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Preface

Dear Reader

The Swiss National Bank (SNB) is obliged by the Constitution and by statute to act in accordance with the interests of the country as a whole. Its primary goal is to ensure price stability, while taking due account of economic developments. For the SNB, as for all central banks, sound research plays an important part in fulfilling this mandate. With its experts in all areas of central banking and state-of-the-art tools, the SNB seeks to play a leading role in research on Swiss monetary policy. This report serves to account for the SNB's research activities and details the quantity, quality and relevance of the corresponding output.

In order for central banks to rise to the challenges of the day, it is crucial that they maintain an ongoing dialogue both with each other and with researchers from academia. This allows them to learn from common experiences, gain new perspectives and share possible solutions. The easing of pandemic-related personal and travel restrictions since spring of last year has meant that the SNB has once more been able to invite academic advisors to participate in its research projects, as well as to second its economists to other institutions on research visits. For the first time since 2020, exchanges have no longer been limited to virtual or hybrid formats, but could take place physically. This pleasing trend is reflected in the significant increase in seminars and academic conferences, as detailed in the chapter on supporting research in the year under review.

I am pleased to present the SNB Research Report for 2022.

May 2023

Thomas J. Jordan
Chairman of the Governing Board

Executive summary

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

2022 was a successful year in the area of completed research. In two areas – quantity and quality – research output consolidated on levels similar to those in the previous year, significantly above the ten-year average. The relevance of the research output for the SNB has continued to rise relative to 2021 and to the average.

- Quantity: Consolidation of the number of published articles at 27 (average: 22).
- Quality: Despite no publications in A-rated journals, research quality showed a strong development in 2022 with a concentration on articles in B and C-rated journals and 74% of all publications falling in one of those categories (average: 54%). This leads to the lowest recorded share of publications in D-rated journals and indicates a steady increase in the average quality of the SNB's research output.
- Relevance: Increase in articles with high relevance from 44% to 52% – the highest recorded share – of all publications (average: 31%).

The prior publication of articles as SNB Working Papers is positively correlated with the relevance; eight of 14 articles with a high relevance were previously published as SNB Working Papers.

The number of working papers decreased from 39 to 34, and fewer SNB Working Papers were published than in the previous year (2022: 14, 2021: 20).

With regard to seminars, workshops and conferences, an increase from an already high level has been recorded. With the easing of the pandemic public health measures, many events were held in a hybrid format, some conferences even completely on site, especially in the second semester of the year.

Research publications in 2021

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 this research should not be underestimated, even if it is not evaluated and reported here.

COMPLETED RESEARCH: QUANTITY

	2022	2021	Average
Articles in research journals	27	27	22
Of which SNB Economic Studies	–	–	1
Contributions to books	2	–	5

Source(s): SNB

In 2022, SNB economists published 27 articles in research journals – the same number as in 2021, significantly above the average of 22, and just under the maximum of 28 articles in 2019.

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

ARTICLES IN ACADEMIC JOURNALS: QUALITY

	2022	2021	Average
A journals	0%	7%	3%
B journals	33%	30%	17%
C journals	41%	30%	37%
D journals	26%	33%	43%

Source(s): SNB

While the number of publications has remained the same, their quality has become more consistent; the share of articles published in B-rated journals rose to 33%, while there were no publications in A-rated journals in 2022. However, the share of C-rated articles increased significantly, to 41%. It is also worth noting that the share in D-rated journals in 2022 is the lowest in all recorded years.

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

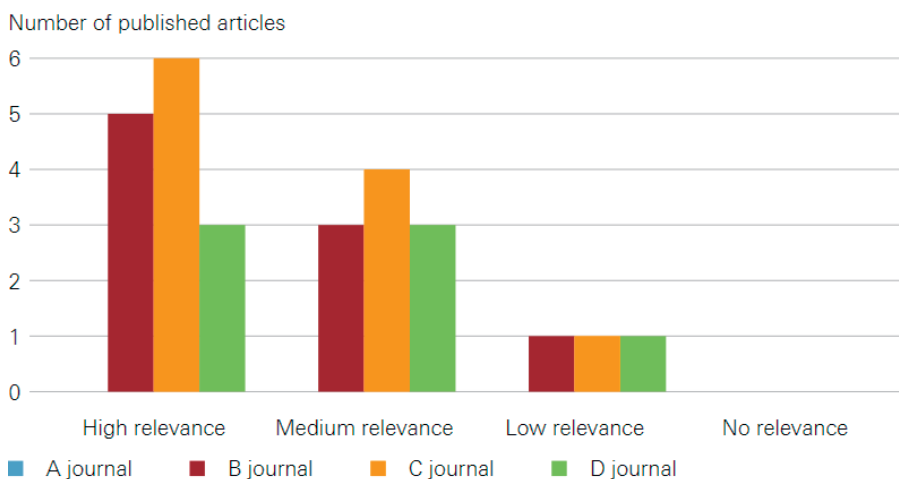
	2022	2021	Average
High relevance	52%	44%	31%
Medium relevance	37%	37%	41%
Low relevance	11%	15%	25%
No relevance	0%	4%	3%

