

BISHMAY BARIK

🏠 bishmaybarik.github.io

✉ bishmaykbarik@gmail.com

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Education

M.Sc. Economics | Shiv Nadar University, Delhi-NCR CGPA: 8.97/10 (3.6/4.0) | Dean's List, 2025 2023-2025

- **Subjects:** Macroeconomics (I & II) (*Distinction*), Econometrics (I & II), Microeconomics (I & II), Economics of Discrimination, Development Economics, Behavioural Economics
- **Dissertation:** *Caste in Stone? Cultural Distance and the Education Game*

B.Sc. Economics (Hons.) | XIM University, Bhubaneswar CGPA: 9.47/10 (3.8/4.0) | Second Ranker 2020-2023

- Merit Scholarship recipient for three consecutive years
- **Subjects:** Macroeconomics, Microeconomics, Development Economics, International Economics, Game Theory and Behavioural Economics
- **Dissertation:** *Economics of Discrimination: Review of Gary Becker's work and its application on India*

Research Experience

Research Associate | Centre for Advanced Financial Research and Learning (CAFRAL), RBI July 2025 - Present

Full-time position at RBI, Mumbai, Maharashtra, India.

Research Assistant (continuing part time) | QuantEcon May 2025 - Present

Principal Investigator: Dr. John Stachurski

- Designing open-access undergraduate economics course using Pyodides/WebAssembly for real-time simulation, teaching scientific computing for inequality, resource scarcity, and climate change
- Enhancing QuantEcon's intermediate Python lectures by rewriting selected series with JAX, improving computational efficiency, numerical accuracy, and scalability

Data Science Intern | Development Data Lab Mar - Sept 2025

Principal Investigator: Dr. Paul Novosad

- Cleaning and coding ASER (2007-2022) for incorporation into SHRUG Dataset by Development Data Lab

Research Assistant | Culture and Debt in India Aug 2024 - Present

Principal Investigators: Dr. Satyajit Chatterjee, Dr. Ashwini Deshpande & Dr. Nirupama Kulkarni

- Analyzing emigration patterns and debt holdings across castes, religions, and social strata using CMIE-CPHS, focusing on state/district variations
- Investigating loan-taking behavior across castes/religions, exploring cultural norms' influence on financial decisions

Research Assistant | Ashoka University Apr - May 2025

Principal Investigator: Dr. Bhaskar Dutta

- Replicating methodologies from Journal of Development Economics paper using ASER at state level

Research Assistant | "Punishment and Crime: Impact of Death Penalty on Local Crime Rates in India" Dec 2024 - Jan 2025

Authors: Dr. Ashwini Deshpande & Dr. Anisha Sharma

Research Intern | CAFRAL, RBI 2024

Principal Investigators: Dr. Gautham Udupa & Dr. Vidhya Soundararajan

- Converting Stata codes to MATLAB equivalents; reviewing RBI circulars on Priority Sector Lending; reviewing literature on developmental factors affecting stock market participation

Public Contributions

lipi-swap: Devanagari to Roman Transliteration Utility 2025

Tools: Python (requests, BeautifulSoup, pandas, unicodecode)

- Python utility for converting Devanagari script (Hindi) into Roman English characters, solving practical challenges in handling non-Latin text when working with Indian administrative datasets
- Integrates transliteration engine into web scraping workflow for hierarchical Indian administrative data (states, districts, blocks, panchayats); ensures datasets remain readable and compatible across platforms
- Eliminates encoding issues in CSV exports by converting geographic entities labeled in Hindi script (e.g., "पंचायत" → "panchayat")

State-wise Jati Distributions Dashboard 2025

Tools: Python (Streamlit, pandas), DuckDB, Apache Parquet, AWS S3

- Interactive Streamlit dashboard visualizing caste (*jati*) distribution across India using CMIE-CPHS (2014-2024); dynamic filters by state/district/year/month, highlights dominant *jatis*
- Direct cloud integration: queries remote Parquet files from AWS S3 without local downloads; highly optimized SQL queries via DuckDB for efficient data retrieval over HTTPS
- Performance optimization: `@st.cache_data` caching for metadata loading and database queries; columnar storage format enables fast aggregation without loading full dataset into memory

Dissertation and Research Projects

Caste in Stone? Cultural Distance and the Education Game (*Master's Thesis*) 2024-25

Supervisors: Dr. Partha Chatterjee, Dr. Pubali Chakraborty

- Developed three-period macroeconomic model analyzing intergenerational human capital/income disparities across caste/religious groups using CPHS and Samaj Survey data
- Quantified cultural distance's role in perpetuating intergroup disparities, linking cultural norms variation to human capital accumulation and income outcomes

Shedding Light on Consumption: Night-Time Luminosity as Predictor of Consumption Expenditure in India 2025

Tools: Python (Streamlit, Plotly, TensorFlow, Pillow)

- Exploring night-time light intensity correlation with consumption expenditure using SECC/DMSP Nightlights data from SHRUG
- Neural network with TensorFlow/Keras for prediction; SHAP analysis for model interpretability

Tracing Disparities: Educational Spending Before/After Covid-19 Among Social Groups in India 2024

Supervisor: Dr. Gitanjali Sen | *Co-author:* Manya Pahwa | *Tools:* Python, STATA

- Difference-in-Differences model estimating pre/post-Covid educational expenditure trends across religion/caste groups using CMIE-CPHS
- Explored reasons for differential social group impacts during pandemic

Does Overconfidence Lead to Procrastination?: A Cognitive Reflection Test Experiment 2024

Supervisor: Dr. Punarjit Roychowdhury

- Bridge between overconfidence and procrastination using Cognitive Reflection Test to identify overconfident individuals and study their procrastination behavior

Environmental Kuznets Curve (EKC) Analysis: Case Study on Ganga and Yamuna 2024

Supervisor: Dr. Ram Ranjan | *Co-author:* Manya Pahwa | *Tools:* STATA, R, Excel

- Econometric model testing EKC in Ganga/Yamuna; analyzed pollution patterns and identified causes

Economics of Discrimination: Review of Gary Becker's work and its application on India (*B.Sc. Dissertation*) 2022-23

Institution: XIM University, Bhubaneswar | **Supervisors:** Dr. Bharatee Bhusana Dash, Dr. Pintu Parui

Teaching

Graduate Teaching Assistant | Shiv Nadar University, India 2023-2024

- **Semester IV (Postgraduate):** ECO512: Macroeconomics II | Dr. Kurt Horner, Dr. Trishita Ray Barman
- **Semester III:** ECO302: Intermediate Macroeconomics | Dr. Aditi Singh, Dr. Trishita Ray Barman
- **Semester II:** ECO461: International Economics | Dr. Trishita Ray Barman
- **Semester I:** MAT101: Calculus I | Dr. Nitesh Sahni

Software

Python | STATA | L^AT_EX | Markdown | Jupyter Notebook | Jupyterlab Myst

Technical Tools & Workflow

Workflow & Development: Git/GitHub (CLI-based version control and pipeline management), Bash scripting, GNU Make (project pipeline automation)

AI-Assisted Development: Claude Code (terminal-based AI coding assistant for daily development workflows)