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EDUCATION

Ph.D. in Economics, University of California, Riverside	June 2020 (Expected)
ABD in Economics, Arizona State University	2013
M.S. in Civil Engineering, University of Tehran, Tehran, Iran	2010
B.S. in Civil Engineering, Sharif University of Technology, Tehran, Iran	2007

RESEARCH INTERESTS

Macroeconomics, Financial Economics, Machine Learning, Big Data, International Economics, Latin American Economic Policy, International Trade, Development and Growth, Contract Theory

WORKING PAPERS

1. "Determinants of Mortgage Loan Delinquency: Application of Interpretable Machine Learning", [Job Market Paper]
2. "Maturity Structure and Debt Renegotiation in Sovereign Bonds"
3. "Debt Instruments and Sovereign Default"
4. "Partial Defaults and Debt Renegotiation in Sovereign Bonds"
5. "Capital Taxation and Entrepreneurial Activities"
6. "Welfare Effects of Monetary Policies under Commodity News Shocks"

SEMINAR AND CONFERENCE PRESENTATIONS

Western Economic Association International	07/04/2019
Economics Brown Bag, University of California Riverside	01/28/2019
Economics Brown Bag, University of California Riverside	10/24/2018
Economics Theory Colloquium, University of California Riverside	10/08/2018

AWARDS AND HONORS

Teaching Assistantship, University of California, Riverside	2014-Present
Teaching Assistantship, Arizona State University, Tempe, AZ	2010-2013
Ranked Among Top 0.1% in Iran's National University Entrance Exam for M.Sc. in Civil Engineering (Over 30,000 Participants)	2007
Ranked Among Top 0.1% in Iran's National University Entrance Exam (Over 400,000 Participants)	2002

TEACHING EXPERIENCE

Lecturer - University of California, Riverside

Undergraduate:

Introduction to Money, Banking and Credit	Summer 2016, 2017, and 2018
Industrial Organization	Summer 2018

Graduate:

Math-Camp for 1 st Year Ph.D. Students	Summer 2018
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Teaching Assistant - University of California, Riverside

Graduate:

Advanced Macroeconomics	Winter 2016, 2017, and 2018
Advanced Microeconomics	Spring 2018

Undergraduate:

Introduction to Microeconomics	Winter 2019, Fall 2018, Spring 2015 Fall 2014
Intermediate Macroeconomics	Summer 2015, Spring 2016 and 2017, Fall 2017
Intermediate Microeconomics	Fall 2015 and 2016, Summer 2017

Lecturer - Arizona State University

Introduction to Microeconomics	Summer 2012
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Teaching Assistant - Arizona State University

Undergraduate:

Introduction to Macroeconomics	Fall 2011, Spring 2012
Introduction to Microeconomics	Fall 2012, Spring 2013

REFEREEING

Journal of Development Economics

SKILLS AND PERSONAL

Softwares: Matlab, Python, R, Stata, EViews, Pascal, L^AT_EX

Languages: English, Persian, Turkish, Arabic

REFERENCES

Marcelle Chauvet (Chair)	Urmee Khan	Jana Grittersova
Professor of Economics	Associate Professor of Economics	Assistant Professor of Political Science
University of California, Riverside	University of California, Riverside	University of California, Riverside
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RESEARCH

1. "Determinants of Mortgage Loan Delinquency: Application of Interpretable Machine Learning" (JMP)

This paper finds the important factors affecting the +90-day delinquency within the first 12 months after the origination of the mortgage loan for 2013Q1-2017Q4 period. Different studies find different triggers for mortgage loan default; while some confirm the Negative Equity theory (which asserts default happens when the value of the property drops below the loan amount), other finds the role of factors such as unemployment to be critical. To find the determinants of mortgage loan delinquency, we apply a modified Gradient Boosting method, XGBoost, to Fannie Mae Single-Family mortgage loan data. First, we show Machine Learning provides a higher prediction accuracy compared to traditional Logistic Model. Next, we use Permutation Feature Importance approach to find the main features affecting mortgage delinquency. Finally, we use Interpretable Machine Learning tools to quantify and visualize the impact of each factor on delinquency. Borrower's credit score, Federal Funds Rate, and the original interest rate are found to be the important features explaining 90-Day delinquencies in our model. These factors are all impacting the interest payments through mortgage loan contract terms. Using Interpretable Machine Learning, we further investigate the effect of each factor and conclude the effects are unbiased and independent of each other. While other factors such as Combined-Loan-to-Value and unemployment rate found to be important, their effect is overshadowed by the impact of aforementioned factors. This study suggests, first, a policy aimed to mitigate mortgage loan defaults during an expansion period should target the interest payments. Furthermore, mortgage loan delinquency triggers are contingent on the state of the economy; different set of features can trigger mortgage defaults in expansion and recession periods.

2. **"Maturity Structure and Debt Renegotiation in Sovereign Bonds"**

This paper develops a model of endogenous default with debt renegotiation for emerging economies. A small open economy faces a stochastic stream of income. The government can issue short and long term bonds and makes decision on behalf of the residents of the borrowing country. Lenders are risk-neutral and operate in a perfectly competitive financial market. Upon default, the borrowing country loses access to the financial markets and will not be able to borrow any longer. The defaulted country has to pay off the principal and interest of the restructured debt to regain access to the credit market. Debt restructuring is modeled by a Nash bargaining game. The resulted equilibrium haircut is directly related to the debt level. This feature results in a default value function that flattens out after an endogenous threshold; consequently default happens at higher debt levels compared to models without debt renegotiation. The model is calibrated to capture the default episodes in Argentina. The model statistics closely match the observed values. This is particularly the case for the resulted interest rate distributions for short and long term bonds, compared to previous literature. Providing a precise interest rate distribution is crucial as finding the optimal maturity structure relies on it. Furthermore, interest rates can be an indicative of financial crisis. The paper finds that endogenous debt renegotiation is an important mechanism in generating more realistic fluctuations of the interest rate.

3. **"Debt Instruments and Sovereign Default"**

The introduction of Brady Bonds was followed by a reduction in the default frequency in Latin American countries during 1990s. Prior to that, loans from syndicated banks were used as the main debt instrument. This is puzzling since bondholders have lower bargaining power than syndicated banks, hence borrowing countries are expected to default more frequently. This paper develops a default model with endogenous debt renegotiation to study this problem. Government of a borrowing small open economy can ask for loans or issue bonds. Syndicated banks use monopolistic pricing for loans while bonds are priced in a perfectly competitive market. The defaulted country loses access to the credit market and regains access to it only after paying off the restructured arrears. Haircuts are determined by a Nash bargaining game. The equilibrium haircut is proportional to the total debt level. The calibrated model confirms the prediction regarding the bargaining power: the borrower's bargaining power for the model with loans and bonds is higher than the corresponding value when only loans are used as the debt instrument. The results show that introducing bonds lower interest rates and, consequently, increases opportunity cost of default. The paper suggests that facilitating bond issuance in African countries may reduce both default frequency and severity in these countries, as it was the case for the impact of Brady Bonds in Latin America.

4. **"Partial Defaults and Debt Renegotiation in Sovereign Bonds"**

This paper deviates from the dominant strain of research that studies country default as a discrete event. In contrast, most of the sovereign defaults are documented as partial, not full default. This paper adds endogenous debt renegotiation to a partial default model. The results reinforce the conclusions that partial default can be studied as a costly borrowing instrument. Also, the equilibrium haircut reduces the dependency of the partial default model on the output loss regime.