

# Cameron Fen

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## Education:

University of Michigan, Ann Arbor, MI  
Brandeis University, Waltham, MA

August 2018-Present  
Sep 2012-May 2015

## Research Interests:

Bayesian Econometrics, Time Series Forecasting, Deep Learning, Causal Inference

## Research Experience:

Summer Research Assistant, University of Michigan 2019, 2020  
Research Assistant, Philadelphia Federal Reserve 2016-2018

## Teaching Experience:

Teaching Assistant, Intermediate Macroeconomics, Brandeis Spring 2014  
Teaching Assistant, Economics of Europe, Michigan Fall 2019, 2020  
Teaching Assistant, Introductory Microeconomics, Michigan Spring 2020  
Teaching Assistant, Capitalisms, Michigan Spring 2021

## Working Papers:

**Forecasting GDP with Recurrent Neural Networks** with Samir Undavia

We show that adding countries as a panel dimension to macroeconomic data can statistically significantly improve the generalization ability of structural and reduced form models, as well as allow machine learning methods to outperform these and other macroeconomic forecasting models. Using GDP forecasts evaluated on a out-of-sample test set, this procedure reduces root mean squared error (RMSE) by 12% across horizons and models for certain reduced form models and by 24% across horizons for structural DSGE models. Removing US data from the training set and forecasting out-of-sample country-wise, we show that both reduced form and structural models become more policy invariant, and outperform a baseline model that uses US data only. Finally, given the comparative advantage of “nonparametric” machine learning forecasting models in a data rich regime, we demonstrate that our recurrent neural network (RNN) model and automated machine learning (AutoML) approach outperforms all baseline economic models in this regime. Robustness checks indicate that machine learning outperformance is reproducible, numerically stable, and generalizes across models.

## Works in Progress:

“Variational Inference and Bayesian DSGE Estimation”  
“An Optimal Transport Algorithm for Arbitrary Distributions and Cost Functions” with Asef Ahmed  
“Data Imputation with Transformers” with Zhengyuan Cui

## Skills:

- Python: Scrapy/Beautiful Soup(Web Scraping), Tensorflow/PyTorch(Deep Learning); Matlab; SQL;Java: Hadoop (Distributed Computing); C++; Stata

## Seminars:

2020: European Winter Meeting of the Econometric Society, Umich Political Science I3SM  
2021: Midwest Economics Association Annual Conference, EcoMod

**Referee:**

2021: Journal of Econometrics