected Completion Date: May 2024

Thesis Committee and References:

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Teaching and Research Fields:

Primary fields: Urban and Regional Economics, Economic Geography
Secondary fields: International Trade

Teaching Experience:
Teaching Assistant:

2023 Organizational Economics, Economics and Society

2022 Economics and Society, Economics of Globalization
2021 Urban Economics and Policies
2020 Economics and Society

Research Experience:

Research Assistant Experience:
2022 Research Assistant for Professor Yuan Mei, Singapore Management University
2018 Research Assistant for Professor Ujjayant Chakravorty, Tufts University

Honors, Scholarships, and Fellowships:
2023-2024 Presidential Doctoral Fellowship, Singapore Management University
2019-2023 Graduate Full Scholarship (Ph.D. Program), Singapore Management University
2017-2019 Tuition Scholarship, Tufts University

Research Papers:

"Education Migration in China" (Job Market Paper) *with Lin Ma*

Abstract: Educational resources are distributed unevenly across space and could contribute to spatial inequality. We develop a dynamic spatial model with life-cycle elements to study the impacts of location-specific educational resources. In the model, individuals determine whether and where to attend college, weighing on the distance to home, the expected option value of education, and the educational resources in the destination. Locations with more colleges attract more students. Moreover, as mobility costs increase with age, many college graduates stay in the city of their alma mater, leading to long-term changes in skill composition. We quantify the model to the context of China and structurally estimate the cost of obtaining a college degree in each location. We show that the college expansion between 2005 and 2015 had minimal impacts on welfare and skill composition, as it diverts resources towards the locations already well-endowed with colleges. More evenly distributed colleges could improve aggregate welfare and reduce spatial inequality at the same time.

"(Trade) War and Peace: How Can International Sanctions Be Imposed Most Cost Efficiently?"
with Gustavo de Souza, Haishi Li, and Yuan Mei, 2023. **R&R Journal of Monetary Economics.**

Media coverage: VoxEU

Abstract: Trade sanctions are a common instrument of diplomatic retaliation. To guide current and future policy, we ask: What is the most cost-efficient way to impose trade sanctions against Russia? To answer this question, we build a quantitative model of international trade with input-output connections. Sanctioning countries simultaneously choose import tariffs to maximize their welfare (measured with real income) and to minimize Russia's welfare, with different weights placed on these objectives. We find, first, the sanctioning countries can cause moderate economic damage in Russia, with Russian welfare falling 1.3% to 2.9%, depending on whether Russia retaliates or not. Second, for countries with a small willingness to pay for sanctions against Russia, the most cost-efficient sanction is a uniform, about 20%

tariff against all Russian products. Third, if the European Union (EU) is willing to pay at least US$0.67 for each US$1 drop in Russian welfare, an embargo on Russia's mining and energy sector products and about 50% tariffs on all other imports from Russia is the most cost-efficient policy. Finally, if countries target politically relevant sectors, a global embargo against Russia's mining and energy sector is the cost-efficient policy even when there is a small willingness to pay for sanctions.

"**Tariffs as Bargaining Chips: A Quantitative Analysis of US-China Trade War"** *with Yuan Mei and Tong Ni*

Abstract: The Biden administration maintains Trump tariffs on Chinese imports, contrary to Biden's campaign commitments. We investigate the hypothesis that these tariffs serve as a leverage in future trade talks with China. Our quantitative model, incorporating disaggregated U.S. regions and international trade linkages, estimates bargaining power and simulates tariff bargaining outcomes. Results show consistent post-trade war negotiation improvements in U.S. welfare regardless of bargaining power. With an estimated U.S. bargaining power of 0.47, the post-war negotiation yields additional 0.04% gains for U.S. taking the trade war impacts into account.

Computer Skills:
MATLAB, R, Julia, LaTeX

Languages:
English (fluent), Chinese Mandarin (native)

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Undergraduate Studies:
Bachelor of Science, Information and Computing Science, School of Science, Minzu University of China, 2014-2018

Masters Level Work:
Master of Science, Probability and Statistics, School of Mathematics, Renmin University, 2018-2019

Graduate Studies:
Singapore Management University**,** 2019-2024
Thesis Title: US Foreign Trade Zones - Working as Cushions for Trade War
Expected Completion Date: June 2024

Thesis Committee and References:

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Teaching and Research Fields:

Primary fields: International Trade Policy
Secondary fields: Multinational Firms

Teaching Experience:

