Shadow Banks and Financial Distress in Minority Communities: The Debt Servicing Channel

Erica Jiang, Brittany Almquist Lewis, and Manisha Padi

When borrowers face financial distress, they turn to debt servicers to obtain relief through forbearance and loan modification. These servicers are increasingly likely to be shadow banks. Since the 2008 financial crisis, stringent bank regulations have led to the growth of shadow banks, particularly among minority and low-income communities (Buchak et al. (2018), Lewis (2022)). Shadow banks differ from banks in regulatory burden, funding capacity, asset composition, and lack of explicit access to government liquidity and credit backstops, making them less effective in providing debt relief during crisis times (Jiang et al. (2020), Jiang (2021), Cherry et al. (2021, 2022)).

This project studies the role of bank regulation on the transfer of mortgage servicing rights (MSRs) from banks to shadow banks, and the subsequent impact on debt relief in minority communities. In 2010, the USA adopted Basel III which changed allowed leverage ratios, changed risk weighting of assets, and included countercyclical stability measures. Among the adopted regulations was a higher capital requirement imposed on banks holding MSRs, meaning that the bank had the right to collect payments on mortgage loans. Since shadow banks were excluded from compliance with Basel III, banks transferred MSRs to shadow banks following the introduction of the rule. Moreover, non-mortgage servicing was excluded, increasing banks' incentive to invest in other asset-backed securities. We will first study the effect of Basel III on MSR holdings of shadow banks, relative to banks, focusing on disparate sale of minority MSRs to shadow banks. We will then estimate the impact of this change on the resolution of households' distress, including default, foreclosure, loan modification, and personal bankruptcy.

Our research design depends on the creation of a unique new consumer credit dataset that includes information on servicers. To date, servicing data is available only for the mortgages and only for a small segment of mortgages - government mortgages serviced by the top servicers. In this research project we plan to link credit bureau data to comprehensive servicing data. This data covers the servicing for a representative sample of borrowers in the USA – all borrowers in the state of California and a 2% random sample of all borrowers in the USA. We will link these data to a panel dataset of the servicers who service each of the credit products that consumers hold. This merge will allow us to identify whether a servicer is a shadow bank or a commercial bank as well as identifiers for whether or not it is solely in the servicing business versus an originator/servicer, and quarterly balance sheet data for the servicer when available.

Connecting servicer information to consumer outcomes is essential for understanding the transmission of bank regulation. Debt servicers have a great deal of power over consumer outcomes, given their ability to offer forbearance and modifications to borrowers in financial distress. Little is known about the role of shadow banks in providing debt relief and their impact on the pass-through of macroeconomic policy. A central strength of the data is that it is a representative sample of all servicers and we observe servicer information for all types of credit. Our outcomes of interest include measures of servicer debt relief in mortgage payments, as well

as in credit card, auto loan, and student loan payments. Moreover, we can observe race at the census-tract level to study the differential treatment of racial groups by banks and shadow banks.

Our work contributes to several open literatures. It deepens our understanding of household debt and defaults documented in Mian and Sufi (2017) by illuminating the role that servicers play in default. Our work also adds to previous work on the microeconomic effects of macroprudential policy and capital market regulations. For instance, Lewis (2021) shows that changes in collateral reuse policy have unintended consequences for retail mortgage borrowers, increasing foreclosure risk and accelerating financial crises. Our work also adds to the literature on debt relief during crisis times. Cherry et al. (2021, 2022) show that shadow banks are less likely to provide forbearance than traditional banks and study the key role of mortgage forbearance in averting household financial crises during the COVID-19 pandemic. Finally, our work adds to a growing literature showing disparities in debt servicing for disadvantaged communities. Jiang and Zhang (2022) find that low-income and minority households tend to live in high price dispersion counties, so housing serves poorly as mortgage collateral, precisely in areas where households tend to be constrained and need mortgage credit most. Padi (2022) shows that servicers provide mortgage forbearance to high income communities more often than to low income communities. Kermani and Wong (2021) find that the main driver in racial disparities in the housing wealth gap is due to forced liquidation sales in minority areas.

