HYEONSEOK PARK

PERSONAL INFORMATION

Institute for Advanced Economic Research,
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Dalian, China
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CURRENT RESEARCH INTEREST

Econometric Theory, Time Series Econometrics, Optimal Transport, and High-dimensional Econometrics, and Distributionally Robust Optimization.

EDUCATION

Ph.D., Economics, University of Washington, USA	**2016 - 2022**
M.A., Economics, University of Korea, Republic of Korea	**2013 - 2016**
B.A., Economics, University of Korea, Republic of Korea	**2006 - 2013**

EMPLOYMENT

Assistant Professor, IAER, Dongbei University of Finance and Economics 2022 - Present

WORKING PAPERS

"Quantifying Distributional Model Risk in Marginal Problems via Optimal Transport" with Yanqin Fan and Gaoqian Xu, available at arXiv:2307.00779

<u>Abstract:</u> This paper studies distributional model risk in marginal problems, where each marginal measure is assumed to lie in a Wasserstein ball centered at a fixed reference measure with a given radius. Theoretically, we establish several fundamental results including strong duality, finiteness of the proposed Wasserstein distributional model risk, and the existence of an optimizer at each radius. In addition, we show continuity of the Wasserstein distributional model risk as a function of the radius. Using strong duality, we extend the well-known Makarov bounds for the distribution function of the sum of two random variables with given marginals to Wasserstein distributionally robust Markarov bounds. Practically, we illustrate our results on four distinct applications when the sample information comes from multiple data sources and only some marginal reference measures are identified. They are: partial identification of treatment effects; externally valid treatment choice via robust welfare functions; Wasserstein distributionally robust estimation under data combination; and evaluation of the worst aggregate risk measures.

"Minimum Sliced Distance Estimation in Structural Models," with Yanqin Fan

<u>Abstract:</u> This paper develops a simple and robust method for the estimation and inference in structural econometric models based on sliced distances. Three motivating models considered are asset

pricing/state-space models, aggregate demand models, and models with parameter-dependent support. In contrast to MLE and likelihood-based inference, we show that under mild regularity conditions, our estimator is asymptotically normally distributed leading to simple inference regardless of the possible presence of "stochastic singularity" such as in the asset pricing/state-space models and parameter-dependent supports such as in the one-sided and two-sided models. Furthermore, our estimator is applicable to generative models with intractable likelihood functions but from which one can easily draw synthetic samples. We provide simulation results based on a stochastic singular state-space model, a term structure model, and an auction model.

"Estimation and Inference on Granger Causality in a Latent High-dimensional Gaussian Vector Autoregressive Model," with Yanqin Fan and Fang Han, 2023, Journal of Econometrics

<u>Abstract</u>: This paper develops simple, robust estimation and inference methods for the transition matrix of a high-dimensional semiparametric Gaussian copula vector autoregressive process. Our estimator is based on rank estimators of the large variance and auto- covariance matrices of a transformed latent high-dimensional Gaussian process. We derive rates of convergence of our estimator based on which we develop de-biased inference for Granger causality. Numerical results demonstrate the efficacy of the proposed methods. Although our focus is on the observable process, by the nature of rank estimators, all the methods developed directly apply to the transformed latent process. In technical terms, our analysis relies heavily on newly developed exponential inequalities for (degenerate) U-statistics under α-mixing condition.

PROFESSIONAL ACTIVITIES

Referee for: Journal of Econometrics

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Languages: English (fluent), Korean (native)
Computing: Matlab, R, Python, GAUSS