

# Debmallya Chanda

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## AREA OF INTEREST

Monetary policy, Fiscal policy, Network, Climate change, DSGE models, IAM models

## PROFESSIONAL EXPERIENCE

### Postdoctoral Researcher, EIEE

CMCC

December 2025 – Present

Milano, Italy

- Advancing the WITCH integrated assessment model by developing energy–economy pathways, improving representation of low-carbon technology deployment, and evaluating climate and fiscal policy scenarios relevant to the European net-zero transition.
- Performing quantitative policy analysis on macroeconomic, energy, and emission trajectories, producing insights for senior researchers on the economic impacts of decarbonization strategies and supporting interdisciplinary collaboration across climate, energy, and macro-modeling teams.

### Intern at DG Economics, Monetary Policy Division

Deutsche Bundesbank

August 2024 – February 2025

Frankfurt, Germany

- Contributing to the extension of the quantitative macroeconomic model, including the energy sector to assess carbon taxation and the EU's net-zero transition.
- Conducting quantitative analysis and forecasts on macroeconomic variables based on implications of Nonlinear Phillips Curve, assessing policy implications, and assisting in research reports for senior economists on market trends.
- Collaborating with cross-functional teams to provide insights on environmental and monetary policies while participating in discussions and conferences to build a network and deepen expertise in the European energy transition.

### Early Stage Researcher

Economic Policy in Complex Environment

Funded by European Union under the Horizon 2020 scheme.

Sept. 2021 – Aug. 2024

Milan, Italy

- Assessed the consequences of financial innovation, including cryptocurrencies, fintech, and new business models, on economic stability and the design and implementation of monetary policy.
- Developed and analyzed macroeconomic computational models with deep micro-foundations, emphasizing the role of a sophisticated financial system.
- Explored the effects of complex financial institutions, assets, and liquidity instruments on economic stability and the effectiveness of various monetary policy measures.

## EDUCATION

### Università Cattolica del Sacro Cuore

Ph.D. in Economics

Milan, Italy

Sept. 2021 – Present

### Bielefeld University

Visiting Researcher

Bielefeld, Germany

Oct. 2022 – Sept. 2023

### Université Paris 1 Panthéon-Sorbonne

Master in Quantitative Economics

Paris, France

Sept. 2018 – Sept. 2020

## PUBLICATIONS

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Glielmo, A., Favorito, M., Chanda, D., & Delli Gatti, D. (2023). Reinforcement learning for combining search methods in the calibration of economic abms. , 305–313. Retrieved from <https://doi.org/10.1145/3604237.3626889> doi: doi: 10.1145/3604237.3626889

## ONGOING WORK

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**Optimal Policy Mix in Heterogeneous Agent Model with Sectoral Disaggregation**

**Central Bank Digital Currency in a CATS model with credit**  
with Aldo Glielmo, and Domenico Delli Gatti

## WORKING PAPERS

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**Macro-financial Implications of Introduction of Central Bank Digital Currency** [\[Link\]](#)

Abstract: This paper examines the economic and financial implications of introducing a Central Bank Digital Currency (CBDC), using a dynamic stochastic general equilibrium model that incorporates banking sector frictions. The analysis shows that while CBDC can help stabilize the economy by providing an alternative source of liquidity for households and firms, it also weakens the traditional credit channel by squeezing banks' profit margins and slowing their ability to build capital. The impact of CBDC is highly sensitive to its design: features such as whether it pays interest, how closely it resembles cash, and how its supply is managed all significantly influence the transmission of monetary and financial shocks. In particular, an interest-bearing CBDC can soften the effects of monetary tightening, whereas a non-remunerated CBDC tends to worsen recessions. Differences across households in their demand for liquidity further intensify these effects, creating additional pressure on bank funding. These findings highlight that decisions around the design, timing, and implementation of a CBDC will be crucial in balancing its potential benefits with the risks it may pose to financial stability.

**Depositor-banker relationship and CBDC** [\[Link\]](#)

Abstract: This paper explores the intricate dynamics of the banking sector and the macroeconomy, focusing on the introduction of CBDC and its impacts on monetary policy effectiveness, financial stability, and societal welfare. Using a medium scale DSGE model with financial friction and deep-habits in deposit market, it analyzes responses to shocks such as monetary policy changes, capital quality fluctuations, and shifts in the depositor-banker relationship. Additionally, the study evaluates the welfare implications of CBDC introduction, emphasizing potential benefits underimproved depositor-banker relationships and reduced transaction costs, while recognizing variations based on factors such as existing relationships and implementation costs. These insights offer crucial guidance for policymakers navigating decisions regarding CBDC adoption and digital currency framework design.

## PREVIOUS PROJECTS

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**Master thesis: Self-fulfilling Business Cycle**

Working under the supervision of Dr. Bertrand Wigniolle, I have analyse the effects of sunspot shocks in credit cycles generating from unsecured and secured credit. A dynamic complementarity between current and future borrowing limits permits uncorrelated sunspot shocks to unsecured debt to trigger persistent aggregate fluctuations in both secured and unsecured debt, factor productivity, and output. We have shown that these sunspot shocks are quantitatively important, accounting for around half of output volatility.

### **Data Science: Housing price prediction**

Discussed and predicted the prices of the real estate properties of Ames city, Iowa in the United States. We studied other aspects of the problem through principal component analysis and have reduced the problem to two dimension to bring down the complexities in the model. Ridged and lasso regression were also a part of study and it is found that low constrain value gives higher accuracy indicating that linear regression is better model than constrained regression. Classification trees have been used in the study to classify several significant features.

## **CONFERENCES**

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- 27th Annual Workshop on Economics with Heterogeneous Interacting Agents, University of Bamberg, July 9-11, 2024,
- Workshop on Central Bank Digital Currencies, City, University of London, 4th April, 2024
- 9th World Congress of the International Microsimulation Association at University of Vienna, 8th - 10th January 2024
- 9th Meeting of the German Network for New Economic Dynamics (GENED) at University of Bamberg, 4th - 6th October 2023

## **SUMMER SCHOOLS/ WORKSHOPS**

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- Methods in Time Series Econometrics, SIDE Summer school by Francesco Bianchi, Karel Mertens, Bertinoro, 24 - 29 July 2023
- Macroeconomic Forecasting and Analysis in the Machine Learning Era by Philippe Goulet Coulombe , Dalibor Stevanovic, Perugia, 17-21 July 2023, SIDE summer school
- Barcelona School of Economics Summer School, 2023: High-Dimensional Time Series Models by Luca Sala
- Workshop on Agent-based models in Economics: Scuola Superiore Sant'Anna, July, 2022
- Barcelona School of Economics Summer School, 2022
  - Bayesian Time Series Methods II: Advanced by Andrea Carriero
  - Bayesian Time Series Methods III: DSGE Model Estimation by Kristoffer Nimark
- Digital Currencies Academy, Florence School of Banking, European University Institute, April 2022

## **TECHNICAL SKILLS**

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**Languages:** Julia, Python, C/C++, R

**Software:** Matlab, STATA, Microsoft Office

**Data Science Skills:** Machine Learning

## LANGUAGE SKILLS

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**English:** Advance, **French:** Basic, **Italian:** Basic, **Bengali:** Native, **Hindi:** Fluent

## AWARDS AND SCHOLARSHIPS

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- Charpak Full Scholarship for Master studies in France from French Government
- Institute Merit Scholarship from Indian Institute of Technology Madras
- Baranagore Municipality felicitation for outstanding result in Higher Secondary

## REFERENCES

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