Source(s): SNB

52% of the published articles were highly relevant to the SNB, an increase of 8 percentage points compared to the previous year. 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 2022



Source(s): SNB

Since there were no publications in A-rated journals in 2022, no article was of the highest relevance and quality. However, the quality of the highly relevant articles has increased on average as most of them were published in C-rated journals instead of D-rated journals, which was the most common category for highly relevant publications in 2021.

ONGOING RESEARCH

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

ONGOING RESEARCH: QUANTITY

	2022	2021	Average
Working papers	34	39	26
Of which SNB Working Papers	14	20	16
Of which other working papers	20	19	10

Source(s): SNB

Research output was slightly lower than the previous year in the area of ongoing research: 34 working papers were published. This is especially true for SNB Working Papers, where the output declined from 20 to 14 SNB Working Papers.

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

Supporting research in 2022

The following chapter describes the activities of the Research Coordination unit, which supports researchers at the SNB. These activities involve organising seminars and workshops, but also 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

	2022	2021	Average
SNB Brown Bag Workshops	11	17	16
SNB Research Seminars	28	18	33
SNB Current Economic Issues ¹	4	3	–
SNB Technology and Finance Seminars ²	20	19	–
SNB research visitors	1	–	2
SNB economic advisors	2	–	1
SNB researchers visiting other institutions	1	–	1
SNB Research Lectures	2	1	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.

SEMINARS

With the pandemic public health measures easing, especially in the second semester of 2022, the number of events in all categories – with the exception of the SNB Brown Bag Workshops – increased compared to the previous year. In particular, the SNB offered 28 SNB Research Seminars, which is an increase of 10 compared to the previous year. This development also signals a normalisation, as the yearly average is 33 SNB Research Seminars per year.

A detailed list of the SNB Brown Bag Workshops, SNB Research Seminars, SNB Current Economic Issues and SNB Technology and Finance Seminars can be found in the appendix

DIALOGUE

Antoine Martin visited the SNB from 22 August to 2 September 2022. During the course of his visit, he held an SNB Research Seminar on ‘Optimal Design of Tokenized Markets’ and advised staff in the Economic Affairs division and the Monetary Policy Analysis unit on projects related to digital currencies and the implementation of monetary policy. Antoine Martin also interacted with staff in the Banking Operations division and the Money Market Analysis unit to discuss payment system issues and operational aspects of monetary policy.

Antoine Martin is 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 main fields of research are economics of payments, financial intermediation, money and banking, and macroeconomics. Antoine Martin has published work in various national and international journals, such as the *Journal of Finance* and *Review of Financial Studies*. He is also an associate editor of the *Journal of Money, Credit and Banking* and a referee for numerous academic journals. Antoine Martin visited the SNB six times for SNB Research Seminars from 2015 to 2022.

Together with SNB economists, **Martin Brown** participated in the research project ‘Consumer Adoption of Financial Technology: Contactless Card Payments during the COVID-19 Pandemic’ between January and December 2022 while also attending internal seminars in the area of payments. Martin Brown is Director of the Study Center Gerzensee and a Professor of Financial Economics at the University of St.Gallen (adjunct). He is also a research associate at ZEW – Leibniz Centre for European Economic Research. He holds a doctoral degree in economics from the University of Zürich. Prior to joining the Study Center, he was a Professor of Banking at the University of St.Gallen, an Associate Professor of Finance at Tilburg University, a Senior Economist at the Swiss National Bank, and a Program Director for financial sector development and small business promotion. His current research focuses on financial intermediation and household finance.

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, president 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 covers topics in macroeconomics, monetary economics, international finance and public finance, and he frequently contributes to the public debate. Dirk 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.

