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REFERENCES

Professor Max Croce
Department of Finance
Bocconi University
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Professor Carlo A. Favero
Department of Economics
Bocconi University
carlo.favero@unibocconi.it

Professor Claudio Tebaldi
Department of Finance
Bocconi University
claudio.tebaldi@unibocconi.it

RESEARCH INTERESTS

Macro Finance, Monetary Policy and Large Language Models.

JOB MARKET PAPER

Monetary Policy Shocks: A New Hope — LLMs and Central Bank Communication

Abstract: I develop a multi-agent LLM framework that processes Federal Reserve communications to construct narrative monetary policy surprises. By analyzing Beige Books and Minutes released before each FOMC meeting, the system generates conditional expectations that yield less noisy surprises than market-based measures. These surprises produce theoretically consistent impulse responses where contractionary shocks generate persistent disinflationary effects, and enable profitable yield curve trading strategies that outperform alternatives. By directly extracting expectations rather than cleaning surprises ex post, this approach demonstrates how multi-agent LLMs can implement narrative identification at scale without contamination in high-frequency measures.

EDUCATION

Ph.D. in Economics and Finance

2021–Present

Università Bocconi, Milan, Italy

- Awarded PhD Fellowship, Bank of International Settlements (BIS) (2025)
- Baffi Centre Merit Grant for the 5th year

M.Sc. in Mathematical Finance

2020–2021

University of Manchester, United Kingdom, Average: 82/100 (With Distinction)

- *Thesis:* Reinforcement Learning Approach to Continuous Mean-Variance Portfolio Selection

M.Sc. in Secondary Education

2020

Universidad Europea, Madrid, Spain, Average: 9/10

- *Thesis:* Around the Validity of International Assessments on Mathematics during Obligatory School

Professional Music Qualification in Viola

2020

Conservatorio Profesional de Arturo Soria, Madrid, Spain, Average: 9/10

B.Sc. in Mathematics

2015–2019

Universidad Autónoma de Madrid, Madrid, Spain, Average: 8.76/10

- *Thesis:* The Geometry of Tessellations. The (2,3,7)-tessellation

WORKING PAPERS

Scoring in the Transition, With G. Bezzi, Max Croce, and G. Gigante

October 2025

Abstract: We propose a novel methodology to assign scores in a model in which: (i) a firm has a valuable environmental growth option whose payoff is realized at the end of a transition period, (ii) the firm's CEO has private information on the growth option quality; and (iii) a fund manager must decide how much to invest in this firm under limited information. In this setting, a progress-oriented score improves the allocation of capital. In an application, we show that assessing a CEO's decarbonization plan helps the fund manager to disentangle good-quality (green) growth options from bad-quality (brown) growth options. In the data, an investment strategy that uses progress-based scores delivers a superior performance.

The Scope of Scope 3, With Max Croce, Nicolás Guíñez, Alejandra Inzunza-Méndez and Claudio Tebaldi
October 2025

Abstract: We propose a novel network-based methodology in order to measure emissions along complex international supply chains (SC). Using international data for about 50,000 firms, we characterize SC-level emissions across countries and industries. Our methodology enables us to run counterfactual experiments and formulate granular forecasts about high-scope emissions with respect to many different scenarios such as maritime disruption, military conflicts, trade wars, revised carbon taxes.

Monetary Policy in the COVID Era and Beyond, With Carlo A. Favero
Available at SSRN

September 2023

Abstract: This study examines monetary policy during and post-COVID by analysing innovative rules based on data from before the pandemic. It models fluctuating monetary policy rates using a stochastic trend, linking potential output growth, demographic age distribution, and inflation expectations to the prevailing interest rate trends in both the US and the Eurozone. The cyclical variations in short-term rates are associated with monetary policy through the conventional Taylor rule indicators. Whilst the standard model is robust for the US both in and out of sample, the Eurozone displays less consistent in-sample results and marked deviations in out-of-sample tests. Addressing the ECB's concerns about bond market fragmentation doesn't yield better results. Instead, a model in which the ECB follows the US example with caution and delay proves more effective.

