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Sustainable Financing of Sustainable Agriculture

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Community Banks & Agricultural Lending

- Community Banks under $50 billion in total assets accounted for **85 percent** of overall farm loans (FDIC, 2019).

- Community Banks contributed to an estimated **40 percent** of total farm debt held by all banks (ERS, 2019).

- Community Banks encompassed **73 percent** of “agricultural banks” operating in the United States (ICBA/Federal Reserve, 2019).
Some Promise for Sustainable Agriculture

- Popularity: Between 2012 and 2017, the number of sustainable farming operations increased by 40 percent (USDA, 2017).

- Productivity: Organic farming required 2.5 times more labor but yielded 10 times more in profit (Aquinas College, 2015).

- Profitability: Organic produce is 22 to 35 percent more profitable than conventional produce (Washington State University, 2015).
A Tale of Two Questions

- **Primary question**: what is the impact of adverse weather patterns (resulting from climate change) on community banks’ Ag lending?

- **Secondary question**: what is the impact of climate change mitigation efforts i.e. sustainable agriculture on community banks’ Ag lending?

- These questions are crucial to community banks as they continue to serve the Agricultural Sector as it adapts to a changing climate.
Research Design

- \( AgLending_{it} = \beta_1 DisDecs_{st} + \beta_2 AgRGrants_{st} + \gamma BankSF_{ist} + \mu MarketSF_{ist} + \delta FixedEffects + \epsilon \)

- \( AgLending_{it} \): $ Community Bank Agricultural Loans
- \( \beta_1 DisDecs_{st} \): # Disaster Declarations per State
- \( \beta_2 AgRGrants_{st} \): $ Sustainable Agricultural Research Grants per State
- \( \gamma BankSF_{ist} \): Bank-Specific Factors - Age, Risk (Tier 1 Capital), Net Loans & Leases, Securities, Peer Group, Locations, and Efficiency
- \( \mu MarketSF_{ist} \): Market-Specific Factors - Competition (HHI Index), GDP, Population Density, Unemployment Rate, and Temperature
## Research Results

<table>
<thead>
<tr>
<th></th>
<th>Disaster</th>
<th>Short-Term (1 Quarter)</th>
<th>Mid-Term (2 Quarters)</th>
<th>Long-Term (4 Quarters)</th>
<th>Full Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AgLending</strong></td>
<td>0.059</td>
<td>0.085</td>
<td>0.077</td>
<td>0.080</td>
<td>0.063</td>
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<tr>
<td></td>
<td>(0.009)</td>
<td>(0.012)</td>
<td>(0.022)</td>
<td>(0.020)</td>
<td>(0.021)</td>
</tr>
<tr>
<td><strong>DisDecs</strong></td>
<td>0.045</td>
<td>0.051</td>
<td>0.059</td>
<td>0.056</td>
<td>0.049</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.008)</td>
<td>(0.009)</td>
<td>(0.009)</td>
<td>(0.003)</td>
</tr>
<tr>
<td><strong>AgRGrants</strong></td>
<td>0.087</td>
<td>0.092</td>
<td>0.095</td>
<td>0.103</td>
<td>0.0839</td>
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<tr>
<td></td>
<td>(0.012)</td>
<td>(0.018)</td>
<td>(0.021)</td>
<td>(0.011)</td>
<td>(0.048)</td>
</tr>
<tr>
<td><strong>PeerGroup</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td><strong>State &amp; Time FE</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>21,840</td>
<td>21,840</td>
<td>21,840</td>
<td>21,840</td>
<td>30,773</td>
</tr>
<tr>
<td><strong>Within R-Squared</strong></td>
<td>0.652</td>
<td>0.599</td>
<td>0.710</td>
<td>0.634</td>
<td>0.429</td>
</tr>
</tbody>
</table>
Ag Lending 4 Quarters Post-Disaster in 2018

*Values in $ millions.
Sustainability Efforts 4 Quarters Post-Disaster in 2018

*Values in $ millions.
Importance to the Midwest

*Values in $ millions.
A Synergetic Relationship

- Community banks are consistent in their Ag lending. Their financial support increases to serve the Agriculture-related needs of their borrowers during adverse weather patterns.

- Sustainability research provides additional opportunities for banks to partner with farmers as they develop and implement new strategies that are good for their farms and great for their bottom lines!
Neither snow nor rain nor heat nor gloom of night stays these community bankers from writing their appointed Agricultural loans!

Thank You!