Regulating Banks in the Era of Shadow Banks

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Stanford GSB, Hoover and NBER

Andrew Crockett Memorial Lecture
June 30, 2019
Dramatic Change in Lending Landscape

RISE OF SHADOW BANKS

Shadow bank share in the US personal loan market
Dramatic Change in Lending Landscape

RISE OF SHADOW BANKS

Shadow bank share in the US residential mortgage market
Dramatic Change in Lending over last Decade

### Rise of Shadow Banks

<table>
<thead>
<tr>
<th>Largest Mortgage Lenders, by Originations in Q1 2018</th>
<th>In $ billions, purchase mortgages &amp; refis</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Shadow banks&quot; in red</td>
<td></td>
</tr>
<tr>
<td>Quicken Loans</td>
<td>$17.0</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>$14.5</td>
</tr>
<tr>
<td>JP Morgan Chase</td>
<td>$8.6</td>
</tr>
<tr>
<td>LoanDepot</td>
<td>$6.4</td>
</tr>
<tr>
<td>United Wholesale Mortgage</td>
<td>$6.0</td>
</tr>
<tr>
<td>Bank of America</td>
<td>$5.9</td>
</tr>
<tr>
<td>Caliber Home Loans</td>
<td>$5.4</td>
</tr>
<tr>
<td>Fairway Independent Mortgage</td>
<td>$3.8</td>
</tr>
<tr>
<td>Guaranteed Rate</td>
<td>$3.6</td>
</tr>
<tr>
<td>US Bank</td>
<td>$3.6</td>
</tr>
</tbody>
</table>
**Dramatic Change in Lending Landscape**

**RISE OF SHADOW BANKS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Market size</th>
<th>% inside banking system</th>
<th>% in banking system at risk</th>
<th>Select disruptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Loans</td>
<td>$843bn</td>
<td>81</td>
<td>31</td>
<td>Lending Club, Prosper</td>
</tr>
<tr>
<td>Small Business Loans</td>
<td>$186bn</td>
<td>95</td>
<td>100</td>
<td>On Deck, Kabbage</td>
</tr>
<tr>
<td>Leveraged Loans</td>
<td>$832bn</td>
<td>7</td>
<td>34</td>
<td>Alternative AM, BDCs</td>
</tr>
<tr>
<td>Student Loans</td>
<td>$1,222bn</td>
<td>5</td>
<td>100</td>
<td>SoFi, Earnest</td>
</tr>
<tr>
<td>Mortgage Loans</td>
<td>$1,169bn</td>
<td>58</td>
<td>100</td>
<td>Quicken, PFSI, Freedom</td>
</tr>
<tr>
<td>CRE Loans</td>
<td>$2,354bn</td>
<td>56</td>
<td>9</td>
<td>Commercial REITs</td>
</tr>
</tbody>
</table>
Dramatic Change in Lending Landscape

RISE OF SHADOW BANKS
Dramatic Change in Lending Landscape

RISE OF SHADOW BANKS (EU)
Dramatic Change in Lending Landscape

RISE OF SHADOW BANKS (CHINA)
REGULATION?
County Level Shadow Bank Share: 2008
Change in Shadow Bank Share and Regulation

*CHANGE IN SHADOW BANK SHARE AND REGULATORY PRESSURE*

![Graph 1: Change in Shadow Bank Share vs. Change in County-Level Capital Ratio (2008-2015)](image1)

![Graph 2: Change in Shadow Bank Share vs. County-Level Exposure to Mortgage Lawsuits ($B)](image2)
Technology?
Technology?
Your rate is now locked!

Property Address:
123 Main Street, Detroit, MI, 48226

Here’s what you’ve locked in:

| Interest Rate | 4.125% |
| Loan Type     | 30-Year Fixed |
| Discount Points| 0.12 (§264.56) |
| New Loan Amount| $211,650 |
| Your Rate Lock Expiration Date | 01/06/2016 |

The Steps to Get You to Closing

- Use our powerful online tools to get you through the mortgage process with ease.
- Complete your simple to do list by 11/25/2015.
Technology? Faster Processing

TIME TO SELL

Traditional Lender
Quicken Loans

Technology? Leveraging Credit Information

Refinancing Percent

- Traditional Lender
- Quicken Loans
Technology? Other Data

% DECLARED WHITE


Traditional Lender
Quicken Loans
Technology? Quality

J.D. POWER

2015 U.S. Primary Mortgage Origination Satisfaction Study℠

Mortgage Origination Customer Satisfaction Index Ranking
(Based on a 1,000-point scale)

<table>
<thead>
<tr>
<th>Company</th>
<th>Index Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quicken Loans</td>
<td>850</td>
</tr>
<tr>
<td>Fifth Third Mortgage</td>
<td>812</td>
</tr>
<tr>
<td>Bank of America</td>
<td>811</td>
</tr>
<tr>
<td>BB&amp;T (Branch Banking &amp; Trust Co.)</td>
<td>811</td>
</tr>
<tr>
<td>CitiMortgage</td>
<td>809</td>
</tr>
<tr>
<td>U.S. Bank Home Mortgage</td>
<td>798</td>
</tr>
<tr>
<td>Chase</td>
<td>795</td>
</tr>
</tbody>
</table>
Technology? Willingness to Pay

INTEREST RATES ON LOANS
INTEGRATED INTERMEDIATION
BUSINESS MODEL
Where are the loans?

