



## Ph.D. Dissertation Defense

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<b>Degree:</b>	Doctor of Philosophy
<b>School/Department.:</b>	School of Business / Business Administration
<b>Date:</b>	Tuesday, May 2, 2023
<b>Time:</b>	5:00 – 6:30 pm
<b>Location:</b>	Babbio Center 641
<b>Title:</b>	Three essays on Financial Intermediation and Climate Finance
<b>Chairperson:</b>	Dr. Anand Goel, Finance, School of Business
<b>Committee Members:</b>	Dr. Suman Banerjee, Finance, School of Business Dr. Stefano Bonini, Finance, School of Business Dr. Ye Wang, Finance, School of Business Dr. Feng Mai, Information Systems, School of Business

### Abstract

I propose three essays that examine how consumer welfare is affected by economic shocks, efficiency-based carbon pricing, and financial technology and how firms react to carbon pricing.

The first essay studies individual borrowing activity through small-dollar loans from non-depository consumer lenders. We exploit the COVID-19 economic shock and the subsequent government response to determine the factors affecting the demand for small-dollar loans using foot traffic to lender locations. We find that the number of visitors to lenders drops significantly following shelter-in-place orders and relief programs. The results show that the lockdowns suppressed financially underserved consumers' access to credit. The supplemental paycheck program helped reduce consumers' need for credit. We find differential impacts of government relief programs in metropolitan areas and bank deserts, and on bank borrowers and borrowers from non-depository lenders.

The second essay proposes an efficiency-based measure to assess firms' environmental impacts. We model the firm's objective as a function of its environmental ethics and production output. The cost of emission increases with production and is weighted by firms' environmental ethics, leading firms to endogenize the optimal emission-output level. Firms with higher environmental ethics have higher marginal output and emit less. We show that replacing uniform carbon pricing with efficiency-based pricing in cap-and-trade increases social welfare. Using emission data from 1995 to 2020, we provide empirical evidence to support the theory.

The third essay studies the impact of mobile banking on small business lending after banks close branches. The decline in small business lending in a county after a branch closure is 0.426 million less for banks with mobile apps. The effect is more pronounced in high-income census tracts and for high-rating apps, suggesting that mobile banking is a better substitute for branches for high-income customers and for banks with better technology. We do not find a significant impact of having apps on small business lending when banks increase the number of branches. However, the effect of mobile apps is stronger when closed branches have operated longer. Our results imply that bank branches are still important in providing credit to the local communities, and that mobile banking helps preserve the existing customer-bank relationship but cannot reduce information asymmetry.