A key outcome of this project will be creating a new and novel public dataset available to researchers via the California Policy Lab. The dataset will enable the merge of a representative sample of credit bureau data in the USA with a comprehensive set of servicer data. Once this merge has been completed, the servicers will be de-identified, leaving servicer level balance sheet data binned at a granular level and identifiers for whether the lender is a shadow bank, and whether it only originates, only services, or both originates and services credit products. This will be the first time that a merge of servicer and consumer credit product data will have been created at such a comprehensive level.

Timeline

- The California Policy Lab has agreed on the feasibility of the merge with the credit bureau. The process will be done in three steps. First, the bureau will send the research group a list of servicers in the dataset. Second, the research group will merge relevant variables with the servicer list and return the data to the credit bureau. Third, the bureau will merge servicer variables with the Policy Lab's existing servicer key and return de-identified data to the research group to merge with the individual tradeline credit panel.
- August 2022 – Complete merge with credit bureau and California Policy Lab
- September 2022 – January 2023 – Train research assistant(s) to access data and derive preliminary results
- January 2023 – June 2023 – Write preliminary paper draft
- June 2023 – December 2023 – Present paper and get feedback
- January 2024 – Submit paper for publication

Budget: $15,000

- The California Policy Lab will charge $15,000 to implement the merge between the panel of servicer data and the credit bureau data. Once completed, the merged data will be made accessible to all researchers via the California Policy Lab.

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ACADEMIC POSITIONS

University of Southern California *2020 -*
Assistant Professor of Finance and Business Economics

EDUCATION

The University of Texas at Austin *2015 - 2020*
Ph.D. in Finance

Baylor University *2011 - 2015*
B.B.A. in Business Fellows (Honors), Economics, Mathematics
Summa Cum Laude

RESEARCH INTERESTS

Financial Intermediation, Household Finance, Real Estate, Corporate Finance

PUBLICATIONS

Government and Private Household Debt Relief during COVID-19
(with Susan Cherry, Gregor Matvos, Tomasz Piskorski and Amit Seru)
Brookings Papers on Economic Activity, Accepted

WORKING PAPERS

Financing Competitors: Shadow Banks' Funding and Mortgage Market Competition
Review of Financial Studies, Revise and Resubmit
WFA Cubist Systematic Strategies Award 2020

Shadow Bank Distress and Household Debt Relief: Evidence from CARES Act
(with Susan Cherry, Gregor Matvos, Tomasz Piskorski and Amit Seru)
AEA Papers and Proceedings 2022

Economic Policy Uncertainty, Learning, and Investment Decisions
(with Laura Starks and Sophia Sun)
Journal of Finance, Revise and Resubmit

Banking without Deposits: Evidence from Shadow Bank Call Reports
(with Gregor Matvos, Tomasz Piskorski and Amit Seru)

Collateral Value Uncertainty, Mortgage Credit, and the Homeownership Gap
(with Anthony Lee Zhang)

The Bank Churn Channel
(with Anthony Lee Zhang)

SELECTED WORK IN PROGRESS

Consumer Preference and Bank Competition amid Digital Disruption
(with Gloria Yu and Jinyuan Zhang)

Does Racial Proximity Affect Loan Outcome? Loan Officer Discretion and Racial Disparity in Credit Access
(with Yeonjoon Lee and Will Liu)

SEMINARS AND CONFERENCES

(*including scheduled, *presented by co-author*)

2022 *Conference*
AEA New Lessons in Financial Fragility 2022

Seminar
Federal Reserve Bank of Philadelphia

2021 *Conference*
Short-Term Funding Markets Conference, FIRS Conference (x2), WFA 2021, Adam Smith Workshop, International Industrial Organization Conference, Yale Junior Finance Conference, Swiss Winter Conference, China International Conference in Finance, NBER SI Household Finance, NBER SI Real Estate*, Household and Corporate Lending Conference*, Fourth Columbia Workshop in New Empirical Finance, Guthrie Center Housing and Macroeconomics Conference (x2)*

Seminar
Johns Hopkins Carey, UCLA Anderson, UC Berkeley Haas, Bank of Canada, University of Illinois at Urbana-Champaign

2020 *Conference*
WFA, Columbia HULM Conference, NYU Household Finance (Canceled)

Seminar
Harvard Business School, Stanford GSB, University of Chicago Booth, Yale SOM, UCLA Anderson, Imperial College London, London School of Economics, London Business School, Boston University Questrom, Ohio State University Fisher, University of Michigan Ross, University of Southern California Marshall, Georgetown MSB, INSEAD, Baylor University

