Debmallya Chanda

Hahnstr. 72, 60528 Frankfurt am Main, Germany | (+39) 3518084388
debmallya.chanda@unicatt.it | https://www.linkedin.com/in/debmallyachanda/

Area of interest

Financial frictions, Business cycles, Monetary policy, Fiscal policy, Uncertainty, DSGE models, HANK, TANK

Professional Experience

Intern at DG Economics, Monetary Policy Division August 2024 – Present
Deutsche Bundesbank *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 Sept. 2021 – Aug. 2024
Economic Policy in Complex Environment *Milan, Italy*

Funded by European Union under the Horizon 2020 scheme.

- 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

Bielefeld University Bielefeld, Germany
Visiting researcher *Oct. 2022 – Sept.2023*

Università Cattolica del Sacro Cuore Milan, Italy
Ph.D. in Economics *Sept. 2021 – Present*

Université Paris 1 Panthéon-Sorbonne Paris, France
Master in Quantitative Economics *Sept. 2018 – Sept 2020*

Indian Institute of Technology Madras Chennai, India
Master in Physics *Aug. 2015 – May 2017*

St. Xavier's College Kolkata, India
Bachelor in Physics *Aug. 2012 – June 2015*

Publications

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

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

In this paper we aim to study the impact of introducing CBDC in an agent based macroeconomic model à la CATS. We endogenise the adoption decision of the CBDC by consumers and add the portfolio allocation of payment method allocation according to different features of payment instruments. In our model, due *price coherence*, pricing of the consumption goods firm will be affected and this will contribute to a real effect of CBDC in the economy i.e. a *pricing channel*. We calibrate our model using US survery data of consumer payments and M1 measures.

Working Papers

Macroeconomic effects of Central Bank Digital Currency

Abstract: This paper examines the potential effects of Central Bank Digital Currency (CBDC) on the intermediation of banks and lending. Given the growing popularity of cryptocurrencies, central banks have shown a keen interest in exploring CBDC as a potential alternative. To investigate this, the paper presents a DSGE model that considers bank monopoly, default risk of banks and firms, and the inclusion of CBDC in the economy. The results indicate that the introduction of CBDC can lead to improvements in inflation dynamics and a reduction in interest rates on loans and deposits by banks. However, there appears to be no significant impact on bank deposits. Additionally, the study finds that the remuneration scheme for CBDC can have a different effect on the economy. This analysis offers crucial insights into the impact of CBDC on the performance of the economy, with a particular focus on price stability and financial intermediation.

Depositor-banker relationship and CBDC

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

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

- 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

- 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

Languages: Julia, Python, C/C++, R
Software: Matlab, STATA, Microsoft Office
Data Science Skills: Machine Learning

Language Skills

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

Awards and Scholarships

- 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

Prof. Domenico Delli Gatti
Full Professor
Università Cattolicà del Sacro Cuore
Room 303, Via Lodovico Necchi 5,
20123 Milano, Italy

Email: domenico.delligatti@unicatt.it
Phone: 02/7234 2499

Prof. Herbert Dawid
Full Professor
Universität Bielefeld
5 Room W8-106, Universitätsstraße 25
33615 Bielefeld, Germany

Email: hdawid@uni-bielefeld.de
Phone: +49 521 106-4843