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Preface

Dear Reader

Central banks depend on sound economic research for the fulfilment of their mandate and in preparation for future challenges. The Swiss National Bank (SNB) aims to play a leading role in research on Swiss monetary policy and offers its researchers a stimulating intellectual environment.

Research activities are coordinated, organised and promoted by the Research Coordination unit, which ensures that research activities are conducted with the appropriate transparency. The visibility of research projects increases the potential for collaboration and prevents duplication. The unit is responsible for publishing SNB research and ensuring compliance with the relevant provisions. It also encourages exchange between our researchers and other central banks and academic institutions by organising events and conferences, both internal and external.

Of equal importance to the SNB is its reporting on research activities. To this end, our annual Research Report documents the research performed during the previous year. It assesses our publications in terms of quantity, quality and relevance, and reviews the development of ongoing projects. It also reports on research-related activities such as visits to other institutions and presentations of findings, thus promoting and supporting research within the bank.

I am pleased to present the SNB Research Report for 2023. I hope you find it an interesting and informative read.

June 2024

Thomas J. Jordan
Chairman of the Governing Board

Executive summary

Research supports the SNB in fulfilling its mandate. The annual SNB Research Report serves to account for the SNB's research activities and reports on the quantity, academic quality and relevance of the research output.

In 2023, there were fewer articles published in peer-reviewed journals. Quality, as measured via a ranking of academic journals, was heterogeneous. Nonetheless, a pleasing improvement can be observed in terms of relevance to the SNB.

- **Quantity:** Decrease in published articles, from 27 in 2022 to 21 in 2023 (ten-year annual average: 23).
- **Quality:** Remained overall heterogeneous. The share of articles published in B-rated journals rose to 43% and the share of those in D-rated journals increased slightly.
- **Relevance:** The share of published articles with high relevance increased, from 52% in 2022 to 62% in 2023 – the highest recorded share (ten-year annual average: 35%).

The total number of working papers decreased markedly, from 34 in 2022 to 13 in 2023. In particular, fewer SNB Working Papers were written by SNB researchers than in the previous year (14 in 2022 versus just seven in 2023).

With regard to seminars, an all-time high was recorded in 2023. In particular, the SNB offered 41 SNB Research Seminars. This represents an increase of 13 over the previous year.

Research publications in 2023

COMPLETED RESEARCH

Completed research is defined as an article published in a peer-reviewed journal. However, published research covers only part of the research undertaken by SNB staff. Although research serves as direct input into decision-making, due to confidentiality, not all work is published or released to the public at a later date. The importance of internal research should not be underestimated, even if it is not evaluated in this research report.

COMPLETED RESEARCH: QUANTITY

	2023	2022	Average
Articles in academic journals	21	27	23
Of which SNB Economic Studies	–	–	1
Contributions to books	2	2	5
Dissertations	1	–	1

Source(s): SNB

In 2023, SNB economists published 21 articles in academic journals. This is slightly below the annual average of 23 articles (with a maximum of 28 articles in 2019), and represents a decrease compared to 2022.

A detailed list of publications can be found in the appendix.

ARTICLES IN ACADEMIC JOURNALS: QUALITY

	2023	2022	Average
A journals	0%	0%	3%
B journals	43%	33%	20%
C journals	24%	41%	35%
D journals	33%	26%	42%

Source(s): SNB

As the number of publications has decreased, their quality has become more heterogeneous. The share of articles published in B-rated journals rose to 43%, while there were again no publications in A-rated journals. The share of C-rated articles decreased to 24%. The share of D-rated journals increased slightly (to 33%) yet remained below the annual average.

An article in a high-quality academic journal is allocated an A or B rating, an article in a good academic journal a C, and an article in a decent-quality academic journal a D.

ARTICLES IN ACADEMIC JOURNALS: RELEVANCE

	2023	2022	Average
High relevance (***)	62%	52%	35%
Medium relevance (**)	14%	37%	41%
Low relevance (*)	24%	11%	23%
No relevance	0%	0%	1%