04/2024-08/2024, STA, Further Math for Economics (MSE/MSFE), SMU
08/2022-04/2023, STA, Math for Economics (MSE/MSFE), SMU
08/2023-01/2024, STA, Macroeconomics (Ph.D. in Economics), SMU
01/2023-04/2023, STA, Economics and Society (UG), SMU
01/2021-04/2022, TA, Math for Economics (MSE/MSFE), SMU
08/2021-01/2022, TA, International Trade (Ph.D. in Economics), SMU
08/2020-01/2021, TA, Introductory Statistics (UG), SMU
01/2020-04/2020, TA, Investments (Ph.D. in Business), LKCSB

Research Experience:

12/2020-03/2021, Research Assistant for Prof. Jianhuan XU, SMU
05/2020-08/2020, Empirical Research Project, SMU
12/2015-04/2017, China National University Student Innovation & Entrepreneurship Development Program-Outstanding Outcome, Ministry of Education of the People's Republic of China

Conference and Seminar Presentations:

12/2023, Asia-Pacific Conference on Economics & Finance (APEF), Planned
09/2023, European Trade Study Group 2023 Surry
03/2023, International Trade Seminar, SMU
10/2022, International Trade Seminar, SMU
03/2022, International Trade Seminar, SMU
03/2021, International Trade Seminar, SMU
10/2021, International Trade Seminar, SMU

Honors, Scholarships, and Fellowships:

Academic:
2019-2023, MPhil-PhD Scholarship, SMU
2019, Academic Scholarship, RUC
2018, Academic Scholarship, RUC
2018, Outstanding Undergraduate Thesis, MUC
2016, National Scholarship (Top 1%), Ministry of Education
2015, National Scholarship (Top 1%), Ministry of Education
2018, Top-Level Scholarship (Top 2%), MUC
2017, Top-Level Scholarship (Top2%), MUC
Mathematical Modeling:
2018, National Second Prize, 15th “HUAWEI Cup” National PG Mathematical Contest in Modeling
2017, Honorable Mention Prize, Mathematical Contest in Modeling
2016, Second Prize in Beijing, China Undergraduate Mathematical Contest in Modeling
Certifications:
2022, Teaching Certificate for Graduate Instructor, Center for English Communication, SMU
2018, Software Copyright, Copyright Protection Center of China
2018, Outstanding Graduate Student in Beijing (Top 1%), Beijing Municipal Commission of Education
2017, Computer Level 2 Certificate (C Language), National Computer Rank Examination (NCRE)

Publications:

"Intelligent Growth Model of City" With K. Huang, C. Liang. Growth, 8, 2017, 382-383

Research Papers:

"US Foreign Trade Zones: Working as Cushions for Trade War", *Xincheng Huang, Job Market Paper, 2023*

Abstract: Enabling deferral or elimination of duty payments, the US Foreign Trade Zone (FTZ) displayed significant "Cushion Effects" for producers within the zones during the US-China trade war. The first source of "Cushion Effects" resulted from the over 28% increase in the zones' export volume during the tariff war, measured by the extra duties directly exempted. The effect amounted to about 883 million dollars in 2019. In addition, the FTZ demand for sanctioned components used in the production of domestically sold products was less affected due to the deferral and efficiency of duty payments, providing the second source of "Cushion Effects". I applied the rarely quantitatively analyzed FTZ import data from USITC and compiled trade volumes from the zones' annual reports. The empirical identification results show that tariff shocks triggered more sales of FTZ firms to both foreign and domestic markets at both intensive and extensive margins. This is especially pronounced at the extensive margin: the entrance of 120 new firms was positively correlated with extra tariffs. The supplementary duties that were exempted, temporarily deferred, and non-paid by the year's end quantify "Cushion Effects". Under the protection, FTZ firms' tendency to pre-storage when anticipating new tariffs or substitute the domestic and non-affected foreign sources of inputs for their sanctioned Chinese counterparts is less pronounced, as the FD and DID models estimate. For the cutting-edge technology inputs of List 2 issued in Section 301 Act, which were also included in the "Made in China 2025" program, the imposed tariff shocks generated positive impacts on FTZ producers' import volumes. Lastly, the empirical observations are mapped theoretically to a two-tier Melitz model, and the counterfactual comparative statistics derived provide a constructive suggestion that the government can enhance the protection by relaxing the criteria of entry into the zones.

