Connecting Research and Practice

Dr. John Sedunov
Villanova University
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Technology and Banking

• The development of new technology is important for banks:
  – ATMs
  – Online Banking
  – Mobile Banking

• Numerous costs and benefits associated with new banking technology

• Much of the technology question can be traced to soft and hard information (Williamson, 1988; Berger & Udell, 2002; Stein, 2002) and Relationship Banking (Boot, 2000; Petersen & Rajan, 2002; Berger, et al., 2005)
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• My own work:
  – Attempts to understand how improving bank technology may (indirectly?) impact the availability of credit to soft-information borrowers
  – Separate out the effects of front- and back-office technology
  – Understand the determinants of front-office technology
# Trends in Banking Technology

<table>
<thead>
<tr>
<th>Year</th>
<th>Small Business Loan Ratio</th>
<th>Back-Office Technology</th>
<th>Website</th>
<th>Front-Office Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>0.0860</td>
<td>0.00038</td>
<td>0.80</td>
<td>N/A</td>
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<tr>
<td>2002</td>
<td>0.0824</td>
<td>0.00036</td>
<td>0.80</td>
<td>N/A</td>
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<tr>
<td>2003</td>
<td>0.0801</td>
<td>0.00035</td>
<td>0.83</td>
<td>0.55</td>
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<tr>
<td>2004</td>
<td>0.0777</td>
<td>0.00034</td>
<td>0.84</td>
<td>0.63</td>
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<tr>
<td>2005</td>
<td>0.0763</td>
<td>0.00033</td>
<td>0.84</td>
<td>0.71</td>
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<tr>
<td>2006</td>
<td>0.0750</td>
<td>0.00032</td>
<td>0.84</td>
<td>0.78</td>
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<tr>
<td>2007</td>
<td>0.0743</td>
<td>0.00030</td>
<td>0.86</td>
<td>0.83</td>
</tr>
<tr>
<td>2008</td>
<td>0.0729</td>
<td>0.00029</td>
<td>0.90</td>
<td>0.86</td>
</tr>
<tr>
<td>Total</td>
<td>0.1227</td>
<td>0.00056</td>
<td>0.82</td>
<td>0.72</td>
</tr>
<tr>
<td>2008-2001</td>
<td>0.0131***</td>
<td>0.00009***</td>
<td>0.10***</td>
<td>0.31***</td>
</tr>
<tr>
<td>t-statistic</td>
<td>13.39</td>
<td>46.25</td>
<td>17.42</td>
<td>44.23</td>
</tr>
</tbody>
</table>
Technology and Banking

[Graphs showing trends in Back-Office Tech. and Small Bus. Lending, and Interactive Sites and Small Bus. Lending over the years 2000 to 2008.]
Technology and Banking

Main Findings:

• Better technology is associated with less lending to small businesses

• Determinants of Front-Office Technology:
  – Size
  – Competition
  – Lending

• Some results are stronger for smaller banks
Online Banking

• DeYoung (2005) – First bank websites, now over 90% of banks have a transactional website

• Hernandez-Murillo, Llobet, and Fuentes (2010): website adoption is:
  – Positively related to county-level demographics and market concentration;
  – Negatively related to branching intensity, capital/assets, nonperforming loans
Online Banking

• Goddard, McKillop, and Wilson (2008, 2009): Credit unions that do not provide transactional websites are more likely to fail or be acquired

• DeYoung (2005): Internet-only banks have scale economies, and can grow fast
  – Internet banks are somewhat small, and may be operating below optimal scale
  – Profitability gaps between “brick-and-mortar” shrink as internet banks grow
Online Banking

• Hernando and Nieto (2007) find that online banking was associated with lower costs and higher profitability in Spanish banks
  – The internet is a complement rather than a substitute for physical bank branches
  – Claim backed up by Cicirette, Hasan, and Zazzara (2009) for Italian banks

• Bauer and Hein (2006) find younger customers or customers with previous remote banking experience are more likely to use online banking
Other Research Developments

• Degryse, Laeven, and Ongena (2009): Geographical reach of banks are smaller when rival banks have better technology, are large, and are hierarchically organized

• DeYoung, et al. (2011): Increases in borrower-lender distance accelerated rapidly in the mid-1990’s
  – Due to credit scoring technology at lending banks

• Berger and Black (2011): Large banks do not have equal advantages in hard lending technologies
  – Advantages do not increase monotonically in firm size
  – Small banks have comparative advantage in relationship lending to the largest firms

• He (2014): Mobile Banking Study –
  – Rivalry adoptions spur technological innovation
  – Increases with market concentration
• How can we better connect research and practice?

• How can we better connect students and local firms?

• A few ideas –
  • Small, focused roundtables
  • Guest speakers
  • Local case studies
An Analysis of Branch Profitability
Background

**Current Industry**
- Technological advances
- Future of brick and mortar banking?

**Strategic Goals**
- Maximize value of branches
- Focus on customer relationships
Overview of Analysis

- **Branch Activity**
  - Neighborhood Loan Opportunities
  - Accounts Opening/Closing
- **Branch Expenditures**
  - Own vs. Lease
  - Square Footage
- **Neighborhoods**
  - Areas of Economic Growth

**Where to consolidate and where to invest?**
Key Drivers

- Loan opportunities
- Deposit inflows
- Leased space
- Less square footage
- Growing neighborhood

Branch Performance

- Loan opportunities
- Deposit inflows
- Leased space
- Less square footage
- Growing neighborhood

Background

Overview of Analysis

Key Drivers

Results of Analysis

Conclusion
**Take Aways**

- Enhance franchise through select consolidations and investments in branch network
- Focus on service and perception
  - Retain customer accounts
  - Market the new brand
- Build on neighborhood relationships
  - ByLine’s competitive advantage
Questions?
• How can we better connect research and practice?
• How can we better connect students and local firms?

DePaul Center for Financial Services
cfs@depaul.edu