RESEARCH CONFERENCES

SUPPORT OF RESEARCH ACTIVITIES: CONFERENCES

	2022	2021	Average
Conferences at the SNB ¹	8	6	5
Conferences with the SNB ²	2	1	3
Conferences hosted by the SNB ³	–	–	1
Total	10	7	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.

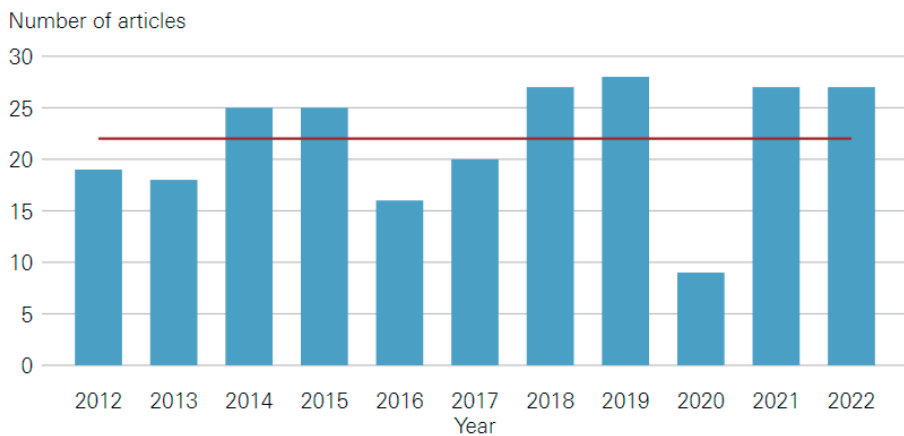
Source(s): SNB

The SNB organised eight conferences in 2022, which is a slight increase compared to the previous year.

