

“A Quantitative Model of Banking Industry Dynamics”

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MIT – October 23, 2010

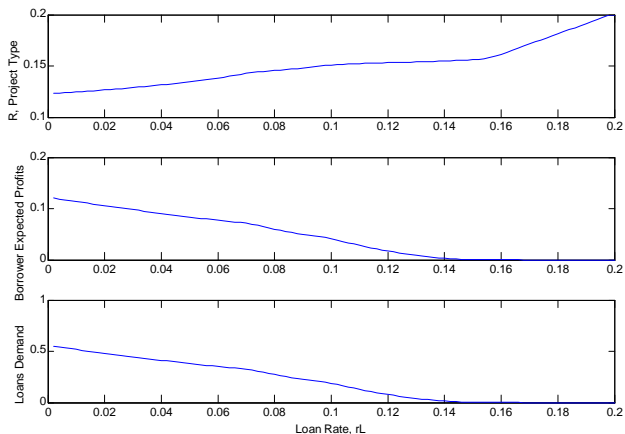
This paper

- ▶ This is a very interesting paper.
- ▶ Analyzes the link between market structure (in banking industry) and risk taking (e.g. prob. of crisis).
- ▶ Studies data to guide modeling choices (e.g. high concentration) and test the theory.
- ▶ Builds a dynamic model of the banking industry with Cournot competition.
- ▶ Performs policy experiments
 - ▶ lower competition (no regional banks)
 - ▶ subsidy to national banks (too big to fail)

(Simplified) Model

- ▶ Households provide deposits at the rate $r = r^D$.
- ▶ Given r^L , borrowers choose:
 - ▶ Borrow and produce, or take outside value, ω .
 - ▶ Risk and return of the project.

Borrower's problem and the demand of loans



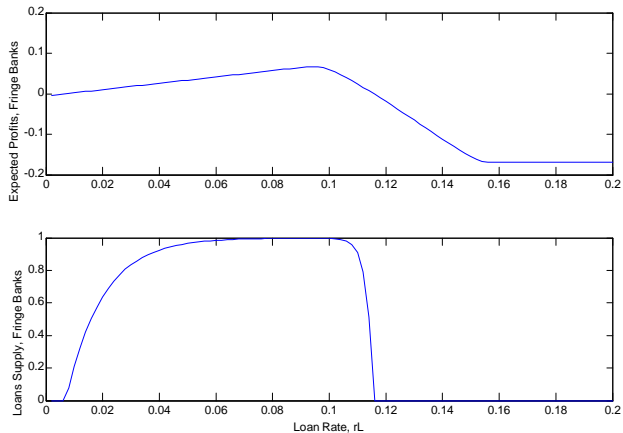
Fringe banks

- ▶ Fringe banks take r^L as given and decide to lend \bar{d} or not.
- ▶ They can exit after the realization of the shock (limited liability).
- ▶ This implies that they will enter if they will make profits in at least one state.

$$\begin{aligned}\varphi^{f*} &= p(R(r^L), z_g, s_1)(1 + r_L) \\ &\quad + (1 - p(R(r^L), z_g, s_1))(1 - \lambda) - (1 + r^D)\end{aligned}$$

- ▶ All the fringe bank with cost $\varphi^f \leq \varphi^{f*}$ will lend \bar{d} .
- ▶ The measure of potential fringe bank is M .

Fringe bank's problem



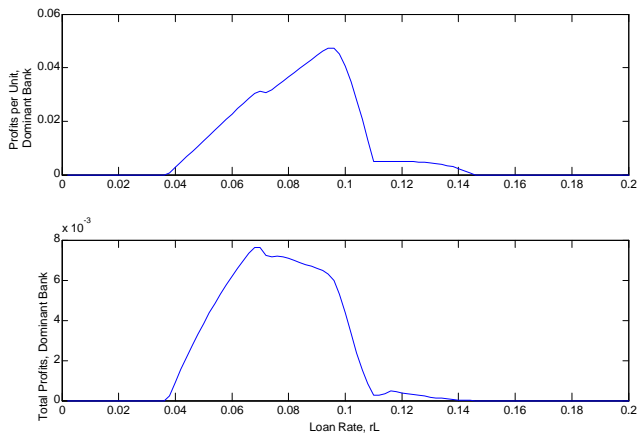
Dominant bank's problem

- ▶ The dominant bank chooses I^d to maximize expected profits, $\pi^d(r^L(I^d))I^d$, where $r^L(I^d)$ can be obtained as follows.
 - ▶ dominant bank picks I^d
 - ▶ solve for r^L such that

$$L^D(r^L) = L^{S,f}(r^L) + I^d$$

(notice this step is like competitive equilibrium)

Dominant (regional) bank's problem



“Lower competition” is similar to the simplified model

Moment	Benchmark	Lower Competition
Default Frequency (%)	1.95	2.28
Exit Rate (%)	1.29	1.22
Borrower Return (%)	13.25	13.22
GDP	0.72	0.6
Loan Supply	0.63	0.53
Taxes/GDP (%)	0.04	0.03
Loan Interest Rate (%)	6.84	8.04
Borrower Project (%)	13.57	13.59
Avg. Number Fringe Banks	7472	7497
Avg. Number Dominant Banks	2.90	1.00

Why are big banks big?

- ▶ They present evidence of concentration in the banking industry.
- ▶ Then, they construct a model with “dominant banks” (at most two in each region).
- ▶ Is concentration enough evidence for this choice?
- ▶ What types of loans do they have in mind?
- ▶ It may be hard to argue that the mortgage market is not competitive.

Why are big banks big?

- ▶ Model: only one bank can enter both regional markets and diversify regional shocks.
- ▶ Although regional banks could diversify (securitization), there is some evidence that regional banks suffer from regional shocks.
 - ▶ Bank failure rates were higher in states with the largest declines in personal income and the largest increases in unemployment (Wheelock, 2009).
 - ▶ Correlation between house prices in Missouri and Charge-offs (real state loans):
 - ▶ Bank of America: 0.33
 - ▶ Missouri Banks: 0.45
- ▶ But there is also evidence of economies of scale.
 - ▶ “Do Large Banks have Lower Costs? New Estimates of Returns to Scale for U.S. Banks” (Wheelock and Wilson, 2009).

Changes in the market structure in the US

- ▶ Before 1920, branching restrictions limit the geographical scope of banks operations.
- ▶ In the early 1920s many states relaxed branching restrictions and created a consolidation movement heading into the Great Depression.
- ▶ Legislation following the Great Depression stopped it for about 50 years.
- ▶ 1920s consolidation movement would be repeated and extended in the 1980s and 1990s.
- ▶ Banks operating national branching networks rose from 10% of the banking system's loans or deposits in 1980 to more than 70% of the system by the mid-1990s.

The market structure and the Great Depression

- ▶ Friedman and Schwartz (1963) contend that branching restrictions left the U.S. banking system especially vulnerable to banking panics.
- ▶ Grossman (1994) finds that panics were less likely to occur during the Depression in countries that had nationwide branch banking.
- ▶ Wheelock (1995) and Mitchener (2002) find that during the Depression bank failure rates were lower in states that permitted some branching.
- ▶ Carlson and Mitchener (2009) show that branching deregulation in California in the 1920s and 1930s increased the probability of survival during the Great Depression.