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PUBLICATIONS

"Kernel-based Testing with Skewed and Heavy-tailed Data: Evidence from a Nonparametric Test for Heteroskedasticity," with Daniel J. Henderson, *Economics Letters*, 172 (2018)

We examine the performance of a nonparametric kernel-based specification test in the presence of skewed and heavy-tailed regressors. We start by modifying the Zheng (2009) test for heteroskedasticity by removing the random denominator in the test statistic, a common source of distortion for such tests. Asymptotic equivalence of our test statistic is shown and Monte Carlo simulations are provided to assess the finite sample performance. With normally distributed errors, we find slight improvements using our modified test when the regressors are asymmetric or symmetric without heavy-tails. Trimming and using a smaller bandwidth also improves size for these distributions. When the errors are heavy-tailed, the results are more favorable to our test.

"Evaluating the Impact of the Labor Market Conditions Index on Labor Market Forecasts," with Laura Connolly, *Studies in Nonlinear Dynamics & Econometrics*, 22.1 (2018).

This paper examines the usefulness of the Labor Market Conditions Index (LMCI) in forecasting key labor market variables, particularly unemployment rates. Using a number of linear and non-linear models, we compare out-of-sample forecasts of the unemployment rate with the LMCI to those without the LMCI. Further, we estimate models of the disaggregated unemployment rates by gender, race, and race by gender, with and without the LMCI, to identify disparities in the predictive power of the LMCI for different subgroups. We find little evidence that the LMCI improves forecasting models of the different unemployment rates, particularly for longer horizons.

Working Papers

"Local-Linear Significance Testing," with Daniel J. Henderson and Jiancheng Jiang, working paper

In theoretical and applied kernel estimation, local-linear estimators are generally the dominant and preferred choice. However, in kernel-based testing procedures, local-constant estimators are typically employed to construct test statistics. Here we propose to use local-linear estimators in kernel-based tests. Specifically, we propose a local-linear test for variable significance, similar in spirit to that of Lavergne and Vuong (2000). Asymptotic equivalence of our test statistic is shown. Monte Carlo simulations and three empirical illustrations are used to assess the finite sample performance. The simulations show that our test based on the local-linear estimator performs well even with skewed and heavy-tailed regressors and errors, and often outperforms the local-constant version using a wide range of data generating processes.

"Merit Aid and Female Labor Force Participation," with Le Wang, working paper

Since 1991, 27 states have adopted broad-based merit aid programs. While the effect of this funding on educational decisions has been thoroughly examined in the literature, how this funding has impacted aspects of family life has not received much attention. In this paper we examine the effect of broad-based merit scholarship programs on family budget constraints through its effect on female labor force participation. Using data from the Current Population Survey (CPS) from 1986-2015 and a triple difference approach we estimate linear probability models of female labor force participation. We find that there is a predicted increase in participation of 2.6 percentage points (3.9 percent) for mothers of college-aged children due to merit aid programs. The response is greater for women with 12 or fewer years of schooling and in the first five years after program adoption. This evidence suggests that families are substituting mother's labor force participation for the student's in order for them to maintain their scholarship status.

"Taking Nonparametric Bootstrap-Based Specification Tests out of the Wild," working paper

Due to their relatively slow rates of convergence, practitioners applying nonparametric specification tests typically employ bootstrap-based tests. While there are number of resampling distributions for practitioners to choose from, there is little guidance on which one a practitioner should consider for their application. Through Monte Carlo simulations of two such tests, we follow a data driven method to select the bootstrap distribution which agrees most closely with the estimated residuals. The bootstrap distributions considered include the Rademacher distribution and the most widely recommended skew-corrected wild bootstrap proposed by Mammen (1993). We show that contrary to theory and popular practice, the Rademacher distribution always provides better agreement between the bootstrapped and estimated residuals, even in the presence of skewness. It also provides the best finite sample inference more than any other bootstrap distribution considered. Our findings generalize to the nonparametric case of specification tests, the results of Davidson Monticini and Peel (2007) and Davidson and Flachaire (2008) who show that in most parametric cases it is the Rademacher distribution that performs best even in the presence of skewness.