Credit Expansion and Inequality: A Panel Analysis of the United States

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Introduction

- An exogenous expansion in mortgage credit, business credit, and consumer credit have significant effects on the distribution of income in the U.S.
- This finding is established using U.S. branching deregulations between 1994 and 2005 as instruments for credit. Exploiting the cross-state, cross-time variation in the timing of branch deregulation, my paper finds deregulation expanded the distribution of income.
- Credit has become increasingly important to analyze because credit supply shocks have been found to be an important driver of economic fluctuations as well as a powerful predictor of financial crisis.
- Economists are beginning to look more closely at income inequality with those like Thomas Piketty bringing increased attention to the topic. Barack Obama has stated "income inequality is the defining challenge of our time."
- Historical trends illustrate that credit and income inequality have both drastically increased since the late 1970s and so there are reasons to believe, as described in the economic framework section, that this is not just a simple correlation.

Economic Framework

- Favara & Imbs (2015) show that following removal of restriction on interstate banking, banks eased credit constraints as shown by an increasing loan to income ratio, volume of loans, and number of mortgage originations. What might be the effect of eased credit constraints on the income distribution?
- Increased credit access might operate on the extensive margin and facilitate entrepreneurship and education for people with promising ideas, but little collateral and income - thereby tightening the income distribution.
- Alternatively, it could operate on the intensive margin, enhancing the financial services of those already accessing the financial system, which are frequently high-income individuals and well-established firms - thereby expanding the income distribution.
- Recent studies show that some income inequality may be due to poor financial competences. Over the last few decades, financial development has introduced sophisticated financial innovations that require advanced skills for proper use.
- Financial literacy seems to be a proxy for the ability to reap the benefits of financial opportunities and so although people may have increased access to credit, they do not have the competencies to use it.
- Lusardi & Tufano (2009) find that those with low financial literacy are more likely to transact in higher cost manners, incur higher fees, use higher cost borrowing, and accumulate excessive debt loads relative to the average.
- If credit expansion affects income inequality, economic theory does not provide a unique answer on the sign of this effect. This ambiguity motivates the empirical application at the heart of my paper.

Data Summary

- Deregulation data is a time-varying index capturing state level differences in regulatory constraints between 1994-2005.
- Credit data comes from the Consolidated Report of Condition and Income (the Call Reports) available from the Federal Reserve Bank of Chicago. They are loan to income ratios constructed by dividing real estate loans, business loans, consumer loans, and total loans by personal income.
- Inequality data is constructed from individual tax filing from the IRS. The inequality measures used are: top-1 percent share, Gini coefficient, Theil index, Atkinson index, and the relative mean deviation.

Interstate Banking and Branching Efficiency Act

- With passage of the Riegle-Neal IBBEA (1994) banks could then operate across state borders without any formal authorization from state authorities.
- However, it also allowed states the right to erect barriers to branch expansion and so states could impose restriction such as the number of statewide deposits that could be controlled by a single bank.
- Because states could impose or remove restrictions at varying times, deregulation varies both across states and across time.

