Irving Fisher Committee on Central Bank Statistics | ◆ BIS

IFC-Bank of Italy workshop on "Data science in central banking"

Part 2: Data Science in Central Banking: Applications and tools

14-17 February 2022, BIS Basel, virtual event

Programme[1]

Day 1: 14 February 2022

Time (CET)	Topic	Presenter marked in bold
13:00 – 13:10	Welcome remarks	**Rashad Cassim**, Deputy Governor of the South African Reserve Bank and Chair of the Irving Fisher Committee on Central Bank Statistics (IFC)
13:10 – 13:40	**Keynote speech**: Artificial Intelligence in Finance - Quo Vadis	**Joerg Osterrieder**, Professor of Finance and Artificial Intelligence, ZHAW School of Engineering, Switzerland, University of Twente, Netherlands
13:40 – 13:45	Data Science in Central Banking – Comments from BIS' Innovation Hub perspective	**Ross Leckow**, Head of BIS Innovation Hub
13:45 – 15:00	Session 1.1 – Network Analysis for Financial Stability Oversight	Chair: **Giuseppe Bruno**, Bank of Italy
• A multi-layer dynamic network for significant European banking groups		**Annalaura Ianiro** and **Joerg Reddig**, European Central Bank
• A Network Analysis of the JGB Repo Market		**Yasufumi Gemma**, Bank of Japan
• Data science and Statistics: a network analysis to understand the foreign investment		**João Falcão Silva**, Banco de Portugal, Bojan Stavrik and Flávio Pinheiro, NOVA Information Management School
• Understanding the Patterns of Financial Crimes and Financial Institutions' Exposure to These Patterns using Network Analysis and NLP		**Yan Ling Lee** and **Farah Hani Abd Nasir**, Central Bank of Malaysia

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[1]   Timing: 15 minutes per presentation, including 2 minutes Q&A.

• Cross-Currency Swap Market through the Lens of OTC Derivative Transaction Data – Impact of COVID-19 and Subsequent Recovery		**Kazuaki Washimi**, Bank of Japan
15:00 – 15:45	Session 1.2 – Sentiment analysis in economic and monetary research	Chair: **Giuseppe Bruno**, Bank of Italy
• Sentiment Analysis of Tourist Reviews from Online Travel Forum for Improving Indonesia Tourism Sector		**Muhammad Abdul Jabbar**, **Anggraini Widjanarti,** Arinda Dwi Okfantia and Alvin Andhika Zulen, Bank Indonesia
• Extracting Economic Sentiment from News Articles: The Case of Korea		**Younghwan Lee** and Beomseok Seo, Bank of Korea
• Measuring Text-based Sentiments from Monetary Policy Statements – A Malaysian Case Study using Natural Language Processing		**Sui-Jade Ho** and Eilyn Chong, Central Bank of Malaysia
15:45	Close of day 1	

Day 2: 15 February 2022

Time (CET)	Topic	Presenter marked in bold
13:00 – 15:00	**Session 2.1 – NLP and ML techniques supporting Central Bank Operations**	Chair: **Douglas Araujo**, Bank for International Settlements
• Mailbot – optimising the process of answering statistical queries		**Gavril Petrov,** Daphne Aurouet, Nina Blatnik, Samo Boh, Andrea Colombo, Almir Delic, Jordi Gutiérrez and Kristine Rikova, European Central Bank
• Central bank communication: what can a machine tell us about the art of communication?		Joan Huang and **John Simon**, Reserve Bank of Australia
• News and banks' equities: do words have predictive power?		Valerio Astuti, **Giuseppe Bruno**, Sabina Marchetti and Juri Marcucci, Bank of Italy
• Natural Language Processing for Risk Management		**Bijan Sahamie**, Deutsche Bundesbank
• *gingado*: a machine learning library focused on economics and finance		**Douglas Araujo,** Bank for International Settlements
• Integrating Natural Language Processing Technologies to Central Bank Operations at Bank of Thailand		**Pucktada Treeratpituk** and Jiradett Kerdsri, Bank of Thailand
• Evaluating Mobile Money Access and Use with Non-traditional Data Sources		**Kazuko Shirono** and Ayoub Mharzi, International Monetary Fund
• Machine Learning for Measuring Central Bank Credibility and Communication		**Okiriza Wibisono**, Muhammad Abdul Jabbar and Anggraini Widjanarti, Bank Indonesia
15:00 – 15:45	**Session 2.2 – Business Intelligence tools supporting Data Analysis and Quality Control**	Chair: **Douglas Araujo**, Bank for International Settlements
• Interactive Visualization Tool: Outlier detection in large multidimensional datasets		**Philipp Reisinger**, Thomas Kemetmueller and Christoph Leitner, National Bank of the Republic of Austria
• Spot the flaw – Using Power BI for quality control: an application to non-financial corporations' data		**José Alexandre Neves, Tiago Pinho Pereira** and Ana Bárbara Pinto, Banco de Portugal
• Leveraging the power of visualization for data exploration and insights communication - Visual Analytics with Tableau		**Zunaira Rasheed**, Bank for International Settlements

