Mathias Jimenez

CONTACT INFORMATION	address: 63 Abrams Court, Apt. 808 zipcode: 94305. Stanford, CA	email: mathiasj@stanford.edu phone: (+1)(650)2898895

EDUCATION

Stanford University

Ph.D. Candidate, Department of Economics (*Expected June 2022*)

Dissertation Title: "Essays in Monetary Theory and History"
Fields: Macroeconomics, Finance.

Universidad Torcuato Di Tella

Posgrado en Economia, 2015

Universidad de Montevideo

Licenciatura en Economia, 2013

RELEVANT SKILLS

Languages:	Spanish (Native), English, Portuguese
Programming:	R, SQL, Matlab, LaTeX, Markdown
Software:	QGIS, Eviews, Dynare, Excel, Github
Others:	statistical modeling, graph data analysis, geo-spatial data analysis, time-series econometrics, spatial econometrics, causal inference, game theory, financial asset pricing, optimization, financial forecasting.

COURSES

2021	Blockchain Technologies, Berkeley University edX
2021	Descentralized Finance (DeFi) Deep Dive, Duke University Coursera
2021	Bitcoin and Cryptocurrency Technologies, Princeton University Coursera.
2018	Princeton Initiative, Princeton University.
2018	Alternative Money University Workshop, CMFA.
2015	J-PAL's Short Course on Experimental and Quasi-Experimental Methods.

INDUSTRY EXPERIENCE

Data Scientist Intern at Adobe Inc.

Location: San Francisco, California.
Dates: October 2017 – July 2018 (*10 months*)
Job Description: Alongside a team at Stanford Economics and in partnership with the Adobe Digital Economy team, we leverage Adobe Analytics' real-time data coming from millions of e-commerce transactions to study firm pricing strategies across industries and online versus offline aggregate inflation dynamics. The project involved extensive use of SQL for querying from Adobe's servers and R programming for data wrangling and statistical analysis.

Project Manager at Credifast

Location: Montevideo, Uruguay.
Dates: December 2012 – December 2013 (*1 year*)
Job Description: I led a team in this micro-credit company to develop a new internal software solution for daily front-end and back-end use. It involved managing a developer, designing software's customized reports, automatizing the credit approval process and product offers using statistical risk analysis and financial math.

Intern at Infopesca

Location: Montevideo, Uruguay.

Dates: March 2010 – June 2010 (*4 months*)

Job Description: I worked as a commercial analyst at Infopesca, a multilateral organization dedicated to producing reports on worldwide fishing markets and offering consultancy services for Latin American governments and private fishing industries. The job mainly consisted of working with a team to produce monthly market reports and maintain statistical information about worldwide fishing markets.

RESEARCH
PROJECTS

Are Banks Technologically Obsolete? A New Monetarist Approach *(2020)*

Tech stack and skills:

Economic modeling, game theory, financial asset pricing, LaTeX

Abstract: Given the current state of technology, agents could deal with exchange by transferring directly Central Bank fiat money seamlessly and cheaply. Are we then close to private banks becoming âtechnologically obsoleteâ?. To provide insights into this question, we build a monetary search model with several "imperfections" in the medium-of-exchange (MOE), such as asymmetric information in its value, imperfect supply elasticity, and transfer costs. Banks are special both because they are experts in assaying the quality of the MOE and have access to a payment infrastructure. Our model is specifically designed to account for historical evidence on banking origins, innovations, and also to speculate about its future. We first show what we call the "Two Worlds" result, which allows us to partition the parameter space into two subspaces that speak to the relevance of banking in the competitive equilibrium. Our main result suggests that we might be close to private banks becoming technologically obsolete. Formally, suppose we start from a parameterized model consistent with being in a "Banking World", where only bank debt is used for exchanges. Then, and resembling the current state of technology, even with an arbitrarily good private payment infrastructure, agents prefer to use only the MOE if asymmetric information and transfer costs vanish. The reasons behind this result are twofold. First, when transfer costs are zero, inter-bank netting does not add value anymore. Second, because inter-bank contract enforcement is arbitrarily good but still imperfect, agents would still need to pay banks positive fees to get credit since these fees give banks incentives to re-pay inter-bank debt.