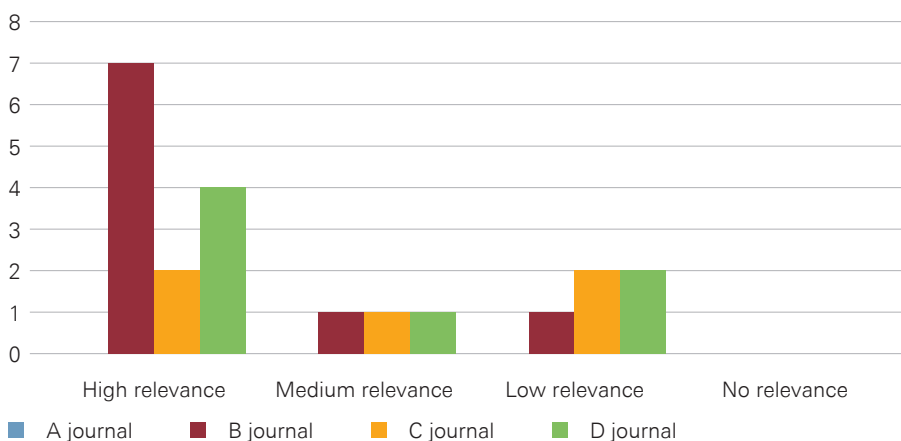
Source(s): SNB

62% of the published articles were highly relevant to the SNB. This share increased by ten percentage points compared to the previous year and is well above the annual average of 35%. This also marks the largest share of highly relevant articles in all recorded years.

The SNB relevance schema considers contributions relevant if they focus on issues relating to the SNB’s core mandate and/or conduct empirical analyses using Swiss data.

RELEVANCE, QUALITY AND QUANTITY IN 2023

Number of published articles



Source(s): SNB

The quality of the highly relevant articles has increased since most of them were published in B-rated journals in 2023. In contrast, C-rated journals were the most common category for highly relevant publications in 2022. Since there were no publications in A-rated journals in 2023 (like in 2022), no article was of both the highest relevance and the highest quality.

ONGOING RESEARCH

Ongoing research encompasses research at intermediate steps, such as the publication of working papers.

ONGOING RESEARCH: QUANTITY

	2023	2022	Average
Working papers	13	34	25
Of which SNB Working Papers ¹	7	14	15
Of which other working papers	6	20	10

¹ Excluding ongoing research of SNB visitors.

Source(s): SNB

Ongoing research output was significantly lower than the previous year since only 13 working papers were written by SNB researchers in 2023. The decline is especially marked for SNB Working Papers, where the output fell from 14 to seven papers.

A detailed list of publications can be found in the appendix.

Supporting research in 2023

The following chapter describes the activities of the Research Coordination unit, which supports researchers at the SNB. These activities involve organising seminars and workshops, as well as enabling exchanges between SNB economists and researchers from other institutions, for example by inviting research visitors to the SNB for a limited period of time.

SEMINARS AND DIALOGUE

SUPPORT OF RESEARCH ACTIVITIES: OVERVIEW

	2023	2022	Average
SNB Brown Bag Workshops	14	11	16
SNB Research Seminars	41	28	33
SNB Current Economic Issues ¹	3	4	–
SNB Technology and Finance Seminars ²	16	20	–
SNB research visitors	4	1	2
SNB economic advisors	1	2	1
SNB researchers visiting other institutions	4	1	2
SNB Research Lectures	2	2	1

¹ Before 2021, the number of Current Economic Issues was included in the total number of SNB Research Seminars.

² The average is not yet available since the SNB Technology and Finance Seminars only began in 2019.

Source(s): SNB

SEMINARS

The total number of seminars reached an all-time high in 2023. In particular, the SNB offered 41 SNB Research Seminars. This is significantly above the annual average and represents an increase of 13 compared to the previous year. There were also more SNB Brown Bag Workshops in 2023 than in the previous year. In contrast, there were fewer SNB Technology and Finance Seminars and SNB Current Economic Issues events.

DIALOGUE

Dirk Niepelt visited the Monetary Policy Analysis unit one day per week from May 2022 until April 2023, working mainly on a research project on CBDC. Dirk Niepelt is professor of macroeconomics at the University of Bern, in the executive committee of the Swiss Society of Economics and Statistics, and leader of the CEPR Research and Policy Network on FinTech and Digital Currencies. He is a research fellow at the CEPR (London), a fellow at SUERF – The European Money and Finance Forum, a member of the CESifo (Munich) research network, and a member of the macroeconomic committee of the Verein für Socialpolitik. His research and teaching cover topics in macroeconomics, monetary economics, international finance and public finance, and he frequently contributes to the public debate. Professor Niepelt received his Ph.D. in economics from the Massachusetts Institute of Technology and holds licentiate and doctorate degrees from the University of St.Gallen.

