Joy J. Bayan

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Research Fields: Macroeconomics; Monetary Economics; Macroeconometrics; International Macroeconomics

Education

Ph.D. in Economics (*Expected May 2027*), Indiana University 2021–2027
B.A. in Global Studies (Summa Cum Laude) / M.A. in Public Policy, University of Minnesota 2012–2017

Research

Working Papers

Job Market Paper: When the Mean Is Not Enough:
The Distribution of Inflation Expectations and Inflation Dynamics

The representative-agent New Keynesian Phillips Curve assumes common inflation expectations across agents, while empirical applications typically summarize heterogeneous expectations by their mean. This paper asks whether the mean is a sufficient statistic for the role of expectations in inflation dynamics or whether the distribution of expectations also matters. Using individual responses from the University of Michigan Survey of Consumers from 1990 to 2025, I estimate inflation-expectation densities and use functional principal component analysis to characterize changes in their shape over time. Accounting for distributional features in the fixed-reference specification produces a steeper estimated aggregate Phillips Curve slope while reducing the explanatory role of the mean expectation. During the COVID inflation surge, the right tail of the distribution thickened before the entire distribution shifted rightward, suggesting that changes in the distribution can provide early signals of inflationary pressures. The results suggest that distributional information supplements mean expectations in explaining inflation dynamics, with additional predictive information during COVID.

Presentations: *Federal Reserve Bank of Philadelphia Research Seminar (Aug 2026); Federal Reserve Bank of Cleveland-RISE (Sept 2026); Illinois Economic Association (Oct 2026*); Midwest Macroeconomics Conference (Nov 2026*); Southern Economic Association (Nov 2026*);*

From Regional to Aggregate: Trade Openness and the U.S. Phillips Curve After 2000

This paper studies how trade openness reshaped the slope of the U.S. Phillips Curve after 2000. I develop an open-economy New Keynesian framework in which inflation dynamics depend on domestic slack and exposure to foreign-goods prices through trade openness. Empirically, I use U.S. regional panel data and exploit cross-regional variation in exposure to globalization using a shift-share instrument constructed from pre-2000 regional employment shares. The results show that trade openness contributed to the flattening of the U.S. Phillips Curve after 2000.

Presentations: *Midwest Economic Association (2026); American Economic Association (2027*).*

Works in Progress

1. When the Poor Pay More for Groceries: Post-COVID Online Retail Transformation
with Xudong (Sean) An (Federal Reserve Bank of Philadelphia)
and Rodney Ramcharan (University of Southern California)

Using 100 million grocery retail transactions from 228,519 U.S. households between 2019 and 2023, we show that low-income households experienced 1.4% more grocery price inflation than high-income households in the post-COVID period. After 2022, fresh-produce prices rose 5.3% more for low-income households. The increased adoption of online shopping eliminated geographic pricing advantages, reducing relative savings for low-income households by 4.4%, while the expansion of warehouse clubs increased their price premiums by 6.4%, with monetary policy tightening adding a further 0.11%.

2. Monetary Policy, Oil Shocks, and the Distribution of S&P 500 Stock Market Returns

This paper studies how oil supply, global demand, oil-specific demand, and monetary policy shocks affect the distribution of U.S. stock market returns. Using monthly data from 1988 to 2018, I estimate cross-sectional densities of S&P 500 returns and use functional principal component analysis to summarize changes in their shape. I combine these distributional components with a Kilian-style structural vector autoregression in a mixed vector autoregressive framework to examine how the shocks transmit through the return distribution beyond their effects on average returns.

Presentations: *Cleveland State University (2025); Indiana University (2024).*

Research Experience

Federal Reserve Bank of Philadelphia June 2026–present
Ph.D. Trainee, Retail Supervisory Modeling Team, SRC

- Constructed income-quartile grocery price indices from 100 million transactions.
- Found 1.4% higher post-COVID grocery inflation and 5.3% greater fresh-produce price increases after 2022 for low-income versus high-income households.
- Found that increased online shopping reduced low-income households' relative grocery savings by 4.4%.