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

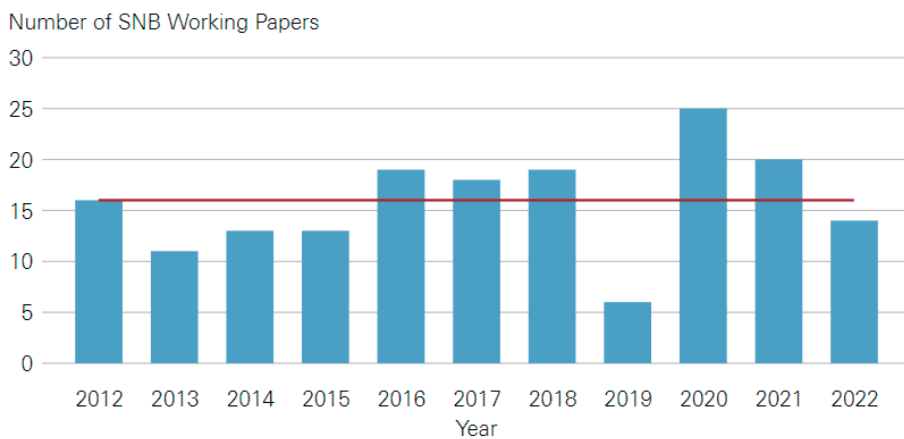
History of SNB research

ARTICLES IN ACADEMIC JOURNALS



Source(s): SNB

SNB WORKING PAPERS



Source(s): SNB

ARTICLES IN ACADEMIC JOURNALS

- Alder, Simon, Timo Boppart and Andreas Müller (2022), A theory of structural change that can fit the data, *American Economic Journal: Macroeconomics*, 14 (2), pp. 160–206.
- Banerjee, Ryan, Francesco Franceschi and Stéphane Riederer (2022), Borrower vulnerabilities, their distribution and credit losses, *BIS Quarterly Review*, September 2022, pp. 57–65.
- Benhima, Kenza and Rachel Arulraj-Cordonier (2022), News, sentiment and capital flows, *Journal of International Economics*, 137, pp. 1–33.
- Bichsel, Robert, Luisa Lambertini, Abhik Mukherjee and Dan Wunderli (2022), The pass-through of bank capital requirement to corporate lending spreads, *Journal of Financial Stability*, 58, pp. 1–15.
- Blatter, Marc and Andreas Fuster (2022), Scale effects on efficiency and profitability in the Swiss banking sector, *Swiss Journal of Economics and Statistics*, 158 (12), pp. 1–24.
- Bonk, Alica Ida and Laure Simon (2022), From He-Cession to She-Stimulus? The labor market impact of fiscal policy across gender, *SERIEs: Journal of the Spanish Economic Association*, 13 (1–2), pp. 309–334.
- Fink, Fabian, Lukas Frei and Oliver Gloede (2022), Global risk sentiment and the Swiss franc: A time-varying daily factor decomposition model, *Journal of International Money and Finance*, 122, pp. 1–15.
- Fischer, Andreas M. and Pinar Yesin (2022), Foreign currency loan conversions and currency mismatches, *Journal of International Money and Finance*, 122, pp. 1–14.
- Funk, Anne Kathrin and Daniel Kaufmann (2022), Do bonuses offset the allocative effects of downward rigid base wages? *AEA Papers and Proceedings*, 112, pp. 486–490.
- Funk, Anne Kathrin and Daniel Kaufmann (2022), Do sticky wages matter? New evidence from matched firm survey and register data, *Economica*, 89 (355), pp. 689–712.
- Girsberger, Esther Mirjam, Miriam Koomen and Matthias Krapf (2022), Interpersonal, cognitive, and manual skills: How do they shape employment and wages? *Labour Economics*, 78, pp. 1–16.
- Grisse, Christian and Gisle James Natvik (2022), Sovereign debt crises and cross-country assistance, *Oxford Economic Papers*, 74 (1), pp. 178–193.
- Guggenheim, Basil, Sébastien P. Kraenzlin and Christoph Meyer (2022), (In)efficiencies of current financial market infrastructures: An empirical assessment, *Swiss Journal of Economics and Statistics*, 158 (19), pp. 1–11.
- Hunziker, Hans-Ueli, Christian Raggi, Rina Rosenblatt-Wisch and Attilio Zanetti (2022), The impact of guidance, short-term dynamics and individual characteristics on firms' long-term inflation expectations, *Journal of Macroeconomics*, 71, pp. 1–18.
- Koeniger, Winfried, Benedikt Lennartz and Marc-Antoine Ramelet (2022), On the transmission of monetary policy to the housing market, *European Economic Review*, 145, pp. 1–36.

- Koomen, Miriam and Uschi Backes-Gellner (2022), Occupational tasks and wage inequality in West Germany: A decomposition analysis, *Labour Economics*, 79, pp. 1–36.
- Koomen, Miriam and Laurence Wicht (2022), Pension systems and the current account: An empirical exploration, *Journal of International Money and Finance*, 120, pp. 1–19.
- Kugler, Peter and Samuel Reynard (2022), Money and inflation in Switzerland, *Swiss Journal of Economics and Statistics*, 158 (1), pp. 1–13.
- Lustenberger, Thomas and Enzo Rossi (2022), The social value of information: A test of a beauty and nonbeauty contest, *Journal of Money, Credit and Banking*, 54 (7), pp. 2125–2148.
- Moser, Thomas (2022), Central bank digital currency: The new kid on the block? *Journal of Digital Banking*, 6 (4), pp. 359–365.
- Näf, Armando, Yannic Stucki and Jacqueline Thomet (2022), The effects of firing costs on labour market dynamics, *Economica*, 89 (354), pp. 359–365.
- Nitschka, Thomas (2022), China's anti-corruption campaign and stock returns of luxury goods firms, *Financial Markets and Portfolio Management*, 36 (2), pp. 159–177.
- Oktay, Alex (2022), Heterogeneity in the exchange rate pass-through to consumer prices: The Swiss franc appreciation of 2015, *Swiss Journal of Economics and Statistics*, 158(21), pp. 1–20.
- Schelling, Tan and Pascal Towbin (2022), What lies beneath—negative interest rates and bank lending, *Journal of Financial Intermediation*, 51, pp. 1–20.
- Wehrli, Alexander and Didier Sornette (2022), Classification of flash crashes using the Hawkes(p,q) framework, *Quantitative Finance*, 22 (2), pp. 213–240.
- Wehrli, Alexander and Didier Sornette (2022), The excess volatility puzzle explained by financial noise amplification from endogenous feedbacks, *Scientific Reports*, 12 (1), pp. 1–13.
- Zetzsche, Dirk A., Linn Anker-Sørensen, Maria Lucia Passador and Andreas Wehrli (2022), DLT-based enhancement of cross-border payment efficiency – a legal and regulatory perspective, *Law and Financial Markets Review*, 15 (1–2), pp. 70–115.