Professor **Kjell G. Nyborg** visited the Money Market and Foreign Exchange division of the SNB in February and April 2023. During his stay, Professor Nyborg discussed conceptual questions of monetary policy implementation with the division staff.

Professor Nyborg holds the Chair in Corporate Finance at the Department of Banking and Finance at the University of Zurich. He is also a Senior Chair of the Swiss Finance Institute. He holds a Ph.D. in Finance from Stanford University. Professor Nyborg has published widely in leading journals. His recent research focuses on the market for liquidity, the role of money and liquidity in financial markets, and central bank collateral frameworks.

During two visits, from 2–3 February and from 16–17 October 2023, **Michele Lenza** pursued several objectives. The main focus was on consulting and on advancing a BVAR model. Bilateral meetings with economists were arranged to exchange ideas and deepen insights. In addition, an SNB Research Seminar was organised during the second visit to present and discuss the latest research findings.

Mr Lenza is Head of Section in the Monetary Policy Research Division of the European Central Bank. He received a Ph.D. in Economics and Statistics from the Université Libre de Bruxelles and he is a Fellow of the Centre for Economic Policy Research (CEPR), the International Association for Applied Econometrics (IAAE), and the Euro Area Business Cycle Network (EABCN). His research interests cover monetary economics, business cycle analysis and macro-econometric methods. His research has appeared in peer-reviewed journals such as *Econometrica*, the *Journal of the American Statistical Association*, the *Journal of Econometrics*, *The Review of Economics and Statistics*, the *Journal of the European Economic Association* and the *Economic Journal*, among other periodicals.

Antoine Martin visited the SNB from 26 to 30 June 2023. During the course of his visit, he held an SNB Research Seminar on ‘Gates, fees and pre-emptive runs’ and advised staff of all three departments on projects related to CBDC, tokenisation and monetary policy frameworks.

Before taking on his new role as a Member of the Governing Board of the SNB on 1 January 2024, Mr Martin was a Financial Research Advisor in the Financial Stability Policy Research Division at the Federal Reserve of New York. He holds a Ph.D. in Economics from the University of Minnesota. His fields of research include the economics of payments, financial intermediation, money and banking, and macroeconomics. Mr Martin has published his work in various leading journals, including the Journal of Finance and the Review of Financial Studies. He is also an associate editor of the Journal of Money, Credit and Banking and has served as a referee for numerous academic journals. Antoine Martin visited the SNB seven times for SNB Research Seminars from 2015 to 2023.

Giacomo Mangiante visited the SNB from 8 to 10 November 2023. During the course of his visit, he had a series of bilateral meetings with the staff of the Economic Affairs division, at which they discussed various research projects.

Mr Mangiante is a Research Fellow at the Bank of Italy. He had previously worked as a trainee at the Bank of England, the European Central Bank, the European Investment Bank and the European Commission. He holds a Ph.D. from the University of Lausanne and a Master’s in Economics from Bocconi University.

SUPPORT OF RESEARCH ACTIVITIES: CONFERENCES

	2023	2022	Average
Conferences at the SNB ¹	5	8	5
Conferences with the SNB ²	4	2	3
Conferences hosted by the SNB ³	–	–	1
Total	9	10	9

¹ The SNB was a member of the programme committee and in charge of event management.

² The SNB was a member of the programme committee.

³ The SNB provided the premises only.

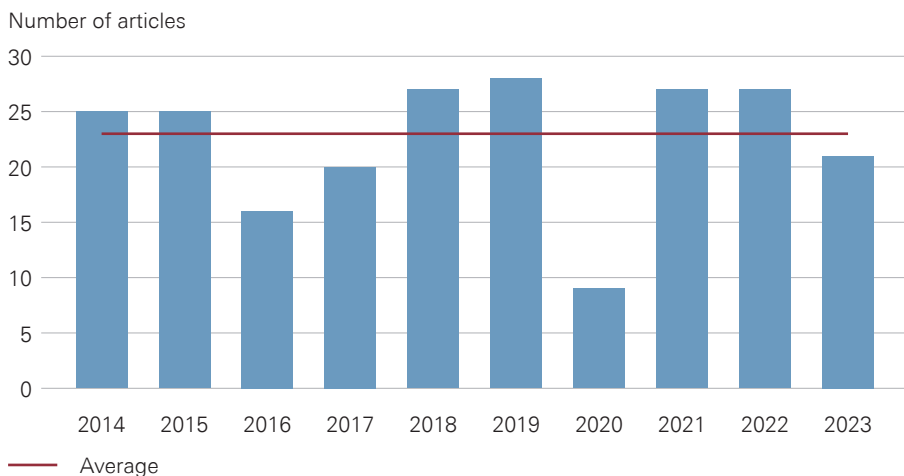
Source(s): SNB

The SNB organised five conferences in 2023, which represents a decrease compared to the previous year. The SNB was nevertheless also involved in four other conferences, bringing the total number of conferences to a level similar to the year before.