2019 *Conference*
SITE Financial Regulation*, NBER Corporate Finance*

FELLOWSHIPS AND AWARDS

Cubist Systematic Strategies Ph.D. Candidate Award for Outstanding Research	*2020*
OGS Summer Fellowship	*2019*
Dean's Allocation Scholarship	*2019*
Dr. James C. Dolley Endowed Presidential Scholarship	*2019*
Graduate School Continuing Fellowship	*2016-2019*
Dolley's Award	*2018*
DSG Tuition Scholarships	*2016-2018*
Distinction in Economics	*2015*
Anna T. Reiman Scholarship in Economics	*2014-2015*
The Hankamer School of Business Scholarship	*2014-2015*
Jerry Johnson Scholarship	*2013-2015*
Dr. W. James Truitt Scholarship	*2013-2014*
Howard L. Rolf Scholarship	*2013-2014*
Tom & Pat Powers HSB Scholarship	*2013-2014*
Risk and Insurance Management Scholarship	*2013-2014*
Adam Smith Scholar Award	*2013-2014*
Provosts Gold Scholarship	*2011-2015*

PROFESSIONAL SERVICES

Conference and Program
SFS Cavalcade North America 2022: Program Committee
USC Brownbag 2021-2022: Organizer
SFS Cavalcade North America 2021: Session Chair for Banking After the Financial Crisis
AFA 2021: Poster Session Selection Committee

Referee
Journal of Monetary Economics, Review of Financial Studies, Financial Analysts Journal, Review of Finance

MEDIA COVERAGE

Government and Private Household Debt Relief during COVID-19
NBER Digest, USC Marshall Feature Article, Fortune, Money Magazine, Brookings, INET Debt Talk

Financing Competitors: Shadow Banks' Funding and Mortgage Market Competition
World Bank All about Finance Blog

CONFERENCE DISCUSSIONS

Personal Bankruptcy and the Accumulation of Shadow Debt
by Bronson Argyle, Benjamin Iverson, Taylor Nadauld, and Christopher Palmer
SITE Financial Regulation 2021, Moderator

Social Networks and Supply and Demand on Online Lending Marketplaces
by Linda Allen, Lin Peng, and Yu Shan
CIRF 2021, Discussant

Do FinTech Lenders Fairly Allocate Loans Among Investors? Quid Pro Quo and Regulatory Scrutiny in Marketplace Lending
by Li Ting Chiu, Brian Wolfe, and Woongsun Yoo
SFS Cavalcade North America 2021, Discussant

Nonbank Lending and Credit Cyclicality
by Quirin Fleckenstein, Manasa Gopal, German Gutierrez, and Sebastian Hillenbrand
SFS Cavalcade North America 2021, Discussant

FinTech Lending and Financial Inclusion
by Yuk-fai Fong, Ke Liu, Xiaoxuan Meng, Kar Yan Tam
IIOC 2021, Discussant

The Effect of the Shared Economy on Crime: Evidence from Airbnb
by Sergio Garate Alvarez, Anthony Pennington-Cross, and Weihua Zhao
AREUEA-ASSA 2021, Discussant

The Passthrough of Treasury Supply to Bank Deposits
by Yiming Ma, Wenhao Li, and Yang Zhao
SITE Financial Regulation 2020, Moderator

TEACHING EXPERIENCE

Foundations of Business Finance *2021 Spring, 2021 Fall*
Investment Management *2018 Summer*

PRE-DOCTORAL RESEARCH

Differentiation with Respect to Parameters of Solutions of Nonlocal Boundary Value Problems for Difference Equations
(with Johnny Henderson)
Involve, a Journal of Mathematics, 2015

Updated: 12-2021

MANISHA PADI

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ACADEMIC APPOINTMENTS

University of California, Berkeley, School of Law
Assistant Professor of Law — 2019 – present

University of Chicago School of Law
Bigelow Fellow and Lecturer in Law — 2017 – 2019
NSF Social, Behavioral, & Economic Sciences Postdoctoral Fellow — 2017 – 2019

EDUCATION

Massachusetts Institute of Technology — Ph.D. in Economics, 2017
Thesis: Essays on Consumer Financial Markets