"Determinants of FDI Entry into US Foreign Trade Zones", *Xincheng Huang, 2023*

Abstract: Up to 2021, a total of 442 production firms have been established within the US Foreign Trade Zones (FTZs), encompassing a diverse spectrum of 144 NAICS6 sectors, predominantly affiliated with the manufacturing industry. By examining the ownership structure of FTZ producers at the headquarter level, I find that approximately 26% of them are subsidiaries of foreign parent companies, with Japan representing the largest source of FDI among these entities. To account for the inherent heterogeneity of foreign investments across industries within the zones, this study presents a comprehensive model that encompasses variations in headquarter service intensity, foreign component intensity, and productivity. By employing the compiled dataset, empirical verification is conducted to validate the propositions implied by the model. The findings demonstrate that non-US headquarters exhibit a stronger propensity to enter FTZs when operating within sectors characterized by intensive usage of dutiable inputs. In contrast, the entry of US producers displays stronger responses to sectoral productivity enhancements.

"Uncertain Programming Model for Shortest Path Problem" *with Soleimani-Alyar M., 2019*

Abstract: The shortest path problem is concerned with finding a path from the source node to the sink node with a minimum total length. It is however a difficult task to find the shortest path in an indeterministic network, especially when there are insufficient samples or historical data. This paper considers the shortest path problem with uncertain lengths and introduces a new uncertain programming model for it. This model can find the ideal shortest path on an uncertain network and is suitable for cases where there is no access to expert estimates of the value of belief degree. To model this problem, we use both uncertainty theory and Dijkstra's algorithm, to obtain the best distribution function of minimum lengths by empirical distribution function.

"The Determination of Agricultural Insurance Rate Based on Satellite Image and Yield Simulation Spatial Model" *(Outstanding Graduate Dissertation), 2018*

Abstract: The main content of this paper is to combine the unit area yield estimation model of satellite image processing and the yield simulation spatial model based on the Kriging interpolation method. The rate of agricultural production insurance in the whole research area in 2018 is determined. Because the historical reimbursement data of domestic agricultural insurance are scarce, we adopted and improved upon the traditional yield simulation model used in the premium rate determination. I propose methods to address the shortcomings of the traditional model.

Computer Skills:

Python, MATLAB, STATA, C++

Languages:

English (fluent), Mandarin (native)

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Personal Information:

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Sex: Male
Citizenship: Chinese

Undergraduate Studies:

B.A., Economics, School of Economics, Capital University of Economics and Business, 2016.

Masters Level Work:

M.S., Quantitative Economics, International School of Economics and Management, Capital University of Economics and Business, 2019

Graduate Studies:

Singapore Management University**,** 2019 to present
Thesis Title: "Essays on High-Frequency Financial Econometrics"
Expected Completion Date: June, 2024

Thesis Committee and References:

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Jun Yu
Lee Kong Chian Professor of Economics
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Tim Bollerslev
Juanita and Clifton Kreps Professor of Economics
Department of Economics
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Phone: (919) 660-1846
Email: tim.bollerslev@duke.edu

Teaching and Research Fields:

Primary fields: Econometrics
Secondary fields: Financial Econometrics

Teaching Experience:

Teaching Assistant:
ECON698 Continuous Time Financial Econometrics (Master), SMU, 2021-2024
DSA201 Statistical Inference for Data Science (Undergraduate), SMU, 2023
ECON611 Econometrics I (PhD), SMU, 2020-2021

Research Experience:

Research Assistant for Prof. Jia Li, Singapore Management University, 2021-2023

Professional Activities:

Referee service: *Journal of Econometrics*

Conference and Seminar Presentations:

The MPSS (Monash-Princeton-SJTU-SMU) Conference in Econometrics, 2023
SH3 Conference in Econometrics (Virtual), 2022
Econometric Research Workshop, Singapore Management University, 2021-2023

Honors, Scholarships, and Fellowships:

Awards:
Presidential Doctoral Fellowship, Singapore Management University, 2022
Best 1st Year PhD Student Award, Singapore Management University, 2019
2nd Prize in the 25th Beijing Mathematics Competition for College Students, 2014
3rd Prize in the 27th Chinese Mathematical Olympiad in Senior, 2011

Scholarships:
PhD Full Scholarship, Singapore Management University, 2019-2023
China National Scholarship for Graduate Students, 2018
The 1st Class Academic Scholarship, CUEB, 2017
Freshmen Scholarship for Graduate Students, CUEB, 2016

Publications:

"Permutation-Based Tests for Discontinuities in Event Studies" (with Federico Bugni and Jia Li) *Quantitative Economics,* 14(1), 2023, 37-70.

"Seemingly Unrelated Regression Estimation for VAR Model with Explosive Roots" (with Ye Chen and Jian Li) *Oxford Bulletin of Economics and Statistics,* 85(1), 2023, 910-937.