A detailed list of the conferences can be found in the appendix.

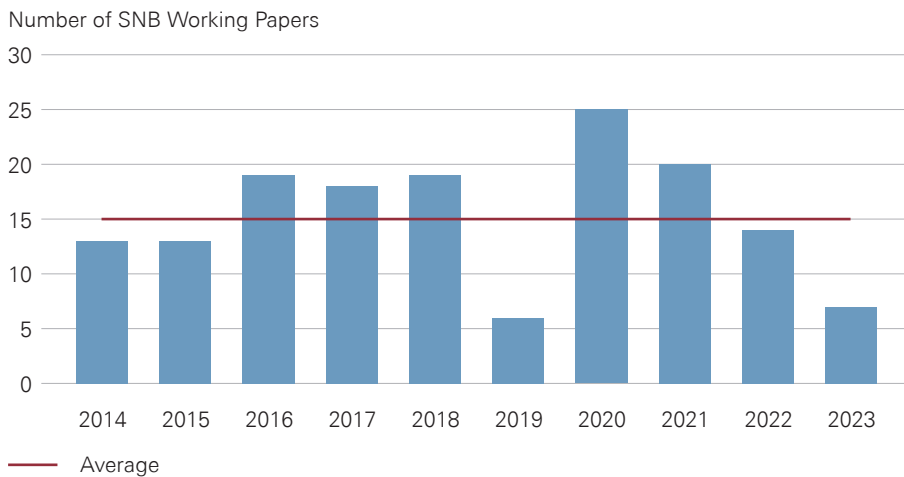
History of SNB research

ARTICLES IN ACADEMIC JOURNALS



Source(s): SNB

SNB WORKING PAPERS



Source(s): SNB

ARTICLES IN ACADEMIC JOURNALS

Abbate, Angela, Sandra Eickmeier and Esteban Prieto (2023), Financial shocks and inflation dynamics, *Macroeconomic Dynamics*, 27(2), pp. 350–378.

Abbate, Angela and Dominik Thaler (2023), Optimal monetary policy with the risk-taking channel, *European Economic Review*, 152.

Aregger, Nicole and Jessica Leutert (2023), Countering appreciation pressure with unconventional monetary policy: The role of financial frictions, *International Journal of Central Banking*, 19 (4).

Argimon, Isabel, Jayson Danton, Jakob de Haan, Javier Rodriguez-Martin and Maria Rodriguez-Moreno (2023), Low interest rates and banks' interest margins: Does belonging to a banking group matter?, *Journal of Banking & Finance*, 154.

Auer, Simone (2023), Financial globalization and monetary transmission, *Review of International Economics*, 31 (2), pp. 721–760.

Baumann, Philipp, Enzo Rossi and Alexander Volkmann (2023), What drives inflation and how? Evidence from additive mixed models selected by cAIC, *Frontiers in Applied Mathematics and Statistics*, 9.

Beck, Elliot, Gianluca De Nard and Michael Wolf (2023), Improved inference in financial factor models, *International Review of Economics & Finance*, 86 (C), pp. 364–379.

Behncke, Stefanie (2023), Effects of macroprudential policies on bank lending and credit risks, *Journal of Financial Services Research*, 63 (2), pp. 175–199.

Bussy, Adrien (2023), Corporate tax evasion: Evidence from international trade, *European Economic Review*, 159 (C).

Bussy, Adrien and Mehtab Ahmed Jagil (2023), Export fraud in India, *World Trade Review* 22 (2), pp. 255–277.

Bussy, Adrien and Huanhuan Zheng (2023), Responses of FDI to geopolitical risks: The role of governance, information, and technology, *International Business Review*, 32 (4).

Cerutti, Eugenio, Catherine Casanova and Swapam-Kumar Pradhan (2023), Banking across borders: Are Chinese banks different?, *Journal of Banking & Finance*, 154 (C).

