William Nicholas McWilliams

Email: wnm007@vt.edu ● Blacksburg, Virginia

1 EDUCATION

Virginia Tech   August 2023 – Present
Ph.D. in Agricultural and Applied Economics   Expected: Summer 2027
Dissertation: TBD
Committee: Dr. Olga Isengildina Massa (Co-Chair), Dr. Shamar Stewart (Co-Chair)
Louisiana Tech University   May 2018
B.S. in Finance

2 RESEARCH INTERESTS

Commodity Markets, Agrifood value chains, Intersection of Theory-Driven and Algorithmic Approaches to Forecasting and Inference

3 WORKING PAPERS

"Food Price Inflation Forecasting: Insights from a Macroeconomic Auto-Regressive Random Forest Approach" (with Olga Isengildina Massa and Shamar Stewart)
This study proposes a Macroeconomic Auto-Regressive Random Forest (MARRF) approach for forecasting annual U.S. food price inflation and evaluates its performance relative to the USDA's current SARIMA-based methodology. Leveraging the flexibility of ensemble machine learning and the interpretability of Generalized Time-Varying Parameters (GTVPs), the MARRF model integrates high-dimensional macroeconomic information extracted from the FRED-MD database to produce forecasts that are both accurate and economically informative. Through a fixed-event forecasting exercise spanning 2003–2022, we find that the MARRF model outperforms the SARIMA benchmark in terms of mean absolute percent errors (MAPE) and forecast bias, particularly at medium and long horizons and during periods of economic crisis. Variable importance metrics and time-varying parameters reveal shifting macroeconomic drivers of food inflation across time and forecast horizons, offering novel insights into the transmission of macroeconomic shocks to food prices.

- Presented at the Agricultural and Applied Economics Association Annual Meeting, 2024

- Presented at the NCCC-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management, 2025

4 TEACHING EXPERIENCE

4.1 Instructor of Record

AAEC 2104: Personal Financial Planning   Summer 2025
Virginia Tech
103 students, online asynchronous delivery

4.2   Graduate Teaching Assistant

AAEC 4504: Agricultural Price and Market Analysis   Spring 2025
Virginia Tech   *Instructor: Dr. Olga Isengildina Massa*
AAEC 4804/STAT 4804/AAEC 5804G: Fundamentals of Econometrics   Spring 2024
Virginia Tech   *Instructor: Dr. Shamar Stewart*
AAEC 3514: Agricultural Futures and Options   Fall 2024
Virginia Tech   *Instructor: Dr. Olga Isengildina Massa*
Additional Courses: Finance 318 (Business Finance), Economics 510 (Managerial Economics),
Finance 319 (Principles of Finance)   August 2022 – May 2023
Louisiana Tech University

5   HONORS, AWARDS, AND FELLOWSHIPS

COINS Graduate Fellow   Fall 2024 – Present
Lead Wheat Analyst, Commodity Investing by Students (COINS)
Student-managed organization investing $1.3+ million of Virginia Tech's endowment in commodity
markets
USDA National Needs Fellowship   Fall 2023 – Present
National Institute of Food and Agriculture
Fellowship for outstanding students with expertise in commodity markets
Farm Foundation Agricultural Scholar   2024
Year-long program for graduate students in agricultural economics and policy

6   PROFESSIONAL SERVICE

Presentations Reviewer   2025
Agricultural and Applied Economics Association Annual Conference
First Round Reviewer, Econometrics Section

7   PROFESSIONAL EXPERIENCE

Graduate Research Assistant   August 2023 – Present
Department of Agricultural and Applied Economics, Virginia Tech
Supervisors: Dr. Olga Isengildina Massa and Dr. Shamar Stewart
- Conduct original research in commodity price analysis, forecasting, and market risk management

- Develop and apply advanced time-series econometric models and machine learning algorithms to analyze agricultural commodity markets

- Investigate price discovery mechanisms, market integration, and volatility spillovers in agricultural futures markets

- Analyze basis behavior, convergence patterns, and hedging effectiveness across commodity markets

- Present research findings at academic conferences and contribute to peer-reviewed publications

Graduate Assistant   August 2022 – May 2023
College of Business, Louisiana Tech University
Supervisor: Dr. William R. McCumber

- Proctored and graded assignments for finance and economics courses

- Led weekly tutoring sessions for Finance 318 students

- Performed data collection and analysis for faculty research projects

Community Economic Development Volunteer   August 2017 – May 2018

Peace Corps, Dili, Timor-Leste

Small Business Development Consultant

- Developed strategic plans for cooperative development, addressing market systems development needs and value chain inequities for vanilla and coffee farmers

- Designed and delivered trainings on cooperative development, processing techniques, and international market access for vanilla and spice cultivation

- Provided management and operations consulting for RADIFU, Municipio Ainaro's largest savings and loans cooperative

Organizational Development Volunteer   August – December 2020

Catholic Relief Services, Dili, Timor-Leste

- Facilitated strategic planning for Lanamona Credit Union (11 staff, 1,436 members)

- Conducted risk assessment and developed mitigation strategies for microfinance operations

- Prepared and presented comprehensive recommendations report for sustainable growth

Financial Analyst Intern   May – August 2017

Graphic Packaging International, Monroe, LA

- Analyzed plant financial statements to identify revenue growth drivers

- Monitored daily inventory, work-in-process, and finished goods levels

- Conducted project costing and financial closure processes

8 TECHNICAL SKILLS

Statistical Software: Python, R, Excel
Languages: English (native), Tetun (fluent)

9 PROFESSIONAL AFFILIATIONS

Agricultural and Applied Economics Association (AAEA)

10 REFERENCES

Dr. Olga Isengildina Massa
Professor of Agricultural and Applied Economics
Virginia Tech
321-A Hutcheson Hall
Blacksburg, VA 24061
Email: oimassa@vt.edu

Dr. Shamar Stewart
Assistant Professor of Agricultural and Applied Economics

Virginia Tech
202-B Hutcheson Hall
Blacksburg, VA 24061
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Dr. William R. McCumber
Associate Dean of Graduate Programs
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