Yale Law School — J.D., 2017

Massachusetts Institute of Technology — B.S. in Economics, B.S. in Mathematics, 2010
Thesis: Education Level as a Dynamic Choice

FELLOWSHIPS, GRANTS, AND AWARDS

Center for Equitable Growth Postdoctoral Grant — 2018 – 2019
NSF SBE Postdoctoral Fellowship — 2017 – 2019
BC Center for Retirement Research Dissertation Fellowship — 2016 – 2017
MIT Economics Shultz Dissertation Grant — 2015
Tobin Project Democracy & Markets Graduate Fellow — 2014 – 2015
NSF Graduate Research Fellowship — 2010 – 2015
Robert C. Byrd Scholar — 2006 – 2010
MIT Burchard Scholar for Excellence in Humanities and Social Sciences — 2009

UNDER REVIEW AND PUBLISHED WORK

Fiduciary Duty and the Market for Financial Advice (with Vivek Bhattacharya and Gaston Illanes) [Revision requested, *Econometrica*]

Retirement Policy and Annuity Market Equilibria: Evidence from Chile (with Gaston Illanes) [Revision requested, *Econometrica*]

Contractual Inequality, 120 MICH. L. REV. __ (forthcoming 2022)

Markets and Mandates: Retirement in Chile and the US, 102 B.U. L. REV. __ (forthcoming 2022)

State Politics and Mortgage Markets (with Brian Feinstein and Chen Meng)

Manisha Padi & Abigail R. Moncrieff, *Measuring the Welfare Effects of a Nudge: A Different Approach to Evaluating the Individual Mandate, in* Nudging Health: Health Law and Behavioral Economics 275-286 (I. Glenn Cohen, Holly Fernandez Lynch, and Christopher T. Robertson eds., 2016).

Abigail R. Moncrieff & Manisha Padi, *Beyond Payment and Delivery Reform: The Individual Mandate's Cost-Control Potential*, 40 AM. JL AND MED. 185-298 (2014).

WORKS-IN-PROGRESS (DRAFT AVAILABLE ON REQUEST)

Consumer Protection Law and the Mortgage Market: Evidence from Ohio

EXPERIENCE

Department of Economics, MIT, Cambridge, MA
Teaching Assistant for Introductory Microeconomics 2016-2017

Department of Justice, Antitrust Division, Washington, D.C.
Summer Legal Intern Program Summer 2014

Weil Gotshal and Manges, New York, NY
Summer Associate Summer 2014

New York City Law Department, New York, NY
Summer Honors Intern Summer 2011

INVITED PRESENTATIONS & LECTURES

2022: Stanford Law and Economics (scheduled); Northwestern Law and Economics (scheduled); University of Nebraska, Lincoln Department of Economics (scheduled); Northwestern Kellogg Finance (scheduled); Queen's University, Law '80 Endowed Lecture in Business Law (scheduled)

2021: AALS Annual Meeting - Junior Consumer Law Scholars Works-in-Progress Session; UC Irvine Law School; Consumer Law Scholar's Conference; BU Law Review Symposium on Law, Markets and Distribution; National Tax Association Annual Meeting; IO-RIDGE Conference; University of Southern California

2020: New York University Law and Economics Seminar; Duke Law and Economics Seminar; National Bureau of Economic Research Summer Institute – Household Finance & Industrial Organization; Harvard Law, Economics, and Organization Seminar; Virtual Law and Economics Workshop Series

2019: American Economics Association Meeting; Stanford University; University of Wisconsin, Madison; National Bureau of Economic Research Industrial Organization/Insurance Meeting; Berkeley Consumer Law Conference; University of Chicago Law School; Risk Theory Conference; Wharton Financial Regulation Conference; University of Toronto Law and Economics Colloquium; University of

Illinois College of Law; Berkeley Law and Economics Colloquium; Conference on Empirical Legal Studies

2018: American Economics Association Meeting; American Law and Economics Association Meeting; Empirical Contracts Conference; Southern Illinois University at Carbondale Economics; University of Texas Law and Economics Seminar; Florida State University; Queen's University (Kingston, CA); George Washington; Cornell Law School; University of California, Berkeley Law; University of Southern California; University of San Diego; Washington University of St. Louis; University of Michigan; Conference on Empirical Legal Studies; University of California, Los Angeles; University of Texas, Austin; Northwestern University; University of Virginia; Federal Trade Commission Microeconomics

