Tadhg Sam Taylor-McGreal

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Education

Master of Arts in Economics & Policy Sep 2025 – Aug 2026
McMaster University *Hamilton, ON*

Honours Bachelor of Arts in Economics Sep 2020 – Apr 2024
McMaster University *Hamilton, ON*

Research Interests

Applied macroeconomics with a focus on the transmission of geopolitical and trade shocks to investment, capital allocation, and macroeconomic dynamics; general equilibrium and DSGE models with policy and price frictions; energy and environmental policy as a structured case study for large, persistent shocks.

Relevant Coursework

- **Graduate Microeconomic Theory**: Consumer and producer theory, constrained optimization, general equilibrium, welfare analysis, risk and insurance.
- **Graduate Macroeconomic Theory**: Intertemporal optimization, growth theory, heterogeneous-agent models, social planner problems, and policy dynamics.
- **DSGE and General Equilibrium Modeling**: Model specification, calibration, numerical solution methods, and policy counterfactuals.
- **Econometrics**: Regression analysis, instrumental variables, causal inference, and panel data methods.
- **Trade and Economic Development**: Trade costs, comparative advantage, development dynamics, and policy interventions.

Works in Process

Carbon Taxation & Energy Substitution in General Equilibrium 2025 – Present

- **Framework:** Developed and solved a multi-sector static and dynamic general equilibrium model of the Canadian economy to characterize the optimal carbon tax path.
- **Execution:** Implemented numerical solution routines using Python; calibrated model parameters to match Statistics Canada sectoral moments and energy intensity data.
- **Working Conclusions:** Results suggest welfare gains from carbon pricing are highly sensitive to sector-specific substitution elasticities, with tighter energy–capital complementarity amplifying short-run labour reallocation costs while increasing long-run efficiency gains.

Neural Networks in Strategic Environments 2025 – Present

- **Objective:** Developed a zero-lookahead chess engine to study the limits of pure function approximation in high-dimensional strategic environments.
- **System:** Built a convolutional neural network in TensorFlow that maps 8x8x12 board tensors directly to move probabilities, achieving competitive play without forward propagation or tree search.

- **Evaluation:** Benchmarked the model against a Minimax/Alpha-Beta baseline to quantify the performance gap between pure pattern recognition and traditional search-based optimization.
- **Working Conclusions:** Pattern-based evaluation captures a substantial share of positional strength but systematically underperforms in tactically sharp positions, highlighting the complementary role of search in strategic decision-making.

Supply Chain Disruptions & Geopolitical Risk Transmission 2025 – Present

- **Focus:** Studies how persistent geopolitical and trade disruptions propagate through irreversible investment, capital reallocation, and aggregate output in general equilibrium.
- **Approach:** Combines reduced-form evidence (VARs and local projections) with structural mechanisms governing capital adjustment and firm investment timing.
- **Status:** Early-stage theoretical and empirical development.

Technical and Research Skills

- **Quantitative Methods:** Econometrics (OLS, IV/2SLS, DiD), time series analysis (VARs, local projections), Probit/Logit models, numerical optimization, and simulation-based calibration.
- **Programming:** Python (NumPy, Pandas, SciPy, TensorFlow), Dynare, GAMS, R (tidyverse, fixest, ggplot2), Stata.
- **Data & BI:** Developed automated Python workflows to pull and clean Statistics Canada API data; advanced proficiency in Excel (VBA/Power Query) and Power BI for visualization.
- **Typesetting & Documentation:** LaTeX (technical reports, Beamer); experienced in documenting complex algorithms within Jupyter Notebooks and Quarto.

Teaching Experience

Graduate Teaching Assistant, Macroeconomics
McMaster University

- Led weekly tutorial sections for undergraduate macroeconomics courses.
- Delivered problem-solving sessions and exam reviews.
- Held office hours and assisted with grading and course administration.

Additional Experience

Inventory Manager, Loblaws Ltd. Jan 2025 – Sep 2025

- Owned perpetual inventory for ∼26,000 SKUs; monitored variance and shrink, and coordinated cycle counts to protect gross margin.
- Partnered with merchandising and store operations to align stock levels with forecasts and seasonal demand; streamlined SKU lifecycle changes (adds/deletes/vendor transitions) to reduce acyclic stock.

Languages

English (native); French (intermediate)