Grise, Christian (2023), Lower bound uncertainty and long-term interest rates, *Journal of Money, Credit and Banking*, 55 (2-3), pp. 619–634.

Hager, Diego and Thomas Nitschka (2023), Responses of Swiss interest rates and stock prices to ECB policy surprises, *Swiss Journal of Economics and Statistics*, 159 (1).

Hwang, In Do, Thomas Lustenberger and Enzo Rossi (2023), Central bank communication and public trust: The case of ECB speeches, *Journal of International Money and Finance*, 137.

Koomen, Miriam and Laurence Wicht (2023), Demographics and current account imbalances: Accounting for the full age distribution, *IMF Economic Review*, 71 (3), pp. 710–758.

Maurer, Tim D. and Thomas Nitschka (2023), Stock market evidence on the international transmission channels of US monetary policy surprises, *Journal of International Money and Finance*, 136 (C).

Nitschka, Thomas and Marc-Antoine Ramelet (2023), Shock and awe? Bond yield responses to domestic monetary policy in a small-open economy, *Economics Letters*, 231 (C).

Reynard, Samuel (2023), Central bank balance sheet, money and inflation, *Economics Letters*, 224 (C).

Schmidt, Richard and Pinar Yesin (2022)¹, The growing importance of investment funds in capital flows, *Aussenwirtschaft*, 72 (01), pp. 1–40.

Voellmy, Lukas (2023), The optimal distribution of insured and uninsured deposits across banks, *Macroeconomic Dynamics*, 27 (8), pp. 2252–2269.

CONTRIBUTIONS TO BOOKS

Buchmann, Manuel, Hendrik Budliger, Martin Dahinden, Reto Francioni, Hans Groth, Carlos Lenz and Heinz Zimmermann (2023), Financial demography: How population aging affects financial markets, in S Irudaya Rajan (ed.), *Handbook of Aging, Health and Public Policy*, Springer, pp. 1-22.

Moser, Thomas (2023), The simple(r) case for wholesale central bank digital currency, in Christos V. Gortsos and Rolf Sethe (eds.), *Central bank digital currencies (CBDCs)*, EIZ Publishing.

WORKING PAPERS

Alexandrova-Kabadjova, Biliiana, Anton Badev, Saulo Benchimol Bastos, Evangelos Benos, Freddy Cepeda-Lopéz, James Chapman, Martin Diehl, Ioana Duca-Radu, Rodney Garratt, Ronald Heijmans, Anneke Kosse, Antoine Martin, Thomas Nellen, Thomas Nilsson, Jan Paulick, Andrei Pustelnikov, Francisco Rivadeneyra, Mario Rubem do Coutto Bastos and Sara Testi (2023), *Intraday liquidity around the world*, BIS Working Papers, 1089.

Baeriswyl, Romain, Alex Oktay and Marc-Antoine Ramelet (2023), *Exchange rate shocks and equity prices: The role of currency denomination*, SNB Working Papers, 2023-05.

Beck, Elliot, Gianluca De Nard and Michael Wolf (2023), *Improved inference in financial factor models*, University of Zurich, Department of Economics Working Paper Series, 430.

Beck, Elliot, Damian Kozbur and Michael Wolf (2023), *Hedging forecast combinations with an application to the random forest*, arXiv.org.

Bieri, Marie-Catherine (2023), *Assessing economic sentiment with newspaper text indices: Evidence from Switzerland*, SNB Working Papers, 2023-07.

Brown, Martin, Laura Felber and Christoph Meyer (2023), *Consumer adoption and use of financial technology: "tap and go" payments*, SNB Working Papers, 2023-08.

Brown, Martin, Yves Nacht, Thomas Nellen and Helmut Stix (2023), *Cashless payments and consumer spending*, SNB Working Papers, 2023-06.

Bruhin, Jonas, Rolf Scheufele and Yannic Stucki (2023), *The economic impact of Russia's invasion of Ukraine on European countries - a SVAR approach*, SNB Working Papers, 2023-04.

¹ Retrospectively recorded in the SNB Research Report 2023.

Felber, Laura and Simon Beyeler (2023), *Nowcasting economic activity using transaction payments data*, SNB Working Papers, 2023-01.

Fischer, Andreas M. and Pinar Yesin (2023), *The kindness of strangers: Brexit and bilateral financial linkages*, SNB Working Papers, 2023-02.