Federal Reserve Bank of San Francisco May–August 2024
Ph.D. Research Intern, Supervision, Risk and Credit Department

- Developed a PCA-based commercial real estate risk index using millions of loan records across large and small metropolitan areas.
- Created Tableau visualizations of the CRE risk index on an internal server to support bank examinations.

Research Assistantships, Indiana University 2022–2024
For Professor Yoosoon Chang Fall 2024

- Nonparametrically estimated firm investment distributions for proxy SVAR analysis in MATLAB.

For Professor Mostafa Beshkar Fall 2023

- Classified international investment disputes using natural language processing methods in R.

For Professor Todd Walker Winter 2022

- Implemented DSGE models in Julia and analyzed model dynamics.

Teaching

Instructor of Record, Indiana University Fall 2024
Fundamentals of Economics for Business II (Macroeconomics; ECON-B 252); 60 students

Teaching Assistant, Indiana University 2022–2025

- Statistical Analysis for Business and Economics (ECON-E 370) Spring 2025
- Economics of Race (ECON-E 211) Spring 2024
- Economics of Gender (ECON-E 211) Spring 2023
- Fundamentals of Economics for Business II (Macroeconomics; ECON-B 252) Fall 2022

Professional Experience

Minnesota Department of Health 2020–2021
Senior Research Analyst, COVID-19 Surveillance

- Developed metrics for the Governor's daily briefings for a statewide pandemic response.

Minnesota Department of Revenue 2018–2019
Star of the North Fellow, Management Analyst 3, Income and Property Tax Divisions

- Built automated reports for legislative and fiscal inquiries using 3M+ records.

Minnesota State Demographic Center 2017–2018
Star of the North Fellow, Research Analyst, Census 2020 Preparation

- Published a 2020 population forecast used as an advisory input in Minnesota's redistricting process.

Conferences

American Economic Association Annual Meeting *(Presenter, Session Chair)* 2027*
Federal Reserve Bank of Philadelphia Research Seminar *(Presenter)* 2026
Federal Reserve Bank of Cleveland RISE Conference *(Presenter)* 2026
Illinois Economic Association *(Best Graduate Student Paper Competition)* 2026*
Southern Economic Association *(Presenter)* 2026*
Midwest Macroeconomics Conference *(Presenter)* 2026*
APPAM Fall Research Conference *(Discussant, Organizing Support)* 2026*
Midwest Economic Association *(Presenter)* 2026
Cleveland State University *(Presenter)* 2025

*Scheduled presentations and conference roles.

Workshops

Advances in Differences-in-Differences, Illinois Economics Association (scheduled)	2026
Federal Reserve Bank of Cleveland, RISE workshop: Regime-Switching and Nonlinear Modeling	2026
Workshop on Estimation of Structural Models, University of Notre Dame	2025
Heterogeneous Agent Asset Pricing Workshop, Cleveland State University	2024

Awards

IU Graduate School Jubilee Award — nominated for best syllabus	2026
Experiential Learning Scholarship, IU Walter Center	Summer 2026, Fall 2026
IU Global Citizens Scholarship, O'Neill School	2026
IU Daniel J. Duesterberg and IU Enrichment Travel Awards	2025, 2026
Thrasher Fellowship for Teaching, Indiana University	2024
Summer Award, Center for Applied Economics and Policy Research	2023
Star of the North Fellowship, State of Minnesota	2017–2018

Service

Women in Economics, Indiana University Alumnae Group, Washington, DC	2025, 2026
Student Ambassador, Association for Public Policy Analysis & Management (APPAM)	2026
AES Departmental Coordinator, Economics Department, Indiana University	2025, 2026
Development Coordinator, Graduate Student Government, Indiana University	2024

Skills

Software: Python, R, Stata, MATLAB, Tableau, SQL
Methods: Nonparametric Estimation, Time Series, DSGE and Regime-Switching Models
Languages: English, Russian, Mongolian; French (intermediate); German (intermediate)

References

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