Research Papers:

"Uniform Inference for High-Frequency Data" (Job Market Paper)

Abstract: We address the uniform inference problem for high-frequency data that includes prices, volumes, and trading flows. Such data is modeled with a general state-space framework, where latent state process is the corresponding risk indicators, e.g., volatility, price jump, average order size, and arrival of events. The functional estimators are constructed by collecting localized estimates across different time points. Although the proposed estimators do not admit a functional central limit

theorem, a Gaussian strong approximation, or coupling, is established under in-fill asymptotics to facilitate feasible inference. We apply the proposed methodology to distinguish the informative part from the Federal Open Market Committee speeches, and to analyze the impact of social media activities on cryptocurrency markets.

"Optimal Nonparametric Range-Based Volatility Estimation" (with Tim Bollerslev and Jia Li), accepted in *Journal of Econometrics*

Abstract: We present a general framework for optimal nonparametric spot volatility estimation based on intraday range data, comprised of the first, highest, lowest, and last price over a given time interval. We rely on a decision-theoretic approach together with a coupling-type argument to directly tailor the form of the nonparametric estimator to the specific volatility measure of interest and relevant loss function. The resulting new optimal estimators offer substantial efficiency gains compared to existing commonly used range-based procedures.

Computer Skills:

Python, MATLAB, LaTeX

Languages:

English (fluent), Mandarin (native)

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Undergraduate Studies:

Bachelor in Economics, FACE, Universidade de Brasilia, 2008.

Masters Level Work:

M.Phil. in Economics, Departamento de Economia, PUC-Rio, 2011

Graduate Studies:

Singapore Management University**,** 2018 to 2022.
Thesis Title: Essays on Social Choice and Implementation Theory

Thesis Committee and References:

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Teaching and Research Fields:

Primary fields: Microeconomics and Mathematical Economics
Secondary fields: Social Choice, Game Theory

Teaching Experience: Teaching Assistant for Microeconomics Analysis, Economic Dynamics and Microeconomics II (graduate); Instructor for Microeconomics II (undergraduate)

Research Experience: Postdoctoral Fellow at School of Economics, Singapore Management University (2022 - Present)

Professional Activities: Credit Risk Modeling Analyst at Itaú-Unibanco – São Paulo (06/2011 – 06/2012)
Credit Risk Modeling Analyst at Itaú-BBA – São Paulo (06/2012 – 06/2013)
Controller Specialist at Postalis Instituto de Previdencia Complementar – Brasilia (10/2014 – 10/2017)

Reviewer for Journals: Journal of Mathematical Economics.

Conference and Seminar Presentations:
Sep 2023 - Singapore Joint Economic Theory Workshop, SMU Singapore
Jul 2023 - Asian Meeting of the Econometric Society in East and Southeast Asia (AMES), NTU Singapore.
Jul 2022 - 3rd Conference on Mechanism and Institution Design, National University of Singapore.
Jul 2022 - 2022 SAET Conference, Australian National University
Dec 2021 - 16th Annual Conference on Economic Growth and Development, Indian Statistical Institute Delhi

Research Papers:

"Compellingness in Nash Implementation" *co-authored with Kunimoto and Chatterji (Job market paper)*
Abstract: A social choice function (SCF) is said to be Nash implementable if there exists a mechanism in which every Nash equilibrium outcome coincides with that specified by the SCF. The main objective of this paper is to assess the impact of considering mixed strategy equilibria in Nash implementation. We call a mixed strategy equilibrium ``uncompelling" if its outcome is strictly worse than the outcome induced by the SCF for any agent. We show that if the finite environment and the SCF to be implemented jointly satisfy what we call *Condition COM*, we construct a finite mechanism which Nash implements the SCF in pure strategies and its any mixed strategy Nash equilibrium outcome is either consistent with the SCF or uncompelling. Our mechanism has several desirable features: transfers can be completely dispensable; only finite mechanisms are considered; integer games are not invoked; and agents' attitudes toward risk do not matter. These features make our result quite distinct from many other prior attempts to handle mixed strategy equilibria in the theory of implementation.

"Minimum Reversals Domains: a link between median rules and monotonicity" *(revised and resubmitted at Games and Economic Behavior)*
Abstract: We show that any monotonic, anonymous, unanimous and tops-only rule defined on a MAT-connected domain must be a median voter rule on a tree. Moreover, a median voter rule on a tree is monotonic if and only if the domain is a minimum reversals domain, which is a weakening of known preference domains. These two results are combined to obtain a set of necessary and sufficient conditions for the existence of monotonic, anonymous, and unanimous rules on a MAT-connected domain.

Computer Skills:
Experience in programming in R, Matlab, SAS and VBA.

Languages:
Portuguese (native) and English (fluent)