2017: Retirement Research Consortium Conference

PROFESSIONAL SERVICE

Referee for *American Law and Economics Review*; *International Review of Law and Economics*; *Journal of Law and Economics*; *Journal of Public Economics*; *Journal of Risk and Insurance* (2019 Excellence in Reviewing Award); *Journal of Law, Economics, and Organization; Journal of Empirical Legal Studies; Review of Financial Studies*

Co-Organizer of Consumer Law Scholar's Conference

AALS Section on Financial Institutions and Consumer Financial Services Executive Committee Member

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ACADEMIC APPOINTMENTS

Kelley School of Business, Indiana University, *Assistant Professor of Finance* 2020 – present
Guthrie Center for Real Estate, Northwestern University, *Visiting Scholar* 2020 – present

RESEARCH APPOINTMENTS

Board of Governors of the Federal Reserve System, *Dissertation Fellow* Jul. – Nov. 2018
Federal Reserve Bank of San Francisco Thomas J. Sargent, *Dissertation Fellow* Jun. – Jul. 2018

RESEARCH FIELDS

Financial Intermediation, Household Finance, Real Estate

EDUCATION

Kellogg School of Management, Northwestern University, Ph.D. Finance, 2020
Dissertation: "Essays on Financial Intermediation"
Committee: Dimitris Papanikolaou, Lawrence Christiano, Janice Eberly, John Mondragon
Kellogg School of Management, Northwestern University, M.S. Finance, 2020
Boston College, B.A. Finance, 2010
Boston College, B.A. Information Systems, 2010

WORKING PAPERS

1. Lewis, Brittany, 2021, **"Creditor Rights, Collateral Reuse, and Credit Supply**," Working Paper

(previously titled: *The Effect of Dealer Leverage on Mortgage Quality)*

- Press: Kelley School of Business News
- *Journal of Financial Economics R&R*

Theories linking the repledging of collateral to financial instability have been influential in macroeconomics but empirical evidence on them is limited. I utilize a change to bankruptcy treatment of collateral in short-term capital markets to provide causal evidence that strengthened creditor rights increase credit supply and financial instability by increasing the repledging of collateral. Using novel hand-collected data linking dealers to the mortgage companies they funded, I find that dealers exposed to the bankruptcy treatment change increased their repledgeable collateral – consistent with a money multiplier – and their credit supply to mortgage companies during the 2000s. I estimate the money multiplier of private-label mortgage collateral to be 4.5 times that of Treasuries, shedding new light on the previously unknown size of this multiplier. I establish that increased dealer credit provision drove mortgage companies to increase originations and pivot toward risky products. I estimate that the expansion in credit increased originations by 9% and accounted for

38% of defaults on mortgages originated during 2005-2006, driving the "last gasp" in the home price boom and its bust.

2. Lewis, Brittany, 2020, "**Real Effects of Capping Bank Leverage,"** Working Paper

In this paper, I study the effects of bank leverage ratio restrictions in a general equilibrium model of the macroeconomy where lenders can anticipate bank runs. This framework allows the analysis of the tradeoffs associated with bank capital requirements - while unlimited leverage allows capital to flow most freely to its most efficient users, limiting leverage through capital requirements reduces the probability of a bank run. This model enables me to study the general equilibrium effects of these tradeoffs on household welfare to understand characteristics of the optimal bank leverage ratio requirement. I find that the optimal leverage restriction will be time varying across the business cycle. When the household's marginal utility of consumption is highest, the leverage ratio requirement should be the least restrictive. Conversely, when the household's marginal utility approaches its steady state level, the optimal leverage ratio becomes more restrictive.

