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Education

PhD Student in Economics, Stanford University 2019–present
Master's in Economics, Pontifical Catholic University of Rio de Janeiro (PUC-Rio) 2016
B.S. in Economics, Pontifical Catholic University of Rio de Janeiro (PUC-Rio) 2013

References

Monika Piazzesi (co-primary)
Department of Economics
Stanford University
piazzesi@stanford.edu

Martin Schneider (co-primary)
Department of Economics
Stanford University
schneider@stanford.edu

Hanno Lustig
Graduate School of Business
Stanford University
hlustig@stanford.edu

Fields

Finance and Macroeconomics

Job Market Paper

Pricing and Risk in Sovereign Green Debt: Evidence from Chile Job Market Paper
(with Lautaro Chittaro)
We study the pricing of sovereign green bonds by exploiting Chile's pioneering program and rich cross-design issuance. We estimate no-arbitrage green pricing kernels on a panel of Chilean U.S.-dollar bonds. The estimation reveals that green bonds are more exposed to interest rate risk. The greenium term-structure, the yield differential between non-green and otherwise identical green bond at different maturities, is downward sloping in our sample, a period of rising inflation and interest rates. We provide evidence that liquidity differences or investor segmentation cannot explain these findings. We develop an asset pricing model where investors derive non-pecuniary utility from holding green bond portfolio. Longer bonds pay higher interest rates to compensate investors for the uncertainty about future nonpecuniary utility, thereby generating a downward-sloping term structure for the greenium.

Publications

Berriel, Tiago, Marcelo C. Medeiros, and Marcelo J. Sena, "Instrument selection for estimation of a forward-looking Phillips Curve," *Economics Letters*, 2016, *145*, 123 – 125.

Working Papers

- **Asset Returns as Carbon Taxes** Working paper
  (with Lautaro Chittaro, Monika Piazzesi and Martin Schneider)
  In frictionless financial markets, a carbon tax on energy users provides the same incentives as a replicating asset price schedule that depends on emissions. In particular, the replicating rate of return on a firm increases linearly in scope 1 emissions relative to enterprise value. We use this result to interpret pollution premia measured by recent empirical studies and conclude that markets currently provide only modest incentives. Replicating a serious carbon tax requires high returns in the right tail of the emission intensity distribution. With heterogeneous investors, such returns are not sustainable unless essentially everyone perceives large nonpecuniary costs from holding dirty capital. Substantial emission reductions can be achieved, however, when even a small share of investors perceive nonpecuniary benefits from owning clean electricity capital.

- **Monetary Policy and the Term Structure of Equity Risk Premia** Working paper
  (with Leandro Gomes, Ruy Ribeiro)
  Using high-frequency identification, we measure the impact of monetary policy shocks on dividend claims across different horizons. A 1% tightening of short-term interest rates decreases expected growth rates by up to 3.3% in the 1-year horizon and increases risk-premia by up to 1% in the 9-year horizon. Our analysis shows that dividend risk-premia, particularly

beyond the ten-year maturity, account for most of the effect on equity returns. Our findings can discipline models of monetary policy and risk-premia.
Presented at the Society for Economic Dynamics 2023, Insper, Naples School of Economics PhD and Post-Doctoral Workshop

- **Local Government Valuation** Working paper
(with Oliver Giesecke, Haaris Mateen)
We construct a novel data set on the fiscal position of cities in the United States. We document a secular decline in their financial health. 61% of cities have a negative book equity position, suggesting risks of insolvency. Poor financial health is associated with higher pension and other post-employment benefits liabilities. Since book values are backward looking, we estimate the market valuation of cities' equity through an asset pricing model that prices untraded future revenue and expenditure claims. Market values of equity are also negative for a sizeable fraction of cities. We quantify high bailout market values for insolvent governments.
Winner of the WFA 2023 NASDAQ Award; presented at WFA 2023, Virtual Municipal Finance Seminar.