Figure A1. Rice-Strahan deregulation index by state and year

0 - Most restrictive 1 2 3 4 - Least restrictive
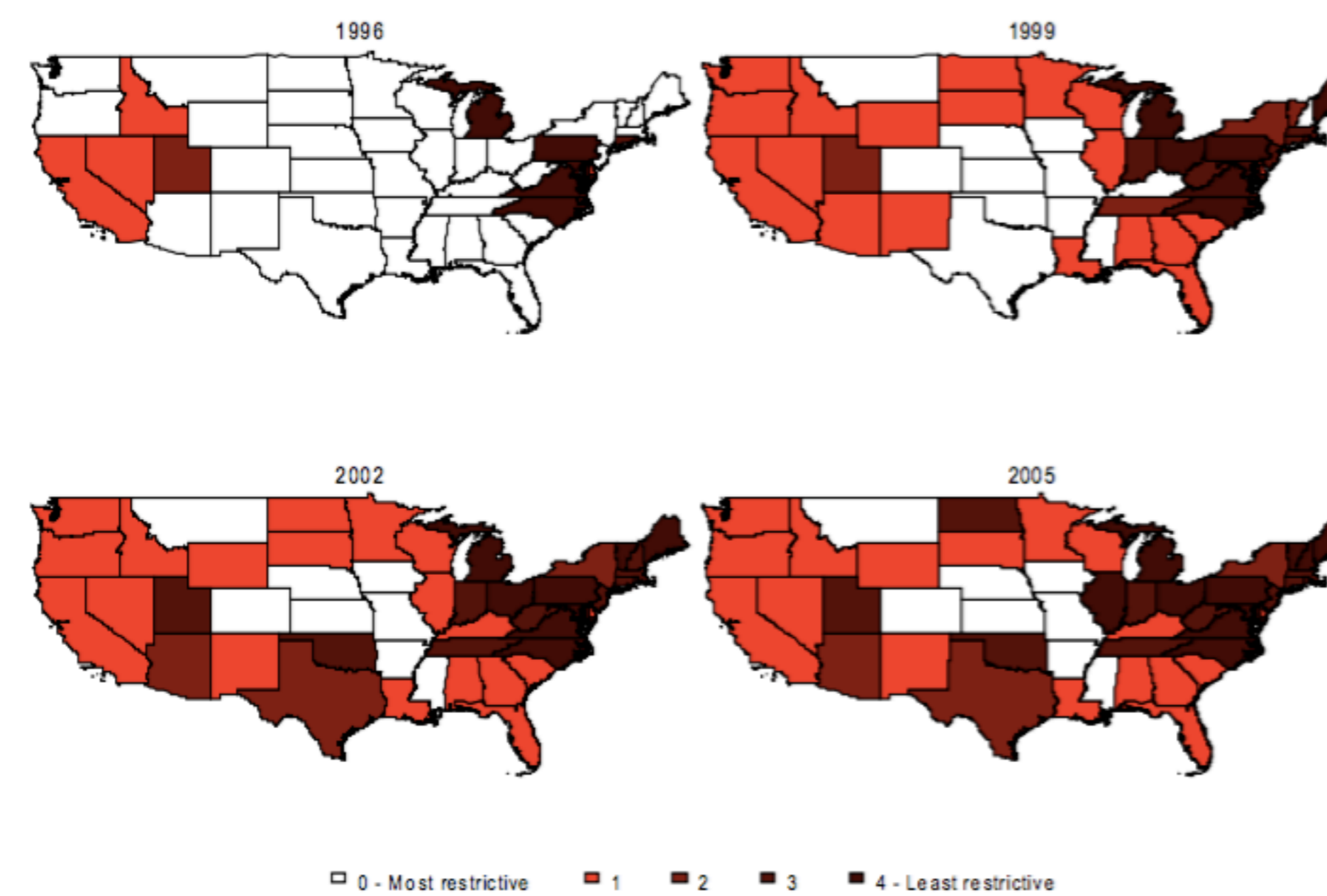
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Favara, G., & Imbs, J. (2015). Credit supply and the price of housing. *The American Economic Review*, *105*(3), 958-992.

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Empirical Strategy

- This paper employs an instrumental variable 2SLS fixed effects model that takes advantage of an exogenous credit supply shock.
- An instrumental variable approach is used to solve issues of endogeneity when looking at the relationship between credit and inequality, such as reverse causality and omitted variable bias.
- The within group estimator eliminates state fixed effects by demeaning the variables using the within transformation. Controlling for time-invariant state-specific effects eliminates another potential source of omitted variable bias.
- The identification then comes from the within group-time variation. In other words, deviations from the mean within a state over time.

Empirical Results

- For the 1st stage, the coefficients for the effects of deregulation on real estate loans, business loans, and total loans are positive and significant while the coefficient for the effect of deregulation on consumer loans is negative and significant.
- For the 2nd stage, the coefficients for the effects of real estate loans, business loans, and total loans on inequality are positive and significant while the coefficient for the effect of consumer loans on inequality is negative and significant.
- Similar findings between OLS estimates and IV 2SLS fixed effects estimates.
- All 1st stage F-tests are above 10 which would indicate a strong credit instrument.
- The results contradict the findings of Beck & Levine (2010) who find a negative relationship between the same interstate banking deregulation event and income inequality using a difference-in-differences specification.

Conclusion

- After exploring the relationship between credit and inequality, this study finds income inequality is well explained by the credit expansion induced by deregulation.
- In particular, mortgage credit has a large and positive effect, business credit has a small and positive effect, while consumer credit has a small and negative effect.
- The estimation strategy is fairly robust: instrumental variable approach solves issues of endogeneity, credit supply shocks vary across state and time, panel data utilizes the within group estimator which eliminates state fixed effects, and the results are robust to five different measures of income inequality.