WORK IN PROGRESS

3. Lewis, Brittany, 2022, "Do Credit Policies Differentially Affect Racial Groups? Evidence from the Mortgage Market"

4. Jiang, Erica, and Brittany Lewis, 2022, "The Real Effect of Bank Regulation Through Non-Bank Lenders"

SEMINARS & CONFERENCES

Seminars (including scheduled)

2022: Ohio State University (Fisher)

2021: Junior Household Finance Seminar (UVA, Federal Reserve Bank of Philadelphia) • University of Oregon (Lundquist) • IU Summer Health Policy Workshop • Stanford GSB • Washington University in St. Louis (Olin)

2020: Emory (Goizueta) • Federal Reserve Bank of New York • University of Georgia (Terry) • University of Delaware (Lerner) • University of Wisconsin-Madison • Federal Reserve Board of Governors • Johns Hopkins (Carey) • Federal Reserve Bank of Richmond • Federal Reserve Bank of Boston • London Business School • Bank for International Settlements • Indiana University (Kelley) • Federal Reserve Bank of Dallas • University of Melbourne • Monash University • Junior Household Finance Seminar (UVA, Federal Reserve Bank of Philadelphia)

2019: Wisconsin School of Business at UW Madison • Kellogg School of Management Strategy Department • Northwestern Department of Economics

2018: Federal Reserve Bank of San Francisco • Federal Reserve Board of Governors Division of Financial Stability

2008: Boston College Undergraduate Research Symposium, ***Awarded Best Presentation***

Conference Presentations (including scheduled)

2022: AEA • AEA • Berkeley Consumer Law Scholars Conference

2021: Eastern Economic Association (EEA) • Berkeley Consumer Law Scholars Conference • Midwest Finance Association (MFA) • Oxford Saïd - ETH Zurich Macro-finance Conference

DISCUSSIONS *(including scheduled)*

2021: 5th Annual Yale Junior Finance Conference • Western Economic Association (WEA) • Conference on Financial Economics and Accounting (CFEA)

2020: Midwest Finance Association (MFA)

PROFESSIONAL ACTIVITIES

Refereeing: *Journal of Monetary Economics, Journal of Financial Services Research, Management Science*

AWARDS AND FELLOWSHIPS

Research Equipment Fund Grant, Indiana University ($75,000, PI)	2021
Kelley Research Funding Grant, Kelley School of Business ($20,600, PI)	2021
Kelley Research Funding Grant, Kelley School of Business ($15,000, Co-PI)	2021
Racial Justice Research Fund, Indiana University ($15,000, PI) (Link)	2020
Kellogg Research Funding Grant, Northwestern University ($3,000, PI)	2019
Kellogg School of Management Fellowship, Northwestern University	2014 – 2019
MFS - 10th Macro Finance Society Workshop Ph.D. Award (Link)	2017
Henrietta Grigg-Lewis Foundation Scholarship	2006 – 2009
Boston College Advanced Study Grant	2007
Western New York Academic Scholarship	2006 – 2007

TEACHING EXPERIENCE

Indiana University

F300: Introduction to Financial Management (Undergraduate) — Fall 2020 – present

Northwestern University (teaching assistant)

FINC 470: International Finance (MBA and Executive MBA) — Fall 2015 – Fall 2017
Professor Sergio Rebelo

FINC 941: Macroeconomic Policy and Global Capital Markets (MBA) — Winter 2016 – Spring 2017
Professor Janice Eberly
Professor Nicolas Crouzet

Boston College (teaching assistant)

ISYS0021: Computers in Management (Undergraduate) — Fall 2007 – Fall 2008
Professor Gerald Kane

RESEARCH EXPERIENCE

Research Assistant to Professor Brian Weller, Kellogg School of Management Jul. – Aug. 2015
Research Assistant to Professor Gerald C. Kane, Boston College Mar. 2007 – May 2008

PROFESSIONAL EXPERIENCE

Analysis Group, Summer Analyst Intern (2008)/Analyst/Sr. Analyst, Boston, MA Aug. 2010 – Jun. 2014
Pioneer Investments, Equity Research Summer Analyst, Singapore Aug. – Sep. 2009
KPMG, Information Technology (IT) Advisory Summer Analyst , New York City, NY Jun. – Jul. 2009

OTHER ACTIVITIES AND SERVICE

Service to the Profession:
Faculty Host, SFS Cavalcade North America 2020
Federal Reserve Board Mentoring to Interns 2020

Outreach:
Public Service Economics, Boston 2010-2013
Dress for Success, Boston 2008-2009

PERSONAL INFORMATION

Citizenship: USA

SKILLS

Language: English (native), Spanish (advanced)
Computer: SAS, STATA, R, SQL, Matlab, Fortran, Python, Command Line Scripting, HTML, PHP, LiveCode, Socialtext Wiki, LaTeX