# Dejanir Silva

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Purdue University
Mitchell E. Daniels, Jr.
403 W. State Street
West Lafayette, IN 47907

*Office*: 509 KRAN
*Email*: dejanir@purdue.edu
http://www.dejanirsilva.com

## Academic Positions

Assistant Professor of Finance, Purdue University, 2021 – present
Assistant Professor of Finance, University of Illinois at Urbana-Champaign, 2017 – 2021
Lecturer, Princeton University, Bendheim Center for Finance, 2016 – 2017

## Research Interests

Macro Finance, Asset Pricing, Financial Intermediation

## Education

Ph.D. in Economics, Massachusetts Institute of Technology, 2016
Thesis advisors: Robert Townsend, Iván Werning, Alp Simsek, and Leonid Kogan
MSc. in Economics, University of São Paulo (USP), 2011
BSc. in Economics, University of São Paulo (USP), 2008

## Published or Accepted Papers

**Under-diversification and Idiosyncratic Risk Externalities**, with Felipe Iachan and Chao Zi
*Journal of Financial Economics*
*Winner of best finance paper at the SBE meeting (2019)*
We study the effects of idiosyncratic uncertainty on asset prices, investment, and welfare. We consider an economy with two main components: i) under-diversification and ii) endogenous and countercyclical idiosyncratic risk. The equilibrium is subject to underinvestment and excessive aggregate risk-taking. Inefficiencies stem from an idiosyncratic risk externality, as firms do not internalize the effect of their investment decisions on the risk borne by others. Risk externalities depend on an idiosyncratic risk premium and a variance risk premium. We assess their magnitude empirically. The optimal allocation can be implemented through financial regulation using a tax benefit on debt and risk-weighted capital requirements.

**Optimal Fiscal Consolidation under Frictional Financial Markets**
*Economic Journal*
This paper studies optimal fiscal policy in a currency union subject to capital flow shocks. I consider an economy with two main ingredients: i) sticky prices and ii) financially constrained international arbitrageurs. Given capital outflows and high external debt, the fiscal authority faces a trade-off between stimulating the economy or paying off the external debt to reduce sovereign spreads. I find that it is *not* optimal to use government spending to stimulate the economy. The planner reduces the VAT in the short-run and increases it over time. It is optimal to raise and front-load the sum of the VAT and payroll tax, in contrast with fiscal devaluation proposals. The country engages in a fiscal consolidation, as government debt falls compared with a passive fiscal policy.

**Fiscal Policy and the Monetary Transmission Mechanism**, with Nicolas Caramp
*Review of Economic Dynamics*

The economy's response to monetary policy depends on its fiscal backing. We present a novel decomposition of the equilibrium that links the wealth effect, i.e. the revaluation of households' financial and human wealth, to the fiscal response to monetary policy. When monetary policy has fiscal consequences, monetary variables affect the timing of aggregate output while fiscal variables determine its present value and the wealth effect. The dynamics of inflation can significantly amplify the impact of the wealth effect on initial output, even in a representative agent model. The slope of the Phillips curve determines the importance of monetary-fiscal coordination.

**Machine Learning for Continuous-Time Finance**, with Victor Duarte and Diogo Duarte

*Review of Financial Studies*, accepted for publication.

We develop an algorithm for solving a large class of nonlinear high-dimensional continuous-time models in finance. We approximate value and policy functions using deep learning and show that a combination of automatic differentiation and Ito's lemma allows for the computation of exact expectations, resulting in a negligible computational cost that is independent of the number of state variables. We illustrate the applicability of our method to problems in asset pricing, corporate finance, and portfolio choice and show that the ability to solve high-dimensional problems allows us to derive new economic insights.

# Working Papers

**Liquidity and Risk in OTC Markets: A Theory of Asset Pricing and Portfolio Flows**, with Mahyar Kargar and Juan Passadore

*Journal of Finance*, revise and resubmit

We develop an asset-pricing model with heterogeneous investors, search frictions, and wealth effects. Trade is intermediated by risk-neutral dealers subject to capacity constraints. Risk-averse investors can direct their search towards dealers based on price and execution speed. Order flows affect the risk premium, volatility, and equilibrium interest rate. We propose anew solution method to characterize the equilibrium analytically. We assess the quantitative implications of the model in response to a large adverse shock. Consistent with the empirical evidence from the COVID-19 crisis, we find an increase in the risk premium and market illiquidity, and a decline in interest rates.