- **Private Liquidity, Intermediation and the Cost of Inflation** Working paper
(with Otávio Rubião)
What is the impact of inflation on the supply side of the banking sector? This paper draws lessons on the relationship between banking and inflation by exploring the Brazilian hyperinflationary period during the 1990s and its sharp disinflation following the Real Plan in 1994. We formalize how banks can extract rents by issuing deposits and how inflation impacts these rent dynamics leading to the entry/bankruptcy (merger) of banks. The model has three key features: (i) interest-bearing private money (deposits) that compete with public money (currency) in households' liquid asset portfolio choice; (ii) heterogeneous productivity banks in supplying loans; (iii) banks' market power in the deposits market. When inflation and nominal rates rise banks can extract more rents from depositors, allowing for the survival of low-productivity banks dependent on inflation profits. We derive conditions under which the existence of too-low productivity banks is inefficient and a regulator would prefer to keep them outside the banking market. Consistent with the data, when inflation drops banks benefit in the short-run due re-evaluation of the assets, but the long-run effects of lower inflation rents lead to the exit and a more concentrated banking system. Using disaggregated bank balance sheet data, we construct a model-based index of banks' long-run reliance on inflation based and show that it predicts exit of banks following disinflation.
Presented at the Stanford Macro Lunch.

Work in Progress

- **Deep Learning for Default Models**
Many economic problems in macro-finance involve default decisions by heterogeneous agents. This paper proposes a deep learning based method to solve high dimensional rational expectations default models. The method can accurately solve for complex default boundaries in high-dimensional state spaces. We provide an application to a model with heterogeneous banks with rich balance sheet details and different customer base.

- **Inflation Deanchoring Risk**
We develop a continuous-time macro-finance model with price stickiness and household disagreement on economic fundamentals. These generate an endogenous distribution of inflation expectations. We calibrate the model to match the time-varying dispersion of inflation expectations observed in the data. We use the model to study how optimal policy differs in the presence of endogenous inflation disagreement.

Scholarships and Fellowships

- Woods Environmental Scholar Award 2025
- Gale and Steve Kolhagen Fellowship in Economics 2025
- Stanford PhD Funding 2019–2025
- FAPERJ Scholarship for Master's Academic Excellence 2015
- CAPES Scholarship for Master's Course 2014
- Undergraduate Tutorial Education Program Fellowship 2010–2011

Programming

Fluent: Python, JAX, R, Julia, MATLAB, Mathematica, Stata, LaTeX, VBA, EViews, PyTorch, TensorFlow, Vim

Basic: SQL, C++, Haskell

Languages

Fluent: English, Portuguese
Basic: Spanish, Japanese

Academic Activities

Teaching Experience Department of Economics, Stanford University Stanford, CA

- *Teaching Assistant (Graduate).* ECON 210 Macroeconomics I (Dynamic Programming), Professors Martin Schneider and Monika Piazzesi Fall 2021–2024
- *Teaching Assistant (Undergraduate).* ECON 44 Modern Financial System, Professors Martin Schneider and Monika Piazzesi Winter 2022–2024
- *Teaching Assistant (Undergraduate).* ECON 141 Financial Markets, Professors Martin Schneider and Monika Piazzesi Winter 2024
- *Programming Camp for Economics Graduate Students* Summer 2022–2023

Department of Economics, PUC-Rio Rio de Janeiro, RJ

- *Adjunct Lecturer (Undergraduate).* Seminar in Quantitative Methods (R) 2018
- *Teaching Assistant (Graduate).* Econometrics I; Econometrics II (Cross-Section and Panel) 2015
- *Teaching Assistant (Professional Master's).* Statistics and Econometrics; International Finance
- *Teaching Assistant (Undergraduate).* Statistics; Economic Growth; Econometrics I; Time Series Econometrics

Research Activities

- Research Assistant, Professors Martin Schneider and Monika Piazzesi 2019-2020
  Research on Central Bank Digital Currencies (CBDCs).
- Research Assistant, Department of Economics, PUC-Rio — Prof. Gustavo Gonzaga 2010–2012
  Data Zoom project: http://www.econ.puc-rio.br/datazoom/english/index.html

Non Academic Activities

- Research Associate, Digital Lab PUC-Rio/Lojas Americanas 2018–2019
  Research on price optimization for one of Brazil's largest retailers. Store-level price experiments and synthetic control methods for price-elasticity estimation.
- *Economist, Truxt Investimentos — Economic Research Department* Rio de Janeiro, 2017–2018
  Latin America and Mexico macroeconomci research; online price microdata scrapping and processing for inflation forecast.
- *Economist, Itaú-Unibanco Asset Management — Economic Research Department* São Paulo, 2016–2017
  Quantitative research; online price microdata for inflation tracking and term-structure models.