

## Liuyi Guo

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### EDUCATION

Ph.D., Economics, Texas A&M University, 2023 (expected).

M.S., Economics, University of Wisconsin-Madison, 2018.

B.A., Public Finance, Shanghai University of Finance and Economics, 2016.

### REASERCH INTERESTS

Microeconometrics, Econometric Theory, Industrial Organization.

### WORKING PAPERS

#### **Structural Analysis of Collusion in First-Price Auctions (Job Market Paper)**

This paper provides the nonparametric identification results for asymmetric first-price auctions with unknown collusion schemes. Although collusion schemes take various forms in the industry, testing collusion in auctions crucially relies upon the assumed collusion scheme in the existing literature. This paper shows that regardless of the unknown collusion scheme, collusive bidders in a partial cartel can be identified from winning bids and identities of winners with auction-specific covariates satisfying an independence condition. Furthermore, the value distributions of collusive bidders can be identified under two types of cartels characterized by McAfee and McMillan (1992): strong cartels with efficient collusion mechanisms; and weak cartels with lottery mechanisms. Based on the identification results, a testing procedure is provided to recover the identities of collusive bidders. The test method is applied to the California highway procurement auctions. The test results suggest no statistical evidence of large-scale collusion among non-fringe firms in the sample.

### WORKING IN PROGRESS

#### **Nonparametric Estimation and Inference on Counterfactual Distributions: An Application for Racial Wage Inequality**

This paper studies estimation and inference on the counterfactual distribution in the presence of proxy variables. A two-step series estimator is developed to consistently estimate the counterfactual distributions and their functionals under a general framework. This two-step estimator is a plug-in sieve M-estimator of a smooth functional. The local asymptotic properties can be obtained from the Riesz representation approach in sieve M-estimation. The construction of uniform confidence bands are built on the method of Gaussian process strong approximations introduced in Chernozhukov et al. (2013). The uniform inference for series counterfactual distribution estimator could be of independent interest beyond the scope of the framework with proxy variables. The series counterfactual distribution estimator is applied to both simulations and the study of wage gap, in which AFQT scores is used as a proxy variable for premarket human capital accumulation. The findings reveal that the black's return of premarket human capital accumulation is lower. AFQT scores has racial bias and is an imprecise measure of premarket human capital. The difference of premarket human capital accumulation explains the racial wage gap.

#### **Synergy in Sequential First-Price Auctions and Land Use Externalities (with Yonghong An)**

**TEACHING EXPERIENCE**

Teaching Assistant, Texas A&M University, 2019 Fall-present.

ECMT 461: Introduction to Economic Data Analysis (Undergraduate), 2019 Fall, 2020 Spring.  
Recitation rating: 4.6/5.

ECMT 463: Introduction to Econometrics (Undergraduate), 2020 Fall.  
Recitation rating: 2.54/3.

ECMT 674: Economic Forecasting (Master), 2021 Spring.

ECMT 673: Economic Analytics (Master), 2021 Fall.

ECMT 475: Economic Forecasting (Undergraduate), 2022 Spring.

Mathematics and Statistics Camp (Doctorate), 2021 Summer, 2022 Summer.

ECMT 675: Econometrics I (Doctorate), 2022 Fall.

**REFEREE**

*PLOS ONE.*

**HONORS AND AWARDS**

Graduate Assistantship, Department of Economics, Texas A&M University, 2018-present.

**WORKING EXPERIENCE**

Financial Analyst Intern, Shanghai Alliance Financial Services Co., Ltd., Shanghai, China, 2016.

Financial Controlling Intern, Carl Zeiss Shanghai Co., Ltd., Shanghai, China, 2015.

**UNIVERSITY SERVICE**

Aggie Honor System Office, Texas A&M University, 2021 Fall-present.

**SKILLS**

MATLAB, STATA, R,  $\text{\LaTeX}$ .

**REFERENCES**

Ph.D. Committee Members:

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