15:45 – 16:30	Session 2.3 – Data Quality Assurance supporting Central Bank Operations	Chair: **Bruno Tissot**, Bank for International Settlements
• Anomaly intersection: disentangling data quality and financial stability developments in a scalable way		Gemma Agostoni (ECB), Louis de Charsonville (McKinsey & Company), Marco D'Errico (ECB, ESRB Secretariat), Cristina Leonte (BIS), **Grzegorz Skrzypczynski** (ECB)
• Introducing interactive feedback loops in statistical production systems		**Georgios Kanellos, Carlos Mougan,** Thomas Gottron, Johannes Micheler and José Martínez, European Central Bank
• Stacking machine-learning models for anomaly detection: comparing AnaCredit to other banking datasets		**Pasquale Maddaloni**, D N Continanza, A del Monaco, M di Lucido, D Figoli, F Quarta and G Turturiello, Bank of Italy
16:30	Close of day 2	

Day 3: 16 February 2022

Time (CET)	Topic	Presenter marked in bold
13:00 – 14:30	Session 3.1 – Modern Data Architectures and Tools (I)	Chair: **Bruno Tissot**, Bank for International Settlements
• Swimming in the Data Lake: An application to NielsenIQ Homescan		**Minnie H Cui**, Botlhale Mosweu and Gene (Fa Gui) Jiang, Bank of Canada
• Implementing a multi-tenant Big Data platform – Challenges and approaches taken in the BIS		Hiren Jani and **Anand Kannan**, Bank for International Settlements
• Modern Computing Platforms as key Central Banking Technology		**Jochen Papenbrock**, NVIDIA GmbH
• The Data Analytics Lab – from innovation to products		Hiren Jani, **Mathieu Le Cam** and Mona Amer, Bank for International Settlements
• Containerization for Research Collaboration: Platform Independent Economics		**Venkat Balasubramanian**, Bank of Canada, **Danielle Handel**, Stanford University and **Carson Rea**, Emory University
14:15 – 15:30	Session 3.2 – Modern Data Architectures and Tools (II)	Chair: **Rafael Schmidt**, Bank for International Settlements
• Strategy for the adoption of a Modern Data Architecture in Banco de Portugal		**Caio Costa, Guilherme de Sousa** and Hugo Matos, Banco de Portugal
• Microdata utility – data loading with automated data parsing and data structure creation		**Marcus Jellinghaus**, Bank for International Settlements
• Data governance In Russian credit information industry		**Andrey Akhramenov**, Central Bank of the Russian Federation
• Defining business transformation rules in a standardised format – a practical case		**Daniela Arru** and Giulia Oddone, European Central Bank
• EU Single Resolution Board system for data collection, transformation and analysis		**Michal Piechocki**, Marta Kuczyńska and Karol Minczyński, Business Reporting - Advisory Group (BR-AG)

15:30 – 16:00	Session 3.3 – Leveraging Big and Alternative Data	Chair: **Rafael Schmidt**, Bank for International Settlements
• Big Data Analytics on Payment System for Measuring Household Consumption Indicator in Indonesia		**Alvin Andhika Zulen, Mohammad Khoyrul Hidayat** and Muhammad Abdul Jabbar, Bank Indonesia
• Using Non-traditional Point of Interest Data as Merchant Survey Sample Frames		**Joy Wu**, Angelika Welte, Bank of Canada, and Marcel Voia, University of Orléans
16:00	Close of day 3	

Day 4: 17 February 2022

Time (CET)	Topic	Presenter marked in bold
13:00 – 14:00	**Session 4.1 – Nowcasting Economic Activity**	Chair: **Juri Marcucci**, Bank of Italy
• Now-casting business and financial cycles using low- and high-frequency data		**Alberto Americo, Frederik Hering and Rukmani Vaithianathan**, Bank for International Settlements
• Nowcasting Economic Activity with Mobility Data		**Koji Takahashi**, BIS, and Kohei Matsumura, Yusuke Oh and Tomohiro Sugo, Bank of Japan
• Big Data Analytics on Real Time Gross Settlement Data for Tracking Corporate Activity		**Amin Endah Sulistiawati**, Mohammad Khoyrul Hidayat and **Alvin Andhika Zulen**, Bank Indonesia
• Economic monitoring in Covid-19 period: the contribution of high frequency indicators		**Coffinet Jérôme**, Jean-Brieux Delbos, Kaiser Vojtech, Jean-Noël Kien, Étienne Kintzler, Ariane Lestrade, Michel Mouliom and Théo Nicolas, Bank of France
14:00 – 14:45	**Session 4.2 – VAR/VECM techniques in Economic and Financial Analysis**	Chair: **Juri Marcucci**, Bank of Italy
• What should be the optimal financial structure of the FDI inflows to Poland in stimulating growth processes?		**Aneta Kosztowniak**, Narodowy Bank Polski
• Deep Vector Autoregression for Macroeconomic Data		Marc Agustí, **Patrick Altmeyer** and Ignacio Vidal-Quadras Costa, Delft Technical University (ECB)
• Changes in the lending activity of banks in Poland, including the portfolio of corporate loans		**Aneta Kosztowniak**, Narodowy Bank Polski
14:45 – 15:15	**Session 4.3 – Text mining and ML utilized in Economic Research**	Chair: **Juri Marcucci**, Bank of Italy
• A Machine Learning Approach to Narrative Retrieval in Economic News: The Case of Oil Price Uncertainty		**Donald Jay Bertulfo**, Delft University of Technology
• A web application prototype to retrieve sustainability information from unstructured text (non-financial corporation annexes)		**Alejandro Morales and Eugenia Koblents**, Bank of Spain
15:15 – 15:30	Closing remarks	**Piero Cipollone**, Deputy Governor of the Bank of Italy
15:30	End of workshop	