

MILEN ARRO-CANNARSA

PhD Candidate in Economics, University of Bern

Research Associate, Study Center Gerzensee, Foundation of the Swiss National Bank (SNB)

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Nationality: Swiss, Estonian

PROFILE

Monetary economist completing a PhD at the University of Bern under Prof. Pierpaolo Benigno, and research associate at the Study Center Gerzensee, the foundation of the Swiss National Bank. My dissertation gives the Swiss safe-haven experience a structural framework: foreign appetite for liquid franc assets jointly produces appreciation, disinflation, and a liquidity trap of foreign origin. The central bank's balance sheet becomes a second policy instrument against it. On the empirical side: an SNB working paper on machine-learning nowcasts of Swiss GDP, after a year in the SNB's business-cycle analysis unit (Konjunktur Schweiz).

EDUCATION

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| 09/2020 – present | PhD in Economics , University of Bern
Advisor: Prof. Pierpaolo Benigno; planned completion: end of 2026
Parental leave 12/2024–08/2025
Research interests: monetary economics, international macroeconomics, quantitative macroeconomics, business-cycle analysis |
| 08/2020 – 09/2021 | Swiss Program for Beginning Doctoral Students in Economics , Study Center Gerzensee
Full first-year PhD sequences in macroeconomics, microeconomics, and econometrics |
| 09/2017 – 12/2019 | MSc in International and Monetary Economics , Universities of Bern and Basel (joint degree), <i>insigni cum laude</i>
Thesis (VAR analysis): “The Effects of the SNB’s Balance Sheet Policies on the Swiss Economy after the Financial Crisis” (advisor: Prof. Luca Benati) |
| 09/2013 – 06/2017 | BSc in Economics (minor: Business Administration), University of Bern, <i>insigni cum laude</i>
Thesis: “Monetary Policy in the Face of Negative Interest Rates” (advisor: Prof. Cyril Monnet) |

RESEARCH

Flight to Liquidity: Monetary Policy in an Open Economy

Job market paper

Safe-haven economies experience global crises as a package: foreign demand for their assets surges, the currency appreciates, inflation falls, and the policy rate is driven to its lower bound. This paper adds one ingredient to an open-economy New Keynesian model, domestic assets that provide liquidity services to the rest of the world, and shows that this single addition makes foreign demand a macroeconomic shock and the supply of the liquid asset a second monetary policy instrument. A flight-to-liquidity shock calibrated to the franc's 2010–2011 appreciation reproduces the package and creates a liquidity trap of foreign origin. A modest expansion of the liquid-asset supply stabilizes inflation and output exactly and prevents the trap, while pegging the exchange rate requires an operation ten times as large and sets off an inflationary boom.

Nowcasting GDP: What Are the Gains from Machine Learning Algorithms?

Working paper

with Rolf Scheufele · [SNB Working Papers 2024-06](#), Swiss National Bank

We compare penalized regressions (LASSO, ridge, elastic net), tree ensembles (bagging, random forest, gradient boosting), and support vector regression for nowcasting Swiss GDP, using a mixed-frequency data set of more than 1,100 series that accounts for publication lags. After the Great

Recession, all machine-learning methods beat the univariate benchmark by up to 28% in out-of-sample RMSE. Ridge, elastic net, and SVR perform best.

Optimal Supply of Liquidity

Work in progress

I study the optimal supply of safe, liquid assets in an open economy, where the government trades off providing liquidity to domestic agents against extracting seigniorage from foreign investors.

