

Justin Doty

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Placement Coordinator

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RESEARCH INTERESTS

Econometrics, Applied Econometrics, Empirical Industrial Organization

EDUCATION

The University of Iowa

Ph.D. in Economics (expected) 2022

M.A. in Economics 2017

California State University, Fullerton

B.A. in Economics 2016

JOB MARKET PAPER

“A Dynamic Framework for Identification and Estimation of Nonseparable Production Functions”

WORKING PAPERS

“Estimating Quantile Production Functions: A Control Function Approach” (*with Suyong Song*, Under Review)

WORKS IN PROGRESS

“Simulated Bounds in Auctions with Unobserved Heterogeneity”

“Quantile Regression with Endogeneity and Measurement Errors” (*with Suyong Song*)

“Identification of Production Functions with Multi-dimensional Unobservables” (*with Kyoo il Kim and Suyong Song*)

“Identification of Gross-Output Production Functions with Mismeasured Inputs”

“Estimating Industry Competitor Network Effects on Firm-Level Productivity” (*with Suyong Song*)

AWARDS AND FELLOWSHIPS

• Ballard and Seashore Dissertation Fellowship, University of Iowa 2021

• Summer Fellowship, University of Iowa 2020

• Post-Comprehensive Research Fellowship, University of Iowa 2020

• GSS/Graduate College Presentation Travel Funds, University of Iowa 2019

PRESENTATIONS

• European Winter Meeting of the Econometric Society (EWMES) December 2021

• Southern Economic Association (SEA) November 2021

• Joint Statistical Meetings (JSM) August 2020

• Midwest Econometrics Group (MEG) October 2019

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TEACHING EXPERIENCE

- Instructor, Principles of Microeconomics Summer 2018
- Teaching Assistant, Principles of Microeconomics Fall 2018 - Fall 2020
- Teaching Assistant, Principles of Macroeconomics Spring 2021 - Fall 2021
- Teaching Assistant, Econometrics (Ph.D. Core) Spring 2018
- Teaching Assistant, Global Economics Fall 2017
- Teaching Assistant, Statistics for Strategy Fall 2016 - Spring 2017
- Grader, Statistics for Economics (Ph.D. Core) Fall 2019, Fall 2020, Fall 2021
- Grader, Applied Econometrics (Ph.D. Core) Fall 2019, Fall 2020, Fall 2021
- Grader, Introduction to Econometrics Fall 2019
- Grader, Economic and Business Forecasting Spring 2018
- Grader, Managerial Economics (MBA) Summer 2021

COMPUTATION AND SOFTWARE

R and Matlab

REFeree

Empirical Economics

REFERENCES

Suyong Song (Advisor)

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ABSTRACTS

A Dynamic Framework for Identification and Estimation of Nonseparable Production Functions

(Job Market Paper)

This paper studies identification and estimation of a nonseparable model for production functions with unobserved heterogeneity. Nonparametric identification results are established for the production function and productivity process under stationarity conditions. This framework allows for heterogeneous effects of output elasticities and factor efficiencies in addition to nonlinear productivity persistence. It also allows for additional unobservables in the input demand functions, which would violate the scalar unobservability requirement in proxy variables under previous approaches. This extension is used to show firms' heterogeneous responses to productivity shocks corresponding to their productivity history. This paper illustrates these results in an application to U.S. manufacturing firms where the proposed model is estimated using nonlinear quantile regression.

Estimating Quantile Production Functions: A Control Function Approach

(with Suyong Song, Under Review)

We propose a new approach to estimate production functions in which output elasticities are heterogeneous across the conditional distribution of output. This paper extends the control function approach for estimating production functions to the conditional quantiles of firm production. Production function parameters are estimated in a simple two-stage approach which relies on a location-shift assumption on unobserved productivity. We show that this method allows us to capture heterogeneity in output elasticities that may not be found in conditional mean estimates of Akerberg, Caves, and Frazer (2015) or Levinsohn and Petrin (2003). We provide small-sample evidence in a Monte Carlo study to show that this approach is robust compared to other production function estimators. The method is applied to firm and plant-level manufacturing data from the U.S., Chile, and Colombia. The findings confirm that the proposed method captures unobserved heterogeneity in output elasticities.

