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EDUCATION

Olin Business School, Washington University in St. Louis Ph.D. Candidate in Marketing (Quantitative) Dissertation Committee: Tat Y. Chan (Co-Chair), Dennis J. Zhang (Co-Chair), Xiang Hui	2019 - 2025 (Expected)
Economics Department, Washington University in St. Louis M.A. in Economics	2017 - 2019
Tsinghua University M.A. in Economics	2014 - 2017
Peking University B.A. in Economics and B.S. in Statistics	2010 - 2014

RESEARCH INTERESTS

Substantive: Social Media, Influencer Marketing, Privacy, Recommender Systems, Artificial Intelligence
Methodological: Field Experiment, Structural Model, Causal Inference, Econometrics and Machine Learning

RESEARCH

Job Market Paper

- Chen, Guangying, Tat Y. Chan, and Dennis J. Zhang. "The Intended and Unintended Consequences of Privacy Protection in Social Media: A Large-Scale Field Experiment and Structural Analysis." [SSRN]

Manuscripts Under Review

- Chen, Guangying, Tat Y. Chan, Dennis J. Zhang, and Industry Collaborators. "The Impact of a More Diversified Recommender System on Digital Platforms: Evidence from a Large-Scale Field Experiment." Major revision at *Management Science*. [SSRN]

Working Papers

- Chen, Guangying, Cheng Lu, Tat Y. Chan, Zhengling Qi, Dennis J. Zhang, and Industry Collaborators. "A New Estimator for Encouragement Design in Field Experiments When the Exclusion Restriction Is Violated." [SSRN]
— Runner-up (Top 5%), 2024 INFORMS Information Systems Cluster Best Paper Award

Work in Progress

- Chen, Guangying, Tat Y. Chan, and Dennis J. Zhang. "The Effects of Recommendations on Social Engagement and User-Generated Content Creation."

- Chen, Guangying, P.B. Seethu Seetharaman, and Annie L. Shi. "Impact of Covid-19 Lockdown on Customer Shopping: A Supermarket Retail Demand Perspective."

CONFERENCE PRESENTATIONS

"The Impact of a More Diversified Recommender System on Digital Platforms: Evidence from a Large-Scale Field Experiment"

INFORMS Annual Meeting, Phoenix, AZ	2023
Advances with Field Experiments Conference, Chicago, IL	2023
Annual ISMS Marketing Science Conference, Miami, FL	2023
POMS Annual Conference, Orlando, FL	2023
Online Research Seminar on Digital Businesses, Virtual	2023
Workshop on Platform Analytics, San Diego, CA	2023

TEACHING EXPERIENCE

Teaching Assistant - Washington University in St. Louis

A/B Testing in Business and Social Science (Master)	SP 2024
Understanding & Conducting Business Experiments (Undergraduate)	SP 2024
Text Mining (Master)	SP 2023, SP 2022, SP 2021
Pricing Strategies (Undergraduate/Master/MBA)	FL 2022, FL 2021, FL 2020
Quantitative Methods in Economics II (Ph.D. Core)	SP 2019
Applied Econometrics (Ph.D. Core)	FL 2018

INDUSTRY EXPERIENCE

Research Intern, Kwai Inc.	August 2023 - Present
Research Intern, NetEase Cloud Music Inc.	September 2021 - July 2023

HONORS AND AWARDS

ISMS Doctoral Consortium Fellow	2023
Doctoral Fellowship, Olin Business School, Washington University in St. Louis	2019-2024
Doctoral Fellowship, Economics Department, Washington University in St. Louis	2017-2019
Model Student for Excellent Academic Performance Award (13/173), Peking University	2013
Merit Student Award (6/173; excellent overall performance), Peking University	2012
Yihai-Kerry Scholarship (2/55; excellent academic performance), Peking University	2012

PROGRAMMING SKILLS

R, Python, MATLAB, PySpark, SQL, \LaTeX

REFERENCES

Tat Y. Chan

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ABSTRACTS OF REPRESENTATIVE PAPERS

“The Intended and Unintended Consequences of Privacy Protection in Social Media: A Large-Scale Field Experiment and Structural Analysis.” (Job Market Paper)