**Traditional Banks**

- Sold to GSEs
- Retained

Legend:
- Not Sold/Affiliate
- GSE
- Private Securitization
- Bank
- Insurer
- Other
Bank Capitalization and Balance Sheet Retention

**Across Lenders**

**Within Lenders**
Where are the loans?

[Graph showing the distribution of loans over years]

Sold to GSEs

- Not Sold/Affiliate
- GSE
- Private Securitization
- Bank
- Insurer
- Other
Penetration of Shadow Banks Not Uniform

Traditional Bank Market Share

Market Share

- Conforming
- Jumbo
Market Segmentation and Financing

**Tradiitional Bank Market Share**

- Easy to securitize
- Hard to securitize

**Balance Sheet Financing**

- Easy to securitize
- Hard to securitize
Equilibrium
Banks Lose Market Share

Funding Costs?

Bank Market Share

Bank Premium over Non-Fintech

Not in the data
Banks Lose Market Share

Regulation?
FinTech Gain Market Share

Funding Costs?

![Graph 1: Fintech Market Share](image1)

![Graph 2: Fintech Premium over Non-Fintech](image2)

Not in the data
FinTech Gain Market Share

Quality?

**FinTech Market Share**

- **Market Share %**
  - 0.02
  - 0.04
  - 0.06
  - 0.08
  - 0.1

**FinTech Premium over Non-Fintech**

- **Rate %**
  - -1
  - -0.5
  - 0
  - 0.5
  - 1

**Fintech Quality Relative to Bank**

- -0.8
- -0.6
- -0.4
- -0.2
- 0
- 0.2
COUNTERFACTUALS
# Counterfactuals: Capital Ratios

**Capital Requirements 6% → 7.5%**

<table>
<thead>
<tr>
<th>Lender</th>
<th>Loan Type</th>
<th>Financing Source</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
<td>-$13b</td>
</tr>
<tr>
<td>Bank</td>
<td>Jumbo</td>
<td>Portfolio</td>
<td>-$38b</td>
</tr>
<tr>
<td>Bank</td>
<td>Conforming</td>
<td>Portfolio</td>
<td>-$204b</td>
</tr>
<tr>
<td>Bank</td>
<td>Conforming</td>
<td>GSE</td>
<td>+$215b</td>
</tr>
<tr>
<td>Shadow Bank</td>
<td>Conforming</td>
<td>GSE</td>
<td>+$14b</td>
</tr>
</tbody>
</table>

**Lending Volumes ($B)**

- Shadow Bank GSE Conforming
- Bank GSE Conforming
- Bank Balance Sheet Conforming
- Bank Balance Sheet Jumbo
Counterfactuals: Capital Ratios

LENDING VOLUME CHANGES ($B)

Without shadow banks
Counterfactuals: Capital Ratios

LENDING VOLUME CHANGES ($B)

With shadow banks

Shadow banks “dampen” the response

Without shadow banks
### Counterfactuals: QE

#### GSE Financing Cost -10bps

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<tr>
<th>Lender</th>
<th>Loan Type</th>
<th>Financing Source</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-</td>
<td>-</td>
<td>+$61b</td>
</tr>
<tr>
<td>Bank</td>
<td>Jumbo</td>
<td>Balance Sheet</td>
<td>-$4b</td>
</tr>
<tr>
<td>Bank</td>
<td>Conforming</td>
<td>Balance Sheet</td>
<td>-$357b</td>
</tr>
<tr>
<td>Bank</td>
<td>Conforming</td>
<td>GSE</td>
<td>+$389b</td>
</tr>
<tr>
<td>Shadow Bank</td>
<td>Conforming</td>
<td>GSE</td>
<td>+$33b</td>
</tr>
</tbody>
</table>

#### Lending Volumes ($B)

![Bar chart showing lending volumes for different scenarios and loan types.](chart.png)
Counterfactuals: QE

LENDING VOLUME CHANGES ($B)

Without shadow banks
Counterfactuals: QE

LENDING VOLUME CHANGES ($B)

-100bps -25bps -10bps Baseline +10bps +25bps +100bps

With shadow banks
Shadow banks “amplify” the response
Without shadow banks
IMPLICATIONS
**Interlinkages**

**Typical Shadow Bank Balance Sheet**

<table>
<thead>
<tr>
<th>A</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash =10</td>
<td>ST Debt from Banks = 75</td>
</tr>
<tr>
<td>Mortgages for Sale =70</td>
<td>Equity = 25</td>
</tr>
<tr>
<td>MSR =15</td>
<td></td>
</tr>
<tr>
<td>IT =5</td>
<td></td>
</tr>
</tbody>
</table>