Contributions to books

- Moser, Thomas and Marcel R. Savioz (eds.) (2022), *Karl Brunner and Monetarism*, Cambridge: The MIT Press.
- Wehrli, Alexander and Didier Sornette (2022), Classification of flash crashes using the Hawkes(p,q) framework*, in M.A.H Dempster and K. Tang (eds.), *Commodities: Fundamental Theory of Futures, Forwards, and Derivatives Pricing*, Chapman and Hall/CRC.

WORKING PAPERS

Alberola, Enrique, Carlos Cantú, Paolo Cavallino and Nikola Mirkov (2022), *Fiscal regimes and the exchange rate*, SNB Working Papers, 2022-01.

Alder, Simon, Kevin Croke, Alice Duhaut, Robert Marty and Ariana Vaisey (2022), *The impact of Ethiopia's road investment program on economic development and land use: Evidence from satellite data*, World Bank Policy Research Working Papers.

Altermatt, Lukas, Hugo van Buggenum and Lukas Voellmy (2022), *Systemic bank runs without aggregate risk: How a misallocation of liquidity may trigger a solvency crisis*, SNB Working Papers, 2022-10.

Andresen, Lena Lee (2022), *Impressing financial markets: IMF lending since the global financial crisis*, SNB Working Papers, 2022-04.

Andresen, Lena Lee (2022), *The influence of financial corporations on IMF lending: Has it changed with the global financial crisis?* SUERF Policy Brief, 361.

Baeriswyl, Romain, Samuel Reynard and Alexandre Swoboda (2022), *Would a retail CBDC achieve its intended purpose?* SUERF Policy Brief, 321.

Bäurle, Gregor, Sarah M. Lein and Elizabeth Steiner (2022), *Firm net worth, external finance premia and monitoring cost - estimates based on firm-level data*, SNB Working Papers, 2022-07.

Benhima, Kenza and Rachel Arulraj-Cordonier (2022), *News, sentiment and capital flows*, CEPR Discussion Papers, 17012.

Bilan, Andrada and Yalin Gündüz (2022), *CDS market structure and bond spreads*, SNB Working Papers, 2022-09.¹

Blunier, Jason and Christian Hepenstrick (2022), *What were they thinking? Estimating the quarterly forecasts underlying annual growth projections*, SNB Working Papers, 2022-05.

Cantù, Carlos, Catherine Casanova, Rodrigo Alfaro, Fernando Chertman, Gerald Cisneros, Toni dos Santos, Roberto Lobato, Calixto Lopez, Facundo Luna, David Moreno, Miguel Sarmiento and Rafael Nivin (2022), *How capital inflows translate into new bank lending: Tracing the mechanism in Latin America*, BIS Working Papers, 1051.

Dentler, Alexander and Enzo Rossi (2022), *Public debt management announcements under "beat-the-market" opportunities*, SNB Working Papers, 2022-06.

Dentler, Alexander and Enzo Rossi (2022), *To announce or not to announce: Basic trade-offs in public debt management*, SUERF Policy Brief, 402.

Eugster, Johannes and Giovanni Donato (2022), *The exchange rate elasticity of the Swiss current account*, SNB Working Papers, 2022-14.

Föllmi, Reto, Christian Hepenstrick and David Torun (2022), *Triangle inequalities in international trade: The neglected dimension*, University of St. Gallen, School of Economics and Political Science, Economics Working Paper Series, 2201-01.²

¹ This working paper also appeared as Deutsche Bundesbank Discussion Paper 24/2022.

² This working paper also appeared as CEPR Discussion Paper 17118 (2022).

Fotiou, Alexandra, Alica Ida Bonk and Georgios Manalis (2022), *Contagion as a dealmaker? The effect of financial spillovers on regional lending programs*, IMF Working Papers, 2022/133.

Galli, Alain and Rina Rosenblatt-Wisch (2022), *Analysing households' consumption and saving patterns using tax data*, SNB Working Papers, 2022-03.

Hwang, In Do, Thomas Lustenberger and Enzo Rossi (2022), *Central bank communication and public trust: The case of ECB speeches*, SSRN Working Paper Series.

Indergand, Martin, Eric Jondeau and Andreas Fuster (2022), *Measuring and stress-testing market-implied bank capital*, SNB Working Papers, 2022-02.³

Koomen, Miriam and Uschi Backes-Gellner (2022), *Occupational tasks and wage inequality in Germany: A decomposition analysis*, IZA Discussion Papers, 15702.

Nitschka, Thomas and Diego Hager (2022), *Responses of Swiss bond yields and stock prices to ECB policy surprises*, SNB Working Papers, 2022-08.