**The Risk Channel of Unconventional Monetary Policy**

*Review of Financial Studies*, revise and resubmit

This paper examines how unconventional monetary policy affects asset prices and macroeconomic conditions by reallocating risk in the economy. I consider an environment with two main ingredients: heterogeneity in risk tolerance and frictions in portfolio adjustment. Risk-tolerant investors take leveraged positions, exposing the economy to balance-sheet recessions. The central bank's balance sheet is non-neutral due to the presence of passive investors. Unconventional monetary policy reduces the risk premium and endogenous volatility. Asset purchases boost investment and growth during crisis, but reduce them during normal times. The intervention reduces risk-taking by leveraged institutions. As risk concentration falls, the probability of negative tail-events is reduced, enhancing financial stability. Under the optimal policy, the central bank should increase its exposure to risk, which is inconsistent with increase in holdings of long-term government bonds.

**Heterogeneous Beliefs and Business Cycles**, with Saki Bigio and Eduardo Zilberman

*Review of Economic Studies*, reject and resubmit

We study heterogeneous beliefs about TFP growth in a complete-market production economy where employment is hired in advance. The firm's discount factor inherits a wealth-weighted average of investor beliefs. Waves of optimism ripple into the firm's investment in hours thus tying together the equity premium and labor volatility puzzles. We present a taxonomy of beliefs that shows the implications of different belief models for asset prices and business cycles. We argue that when beliefs are extrapolative, they add volatility to asset prices and labor markets, contributing to the resolution of both puzzles. With extrapolative beliefs, the length of a cycle is correlated with its amplitude and stock-market turnover is countercyclical. The model is consistent with several asset-pricing and business cycle moments.

**Monetary Policy and Wealth Effects: The Role of Risk and Heterogeneity**, with Nicolas Caramp

We study the role of wealth effects, i.e. the revaluation of real and financial assets, in the monetary policy transmission mechanism. We build an analytical heterogeneous-agents model with two main ingredients: i) rare disasters and ii) risky household debt. The model captures time-varying risk premia and precautionary savings in a linearized setting that nests the textbook New Keynesian model. Quantitatively, the model matches the empirical response of asset prices and the heterogeneous impact on borrowers and savers. We find that wealth effects induced by time-varying risk and household debt account for the bulk of the output response to monetary policy. Defaultable private debt amplifies the effects of monetary policy, but the effect decreases with its duration. Controlling for the fiscal response to a monetary shock is crucial for the quantitative results.

**Risk-taking over the Life Cycle: Aggregate and Distributive Implications of Entrepreneurial Risk**, with Robert Townsend

We study the risk-taking behavior of entrepreneurs over the life cycle in the presence of limited idiosyncratic insurance. The model is able to quantitatively account for the levels of aggregate and idiosyncratic risk premium, the patterns of inequality, and the life cycle profiles observed in the data. A relaxation of risk constraints leads to a reduction in the idiosyncratic risk premium and an investment boom. Consistent with a Kuznets curve, inequality increases in the short-run, but it declines in the long-run. The initial generation of entrepreneurs benefits from better insurance, but future generations of entrepreneurs are worse-off after the reform.

## Research in Progress

*Dissecting the Aggregate Market Elasticity*, with Victor Duarte and Mahyar Kargar

## Teaching Experience

**Purdue University**
Investment Management, Undergraduate

**University of Illinois at Urbana-Champaign**
Advances in Asset Pricing, PhD
Investments, Undergraduate/Master of Science in Finance
Macrofinance, Master of Science in Finance

**Princeton University**
Asset Pricing I, Master in Finance
Money and Banking, Undergraduate

## Fellowships, Honors, and Awards

Macro Financial Modelling Group, Dissertation Fellowship, 2014-2015
Graduate Fellowship, Department of Economics, MIT, 2011-2013
Ryoichi Sasakawa Young Leaders Fellowship, 2011
FAPESP Fellowship, 2010
CNPq Scholarship, Msc in Economics, 2009
First place in the National Graduate Admission Exam (ANPEC)