The Life-Cycle of Banking *(2021)*

Tech stack and skills:

Statistical modeling, graph data analysis, spatial and time-series econometrics, R programming, OCR, QGIS, Excel, Github, LaTeX

Abstract: This paper is the first to document the evolution of a banking system from inception to maturity defined in terms of its turnover dynamics. For this, we digitized multiple novel historical sources for the Canadian banking system, from the founding of its first bank in 1817 to 1933, when turnover then stabilized for twenty years. We show a clear tendency to higher market concentration driven both by failures and acquisitions of smaller banks, and overall, mergers are more common when branch overlap is low. Banks start locally, which partitions competition by region. We also find branch clustering within each region, although only for rural areas. Later, larger banks start expanding nationwide, which coincides with the start of the merger wave. Regarding financial access, the number of years until the first branch varies substantially. However, conditional on that, the time until the second bank opens a branch arrives mostly within two years, suggesting a somewhat high spatial competitive pressure. In the end,

the banking system expands to the point where there is at least one branch in almost 100% of locations with a non-negligible population. In terms of the financial network, links in the correspondent banking network used for inter-bank liquidity services are driven by the fact that only the correspondent bank has a branch where settlement occurs. However, we show that links are only formed after that location has a transportation route where the respondent has its branches. This fact suggests a positive relationship between trade and the demand for financial services. On the other hand, the correspondent network converges to being wholly disconnected due to branching, which implies that it does not converge to the usual "core-periphery" topology extensively documented elsewhere. Finally, in terms of banks' balance sheets, we show a clear tendency to higher leverage ratio driven in the cross-section by larger banks. This fact is consistent with a "diversification channel" since banks with higher spatial branch coverage have a lower non-performing proportion of loans, even controlling by the number of branches and size of the bank. The composition of bank liabilities also changes. Privately-issued banknotes start out being more prominent, but demand deposits and then time deposits take over. On the asset side, the reserve ratio also shows a downward tendency but converges to a more homogeneous cross-sectional ratio around 10%. Interestingly, larger banks hold a higher portfolio share of safe and liquid marketable assets, and we show evidence that these banks use these liquid funds to finance inter-bank loans to smaller and distressed banks during international financial crises.

The Extent of Financial Fragility in Un-Regulated Banking Systems: Evidence from Canada, 1871-1913 *(work in progress, 2022)*

Tech stack and skills:

Economic modeling, numerical optimization, graph data analysis, spatial and time-series econometrics, R programming, Excel, LaTeX, Github

Abstract: This paper challenges the conventional view that unregulated banking systems are "robust-but-fragile", where banks provide valuable services during normal times but are also susceptible to a systemic run under financial stress. We use novel and granular data for Canada from 1871 to 1913, a period where there was no Central Bank, no currency monopoly, no deposit insurance, no explicit nor implicit bailout guarantees, no liquidity requirements, no mandatory public audits or inspections, and no public resolution authority. In this context, we show, among other things: i) The system evolved towards a handful of cooperative and well-diversified large banks, with no need for correspondent relationships. ii) Banks self-organized under an association that implemented centralized daily net clearing and settlement, liquidity management oversight, and rules for crises management and resolution. Moreover, the largest banks acted as ad-hoc central bankers by being lenders of last resort and making assume-and-purchase agreements with others at the brink of failure. iii) There were no system-wide runs even though Canada's principal trading and financial partners (the US and UK) did have several. However, the system experienced some localized financial distress, and several bank failures were accompanied by fraud from top executives to both shareholders and creditors. The paper suggests that more work needs to be done in modern quantitative banking models to disentangle purely decentralized mechanisms from policy-induced microstructure. It also underscores the complexities in modeling and doing counterfactuals on path-dependent systems.

RESEARCH AND
TEACHING
EXPERIENCE

Research Assistant for Pete Klenow

Summer 2017 – Summer 2018   Economic Growth

Lecturer at Universidad Torcuato Di Tella

Spring   2015   Introduction to Probability

Teaching Assistant at Stanford University

Fall   2021   Principles of Economics
Spring   2020   Introduction to Financial Decision Making
Winter   2020   Games Developing Nations Play
Fall   2020   Finance, Corporations, and Society
Spring   2019   Economic Analysis III
Fall   2019   Economic Analysis I
Spring   2018   Economic Analysis III
Winter   2018   Economic Policy Seminar 101
Fall   2018   Economic Analysis III

Teaching Assistant at Universidad Torcuato Di Tella

Winter   2015   Statistical Inference (*Graduate*)
Fall   2015   Introduction to Probability (*Graduate*)

Teaching Assistant at Universidad de Montevideo

Spring   2013   TA Mathematical Economics II
Spring   2012   TA Mathematical Economics II
Winter   2012   TA Industrial Organization
Winter   2011   TA Statistics I
Spring   2011   TA Microeconomics I

ACADEMIC AWARDS

2021 – 2022   Adam Smith Fellowship, Institute for Humane Studies.
2020 – 2021   Thomas C. & Irene W. Graham Fellow, Institute for Humane Studies.
2018   Full Scholarship for Alternative Money University Workshop, CMFA.
2017   Selected for Princeton Initiative 2017.
2016 – 2021   Stanford University School of Humanities and Sciences Fellowship.
2015   Full Scholarship for J-PAL's Short Course on Experimental and Quasi-Experimental Methods, Unverisdad Torcuato Di Tella.

OTHER AWARDS

2006   Bronze medal, 2006 International Basketball Championship, Uruguayan juvenile basketball National Team.
2004   Silver medal, 2004 Uruguayan juvenile National League.