Simulated Bounds in Auctions with Unobserved Heterogeneity

This paper introduces a simulation based approach to estimating bounds on the valuation distribution in first price sealed bid auctions with symmetric independent private values (IPV) and unobserved heterogeneity. Previous papers place restrictions on the relationship between unobserved heterogeneity and private values as well as the available data that identify both distributions. Without these assumptions, partial identification of the valuation distribution and other quantities of interest may be possible. Using a least-favorable entropy-maximizing distribution, this method averages over the unobserved heterogeneity from a set of moment conditions that characterize the distribution of observed bids similar to a Method of Simulated Moments (MSM) estimator. Then, a plug-in estimator for pseudo-valuations is used to recover bounds on the distribution of private values. A Monte-Carlo simulation is used to test the performance of the two-step estimation procedure. Then this method is applied to estimate bounds on the distribution of private costs in a subset of procurement auctions for highway construction in Michigan.

Quantile Regression with Endogeneity and Measurement Errors

(with Suyong Song)

We consider nonparametric estimation of a quantile regression model with mismeasured endogenous regressors. We show an instrument is sufficient to control for both endogeneity and measurement errors. A two-step estimator of the quantile structural effect is proposed. In the first step, we consistently estimate conditional distributions associated with true endogenous regressors. In the second step, based on the penalized method of sieves, we propose a consistent estimator of the quantile structural effect. Monte Carlo experiments show that the proposed estimator performs well in the finite samples under various data generating processes.

ABSTRACTS

Identification of Production Functions with Multi-dimensional Unobservables

(with Kyoo il Kim and Suyong Song)

We show that production function parameters are identified in Levinsohn and Petrin (2003) (LP) and Akerberg, Caves, and Frazer (2015) (ACF) settings when the true inputs are observed with error. We provide two important extensions in the LP and ACF settings where their proxy variable approach may break down. One case is when the capital input is observed with measurement error and the second is when the proxy variable, such as an intermediate input, is poor in the sense that there exists additional unobserved heterogeneity besides the unobserved productivity that enters the input demand. Our identification results build on the insights from an operator-based approach in the literature on non-classical measurement errors. Our results can extend to the case where the labor input is also mismeasured. Our identification strategy uses the observed lagged inputs or multiple observed inputs as instruments for the unobserved inputs. The key identifying assumption is that the observed inputs and their lagged values do not provide more information on firm output than the true unobserved inputs. Our identification results naturally lead to consistent estimation of production function parameters using sample analogs.

Identification of Gross-Output Production Functions with Mismeasured Inputs

This paper studies the identification and estimation of gross-output production functions when inputs are unobserved. Previous approaches that correct for unobservable inputs combine the proxy variable methodology with results from the literature on non-classical measurement errors. The production functions in those models are still subject to the non-identification critique of Gandhi, Navarro, and Rivers (2020) (GNR). I show that under similar assumptions as those papers, identification of the parameters can still be achieved by extension of the GNR estimator. Therefore, this methodology corrects for two sources of identification failure in the production function literature. This paper provides a consistent estimator that is robust to these sources of non-identification and shows that measurement error remains an important obstacle to capturing correct estimates of output elasticities.

Estimating Industry Competitor Network Effects on Firm-Level Productivity

(with Suyong Song)

Recent applications of production networks examine the impact of vertical relationships on firm productivity. The impact of horizontal relationships remains an important empirical question, as the effects of competitor productivity provide guidance on competition policy such as merger evaluation and international trade restrictions. We apply the text-based classification of Hoberg and Phillips (2010, 2016), which is based on firm pairwise cosine similarity scores, to construct product-market peer networks. We then estimate productivity while controlling for the endogeneity bias of firm's inputs using the proxy variable framework. Identification of network effects is complicated due to the reflection problem of Manski (1993), which implies that productivity spillovers cannot be separately identified from competitor productivity enhancing activities such as R&D. We address this issue by using exogenous variation in constituency statutes to instrument for peer productivity. This provides new evidence on the treatment effect of competition on firm productivity.