PROFESSIONAL EXPERIENCE

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| 08/2020 – present | <p>Research Associate and Academic Assistant
Study Center Gerzensee, Foundation of the Swiss National Bank</p> <ul style="list-style-type: none">• Independent research toward the PhD thesis: three projects in monetary economics and business-cycle analysis, combining macroeconomic modeling (DSGE), time-series analysis, and machine learning. Results published as an SNB working paper and presented at international conferences (see Research)• Teach PhD-level mathematics exercise sessions• Prepare full model solutions and grade PhD problem sets in econometrics (Mark Watson: time-series analysis, Kalman filter and state-space models, GDP forecasting) and macroeconomics (Fernando Alvarez)• Support the international courses for central bankers (2021–2026), incl. Topics in Monetary Economics with Lawrence Christiano• Deliver software training in MATLAB, Dynare, Stata, R, EViews, Python, and Jupyter• Support the organization of international conferences, academic events, and advanced PhD courses |
| 07/2019 – 07/2020 | <p>Intern, Business-Cycle Analysis (Konjunktur Schweiz)
Swiss National Bank, Zurich</p> <ul style="list-style-type: none">• Maintained and regularly re-estimated the SNB's short-term GDP forecasting models; presented results at internal forecast meetings• Sole responsibility for the foreign-trade forecasts for six months (covering a staff absence), incl. export-weighted foreign GDP with alternative scenarios• Built high-frequency indicators from scratch, from data sourcing to processing and delivery, for the real-time assessment of the COVID-19 pandemic's impact on the Swiss economy• Supported the Team Switzerland economists with forecasts, presentations, internal analyses, and scientific publications (R, MATLAB, EViews, Stata, Datastream) |
| 07/2016 – 04/2019 | <p>Junior Assistant, Executive Education Programs (40–50%)
Institute of Marketing and Management, University of Bern</p> <ul style="list-style-type: none">• Administration and coordination of executive education programs (CAS, EMBA); liaison for students and faculty; supported examinations and theses |
| 2018 – 2019 | <p>Teaching Assistant, "Introduction to Statistics II" (25%)
Department of Economics, University of Bern (03–09/2018 and 03–06/2019)</p> <ul style="list-style-type: none">• Taught exercise sessions; prepared and graded problem sets and exams |

TEACHING AND COURSE SUPPORT, STUDY CENTER GERZENSEE

- **Courses for central bankers** (assistant): Topics in Monetary Economics (2022–2026; K. Adam, G. Benigno, L. J. Christiano, S. Schmitt-Grohé, L. Straub), Macroeconomic Forecasting (2023; F. Huber, D. Kaufmann, M. Marcellino, B. Rossi), Instruments of Financial Markets (2022; P. Bac-

chetta, A. Goyal, N. Herger, B. Nikolov, M. Rockinger), Financial Stability (2021; P. Bacchetta, M. González-Eiras, N. Herger), Advanced Topics in Empirical Finance (2021; C. de Vries, T. Foucault, M. Rockinger, N. Schürhoff).

- **Swiss doctoral program:** exercise sessions in Mathematics (2023, 2024; with A. Bachmann, C. Monnet, S. Fukuda); grading for Econometrics III (M. Watson; 2022, 2023), Macroeconomics II (F. Alvarez; 2022, 2023), and Microeconomics IV (J. Moore; 2022).
- **Advanced doctoral courses and academic events** (assistant; selection): Survey Data in Economics and Finance (M. Weber, 2024); Recent Advances in Mechanism Design (B. Moldovanu, 2021); Advances in Financial Time Series Modeling (S. J. Koopman, 2021); policy roundtables and conferences, incl. the Fed St. Louis–JEDC–SCG–SNB–UniBern Conference (2021), the Gerzensee Alumni Conference (2023), and the JME Conference at Gerzensee (autumn 2026).

PRESENTATIONS

2026	Brown Bag Seminar, University of Bern
2025	Brown Bag Seminar, Study Center Gerzensee
2024	28th Annual International Conference on Macroeconomic Analysis and International Finance, University of Crete
2023	25th International Conference on Computational Statistics (COMPSTAT 2023), London; Brown Bag Seminar, Swiss National Bank; Alumni Conference, Study Center Gerzensee; Brown Bag Seminar, University of Bern

ADDITIONAL TRAINING

2023	Topics in International Macroeconomics and Finance: Macroeconomics of Exchange Rates (Prof. Oleg Itskhoki), Study Center Gerzensee; Analyzing DSGE Models with Dynare Julia (Prof. Michel Juillard), EPFL
2022	Bayesian Methods for Empirical Macroeconomics (Prof. Gary Koop); An Introduction to Macro-Finance (Prof. Atif Mian); Inflation Forecasting and Monetary Policy (Profs. Pierpaolo Benigno, Daniel Kaufmann, Carlo Favero); all courses at the Study Center Gerzensee

SKILLS, LANGUAGES, AND SERVICE

Software	MATLAB, Python (incl. Jupyter), R, Dynare (MATLAB and Julia), Stata, EViews, L ^A T _E X, Git/GitHub, Refinitiv Eikon, Datastream, MS Office
Languages	German (C2), English (C2), Estonian (native), Italian (B1), Russian (B1)
Service	Head of Student Representation, Fachschaft Wirtschaftswissenschaften, University of Bern (2015–2018); Member, Student Parliament, University of Bern (2016–2017)
Interests	History, Literature, Pilates, Skiing

REFERENCES

Prof. Pierpaolo Benigno
 Professor of Economics
 University of Bern
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Dr. Matthias Lutz
 Economic Advisor
 Swiss National Bank
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Prof. Martin Brown
 Director
 Study Center Gerzensee
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