Rudolf, Barbara and Pascal Seiler (2023), *Price setting before and during the pandemic: Evidence from Swiss consumer prices*, SUERF Policy Brief, 512.

Windsor, Callan, Terhi Jokipii and Matthieu Bussière (2023), *The impact of interest rates on bank profitability: A retrospective assessment using new cross-country bank-level data*, RBA Research Discussion Papers RDP, 2023-05.

Yesin, Pinar (2023), *How prevalent are investment funds in cross-border investment?*, SUERF Policy Brief, 556.

DISSERTATION

Fäh, Claudio (2023), *Die Anwendbarkeit des Aktienrechts auf die Schweizerische Nationalbank*, Dissertation, Zürcher Studien zum öffentlichen Recht.

RESEARCH CONFERENCES AT THE SNB

SNB-CIF Conference on Cryptoassets and Financial Innovation

Date 26 May 2023
Venue Metropol Restaurant, Zurich, Switzerland
Organising committee Aleksander Berentsen, Center for Innovative Finance (CIF)
Thomas Moser, SNB
Fabian Schär, Center for Innovative Finance (CIF)
Sébastien Kraenzlin, SNB
Andreas Fuster, EPFL
Romain Baeriswyl, SNB
Nina Hugelshofer, SNB

Aussenwirtschaft Workshop 2023

Date 7 July 2023
Venue Metropol Restaurant, Zurich, Switzerland
Organising committee Reto Föllmi, SIAW-HSG
Simon Evenett, SIAW-HSG
Alain Gabler, SNB

Karl Brunner Distinguished Lecture by Markus K. Brunnermeier: Monetary Policy and Resilience

Date 28 September 2023
Venue ETH Zurich, Switzerland
Organising committee Lukas Voellmy, SNB
Nicolas Cuche-Curti, SNB

SNB Research Conference 2023: Challenges in an era of monetary policy normalisation

Date 29–30 September 2023
Venue Park Hyatt, Zurich, Switzerland
Organising committee Athanasios Orphanides, MIT
Carlos Lenz, SNB
Pascal Towbin, SNB
Nicolas Cuche-Curti, SNB

SNB-FRB-BIS High-Level Conference on Global Risk, Uncertainty, and Volatility: Policy Making Under Uncertainty

Date 14–15 November 2023
Venue Hotel Baur au Lac, Zurich, Switzerland
Organising committee Thomas Moser, SNB
Nina Hugelshofer, SNB
Kerstin Kehrlé, SNB
Samuel Reynard, SNB
Juan M. Londono, FRB
Danilo Cascaldi-Garcia, FRB
Mohammad Jahan-Parvar, FRB
Sai Ma, FRB
Ilknur Zer Boudet, FRB
Wenqian Huang, BIS
Benoit Mojon, BIS
Vladyslav Sushko, BIS
Nikola Tarashev, BIS

CONFERENCES WITH THE SNB

Joint SNB-BIS research workshop

Date 17 May 2023
Venue BIS Basel, Switzerland / Webex (hybrid)
Organising committee Christian Grisse, SNB
Boris Hofmann, BIS

IMF-Swiss National Bank (SNB)-Joint Vienna Institute (JVI) Peer-to-Peer Workshop for Caucasus, Central Asia, Moldova, and Mongolia Central Bank Practitioners (CCAMM-CBP): Re-thinking Monetary Policy in a Time of Higher Inflation and Lower Growth

Date 12–14 June 2023
Venue Joint Vienna Institute, Vienna, Austria
Organising committee Matthew Gaertner, IMF
Hervé Joly, Joint Vienna Institute
Lena Lee Andresen, SNB
Nasiba Imaralieva, SNB

Fed St. Louis-JEDC-SCG-SNB-Conference – Heterogeneity and Macroeconomics of Labor Markets

Date 13–14 October 2023
Venue Study Center Gerzensee, Switzerland
Organising committee Martin Brown, Study Center Gerzensee
Nicolas Cuche-Curti, SNB
Harris Dellas, University of Bern
Carlos Garriga, St. Louis Fed

19th Annual NBP-SNB Joint Seminar: Remittances and the labour market

Date 27–28 November 2023
Venue Narodowy Bank Polski, Warsaw, Poland
Organising committee Narodowy Bank Polski International Department
Lena Lee Andresen, SNB
Fabian Heller, SNB

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