## Presentations

2024 (including scheduled): Midwest Finance Association Annual Meeting (Discussant), Texas A&M Young Scholars Finance Consortium, Federal Reserve SF Conference on "Fixed Income Markets and Inflation", China International Conference in Macroeconomics (CICM), Western Finance Association (WFA), Conference on "Expectations and Monetary Policy".
2023: Midwest Finance Association Annual Meeting (Discussant), Annual Paul Woolley Centre Conference (LSE), CEBRA Annual Meeting (discussant), Society for Economic Dynamics (SED), FGV-EPGE, Liquidity and Macro (LiMa) Workshop, Chicago Fed, Wharton, SBE Econometric Meeting (mini course)
2022: MFA, Virtual Brazilian Finance Seminar (SBFin), Econometric Society (American Meeting), CESifo Macro, Money, and International Finance
2021: SFS Cavalcade, Society for Economic Dynamics (SED), Western Finance Association (WFA), Eastern Finance Association (EFA), John Hopkins Carey, SAMMF, UIUC, NBER Summer Institute, Nova Summer School (discussant), World Finance Conference, American Real Estate and Urban Economics Association

(AREUA) meeting (discussant), Brazil Central Bank, Stanford Institute for Theoretical Economics (SITE), UFPE.
2020: IMF, UCLA Anderson, Western Finance Association (discussant), Barcelona GSE Summer Forum (ADEMU), Midwest Finance Association (discussant), FGV, Insper, Liquidity and Macroeconomics workshop (UC Davis)
2019: Fed Dallas, EPGE, ITAM Finance Conference (discussant), LuBraFin, Society of Economics Dynamics, Western Finance Association, EIEF, Brazilian Econometric Society (SBE), UIUC
2018: Bank of Portugal, PUC Chile, PUC Rio. Barcelona GSE Summer Forum, Econometric Society (American Meeting) (2x), Econometric Society (European Meeting), Society of Economics Dynamics (2x), EIEF (Rome)
2017: Gerzensee Conference, LuBraMacro, MFM Meeting, Philadelphia Fed, Richmond Fed, Princeton
2016: UIUC Finance, UChicago Booth, FED Board, Princeton, PUC-RJ, EPGE, Insper, FGV-SP. LuBraMacro, LACEA-LAMES, UCLA
2015: MIT, MFM Meeting (NYU Stern), USP

## Conference Discussions

Afonso, Duffie, Rigon, and Shin, "How abundant are reserves? Evidence from wholesale payment system"
Bena, Fisher, Knesl and Vahl, "Pricing Technological Innovators: Patent Intensity and Life-Cycle Dynamics"
Choi, Tian, Wu, and Kargar, "Investor Demand, Firm Investment, and Capital Misallocation"
Khorrami and Mendo, "Fear and Volatility at the Zero Lower Bound"
Bakshi and Londono, "King U.S. Dollar, Global Risks, and Currency Option Premiums"
De La O and Myers, "Real Cash Flow Expectations and Asset Prices"
Krishnamurthy and Li, "Dissecting Mechanisms of Financial Crises: Intermediation and Sentiment"
Gorton and Ordoñez, "The Supply and Demand for Safe Assets"
Bolton, Li, Wang, and Yang, "Dynamic Banking and the Value of Deposits"
Bigio and Zilberman, "Heterogeneous Beliefs and Business Cycles"
Yu, Fangyan, "Dynamic Adverse Selection and Asset Sales"
Reis, Ricardo, "The Constraint on Public Debt When r<g but g <m"
D'Acunto, Malmendier, Ospina, and Weber, "Exposure to Daily Price Changes and Inflation Expectations"
Schneider, "Financial Intermediaries and the Yield Curve"
Croce, Jahan-Parvar, and Rosen, "SONOMA: a Small Open ecoNOmy for MAcrofinance"
Clara, "Demand Elasticities, Nominal Rigidities and Asset Prices"
Chari, Nicolini, and Teles, "Ramsey Taxation in the Open Economy"

## Professional Services

**Associate Editor**
*Junior Associate Editor: Journal of Mathematical Economics*

**Referee**
*Journal of Political Economy, American Economic Review: Insights, Review of Financial Studies, Review of Economic Studies, American Economic Journal: Macroeconomics, Journal of Economic Theory, Economic Journal, Review of Economic Dynamics, Theoretical Economics, BE Journal of Macroeconomics, Journal of Money, Credit, and Banking, Journal of Development Economic, European Economic Review, Journal of Financial Services Research, Canadian Journal of Economics, Journal of Banking and Finance, Quarterly Review of Economics and Finance, Review of Asset Pricing Studies, Applied Economic Letters, Applied Economics.*

**Program Committee**
*Western Finance Association (WFA), European Finance Association (EFA)*

## Personal Information

Born: March 9, 1984. Brazilian Citizen (U.S. Permanent Resident). Married with two children.