Piazza, Roberto, Johannes Eugster, Margaux MacDonald and Florence Jaumotte (2022), *The effect of tariffs in global value chains*, IMF Working Papers, 2022/040.

Porter, Nathan, Camilo Tovar, Juan Trevino, Johannes Eugster and Theofanis Papamichalis (2022), *The systemic impact of debt default in a multilayered global network model*, IMF Working Papers, 2022/171.

Rudolf, Barbara and Pascal Seiler (2022), *Price setting before and during the pandemic: Evidence from Swiss consumer prices*, SNB Working Papers, 2022-12.⁴

Schmidt, Richard and Pinar Yesin (2022), *The growing importance of investment funds in capital flows*, SNB Working Papers, 2022-13.⁵

Sornette, Didier, Florian Ulmann and Alexander Wehrli (2022), *On the directional destabilizing feedback effects of option hedging*, Swiss Finance Institute Research Paper Series, 22-34.

Stucki, Yannic (2022), *Measuring Swiss employment growth: A measurement-error approach*, SNB Working Papers, 2022-11.

Zetzsche, Dirk, Linn Anker-Sørensen, Maria Lucia Passador and Andreas Wehrli (2022), *DLT-based enhancement of cross-border payment efficiency - a legal and regulatory perspective*, BIS Working Papers, 1015.

³ This working paper also appeared as Swiss Finance Institute Research Paper 22-11 (2022).

⁴ This working paper also appeared as KOF Working Paper 506, and in the European Central Bank Working Paper Series, 2748 (2022).

⁵ This working paper also appeared in the University of Zurich, Department of Economics Working Paper Series, 421 (2022).

RESEARCH CONFERENCES AT THE SNB

Joint SNB-BIS research workshop

Dates 12 May 2022
Venue SNB Zurich / Webex (hybrid)
Organising committee Petra Gerlach, SNB
Boris Hofmann, BIS

Network Analysis Workshop

Dates 13 May 2022
Venue SNB Zurich
Organising committee Simon Alder, SNB
Michael D. König, Vrije Universiteit Amsterdam & KOF

SNB-CIF Conference on Cryptoassets and Financial Innovation

Dates 3 June 2022
Venue Metropol Restaurant, Zurich
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 2022

Dates 1 July 2022
Venue Metropol Restaurant, Zurich
Organising committee Reto Föllmi, SIAW-HSG
Pinar Yesin, SNB
Alain Gabler, SNB

Karl Brunner Distinguished Lecture by Benjamin M. Friedman: The Influence of Religious Thinking on Economic Thinking: The Origins of Modern Economics

Dates 22 September 2022
Venue ETH Zurich
Organising committee Lukas Voellmy, SNB
Nicolas Cuche-Curti, SNB

SNB Research Conference 2022: Monetary Policy After the Pandemic

Dates 23–24 September 2022
Venue Metropol Restaurant, Zurich
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: Inflation Risk and Uncertainty

Dates 8-9 November 2022
Venue Hotel Baur au Lac, Zurich
Organising committee Andréa M. Maechler, SNB
Thomas Moser, SNB
Nina Hugelshofer, SNB
Beth Anne Wilson, FRB
Juan M. Londono, FRB
Bo Sun, FRB
Claudio Borio, BIS
Hyun Shin, BIS
Stijn Claessens, BIS
Benoit Mojon, BIS

18th Annual NBP-SNB Joint Seminar:**Digital Finance**

Dates 15-16 November 2022
Venue Metropol Restaurant, Zurich
Organising committee Fabian Heller, SNB
Angela Tendero, SNB
Milena Kyburz, SNB
Aurèle Cotton, SNB
Wiktoria Matyska, NBP

RESEARCH CONFERENCES WITH THE SNB

JME-SNB-SCG Conference – Inflation: Expectations & Dynamics

Dates 14–15 October 2022
Venue Study Center Gerzensee
Organising committee Martin Brown, Study Center Gerzensee
Ricardo Reis, London School of Economics
Nicolas Cuche-Curti, Swiss National Bank

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): Monetary and Exchange Rate Policy Challenges under Heightened Uncertainty

Dates 18–20 October 2022
Venue Joint Vienna Institute, Vienna, Austria
Organising committee Ron van Rooden, IMF
Hervé Joly, Joint Vienna Institute
Lena Lee Andresen, SNB
Fabian Heller, SNB

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