WORK IN PROGRESS

Green DAOs for Brown Networks, With Max Croce, Nicolás Guíñez, Alejandra Inzunza-Méndez and Claudio Tebaldi
October 2025

Abstract: We propose a novel model to think about networks with emission externalities. We consider a decentralized economy in which (i) emissions are not priced; and (ii) firms are subject to firm-specific borrowing constraints depending on their level of greenness. Greenness is measured by either looking at scope-1, scope-3 and embedded emissions. We show that this economy is highly inefficient. We then look at an economy in which: (i) a DAO borrows on behalf of the entire network allocates capital internally; (ii) all producers belonging to that DAO join a blockchain recording transaction of goods and emissions. We show that this setting replicates the first-best. Preliminary empirical results suggest that the welfare gains produced by a Green-DAO could be significant.

PUBLISHED PAPERS

Towards data-congruent models of the term structure of interest rates, With Carlo A. Favero
Econometrics Review

February 2025

Abstract: Bond yields can be decomposed into two unobservable components: the expected sequence of short-term rates and term premia. The identification of these two components is crucial to understand bond pricing and the effect of monetary policy on the term structure of interest rates. This paper illustrates how M.H. Pesaran's prescription of congruency between the salient features of the data and the reduced form, explicitly derived from stochastic dynamic optimization, effectively facilitates the relevant decomposition. By examining the historical evolution of term structure models, we demonstrate that the chosen specifications have not consistently aligned with the data, presenting a missed opportunity. In fact, a data-congruent specification helps in improving forecasts of the dynamics of US short-term rates and generates stationary dynamics for the term premia.

CONFERENCES

AFA 2026

Poster Session: *Monetary Policy Shocks: A New Hope — LLMs and Central Bank Communication PhD Macroeconomics Conference*, Lausanne, December 4-5th, 2025

Presentation: *Monetary Policy Shocks: A New Hope — LLMs and Central Bank Communication PhD Alumni Conference*, Bocconi University

Presentation: *Monetary Policy Shocks: A New Hope — LLMs and Central Bank Communication 4th Frontiers of Factor Investing Conference*, 2024

Presentation: *Towards Data-Congruent Models of the Term Structure of Interest Rates BSE Summer Forum*

Poster Session: *Modelling the Term Structure with Trends in Yields and Cycles in Excess Returns*

OTHER EDUCATION

Attendance: Local Projection Methods for Time Series and Panel Data

Institution: **CEMFI**

Professor: Òscar Jordà

September, 2024

Data Science Summer School: Harnessing Language Models: Your Path to NLP Expert

Institution: **Barcelona School of Economics (BSE)**, Spain

Grade: 9.5/10 (A+)

July, 2024

Attendance: CREI Macroeconomics Summer School

Institution: **Barcelona School of Economics (BSE)**, Spain

June, 2023

WORK EXPERIENCE

Senior Associate, Bank of International Settlements (BIS)

Abril-June 2025

Monetary Policy Expert Panel 2024-2028 (Bocconi Group)

Members: Laura Bottazzi, C. Favero, R. Fernández-Fuertes, Francesco Giavazzi, Veronica Guerrieri, G. Lorenzoni, T. Monacelli, L. Sala, and A. Trigari

2024-2028

Research Assistant, EI MUSA – Multilayered Urban Sustainability Action

November 2023 - March 2024

Research Assistant, Banco de España – Monetary Policy and Capital Markets Division

July 2023

Completion of a revision of the paper "The Term Structure of Interest Rates in a Heterogeneous Monetary Union", by J. Costain, G. Nuño, and C. Thomas.

Researcher: Dr. James Costain

Published: Journal of Finance

Research Assistant, Università Bocconi

2022-2023

Big Data and Data Analysis

Researcher: Prof. Roberto Vincenzi

COMPUTER SKILLS

Python, **Matlab**, **C++**, **LaTeX** (Advanced); **R**, **RStudio**, **Git**, **GitHub**, **AWS** (Intermediate); **HTML**, **CSS**, **JavaScript** (Basic)

LANGUAGES

Spanish (Native), *English* (Advanced), *Italian* (Advanced)

HONOURS

Baffi Centre Research Grant, 2025; **PhD Fellowship**, Bank of International Settlements (BIS) 2025; **PhD Bocconi Merit-Based Fellowship**, 2021; **MSc in Mathematical Finance with Distinction**; **High Honours** in Modelisation and Complex Analysis, 2017; **High Honours** in Bachillerato, 2015; 200 selected students, **Becas Europa**, 2014