In the digital age, privacy concerns are escalating with the increased collection and use of personal information. Consequently, regulators have increasingly pushed companies to make the use of personal information more transparent and protect users with more privacy protection measures. However, the impacts of these policies on user behaviors and welfare remain unclear. We investigate this issue through a large-scale, randomized field experiment on a leading global social media platform. In the experiment, treated users were offered a privacy protection option to disable the “People You May Know” (PYMK) recommender algorithm, which could display their content to users whom the algorithm predicts are their friends elsewhere. Control users were neither informed about nor allowed to disable this function. Interestingly, we found that treated users, on average, decreased their video usage time by 0.78% compared with control users. However, the usage time of those treated users who chose to disable the function increased by 17.37% compared with a matched sample. We interpret these results as the privacy protection option having two consequences: On one hand, it raises users’ concerns by reminding them that their personal information is being used, thereby unintentionally reducing their usage time. On the other hand, it allows users to disable the use of personal information, which eliminates such concerns and leads to an increase in usage time as intended. To evaluate the social welfare impact of our and alternative privacy protection measures, we estimate a structural model that describes users’ decisions regarding usage and disabling the PYMK function, and use the results to run counterfactuals. The results demonstrate that different policies could lead to drastically different social welfare outcomes, highlighting the importance of considering both intended and unintended consequences. In particular, we find that lowering the costs of adopting the PYMK protection option is crucial not only for increasing overall social welfare but also for aligning the incentives of consumers and the platform, potentially creating a win-win scenario for both.

“The Impact of a More Diversified Recommender System on Digital Platforms: Evidence from a Large-Scale Field Experiment”

Personalized recommender systems are widely used by major content platforms to boost user consumption and engagement by suggesting content that users have previously enjoyed and interacted with. A fundamental trade-off in designing these systems lies between exploitation and exploration: deciding whether to recommend familiar content that users favor or to introduce new, diverse content that may interest them in the future. We empirically examined this trade-off in a real-world-scale recommender system through a partnership with a leading global music-streaming service platform. We conducted a large-scale field experiment where users were randomly assigned to receive recommendations from either the platform’s standard algorithm or a modified version that

recommends more diverse content. Contrary to industry expectations, increasing the diversity of the recommender algorithm does not enhance users' consumption diversity; instead, it marginally reduces their click days on the platform. However, among active users—who account for most of the platform's content usage—a 1% increase in recommendation diversity resulted in a 0.55% increase in their consumption diversity, without affecting overall consumption levels. The increase in consumption diversity corresponds with the more accurate prediction of their consumption preferences. The results suggest that the platform should tailor its algorithm to recommend more diverse content for active users.

“A New Estimator for Encouragement Design in Field Experiments When the Exclusion Restriction Is Violated”

Randomized controlled trials are increasingly important in business and academia. However, perfect compliance with the desired treatment in these trials is often not achieved, making it difficult to directly estimate treatment effects. In cases of non-compliance, the encouragement design is a valuable method for estimating treatment effects, using randomization as an instrumental variable to estimate the Local Average Treatment Effect (LATE). However, this method can be invalidated if randomization in the encouragement design directly affects the outcome variables, known as the violation of exclusion restriction. This paper introduces a new unbiased and asymptotically consistent estimator of LATE even when such violations occur. Our approach relies on easily testable assumptions about heteroskedastic treatment intensity, allowing for the separate identification of both LATE and the direct effect of randomization on outcomes. Additionally, we present a min-max estimator that consistently estimates non-parametrically heterogeneous LATEs. We demonstrate the strong performance of the estimator through extensive numerical simulations. Our estimator can also be directly applied to typical instrumental variable settings where the exclusion restriction is violated. Finally, we collaborated with a leading social media company that conducted a large-scale randomized trial with non-compliance. Our estimation strategies revealed exclusion restriction violations in the original design, indicating the invalidity of using randomization directly as an instrument. We then demonstrated that our estimator provides quantitatively accurate estimates of LATE in this experiment, prompting the company to adopt our method subsequently.