

# Impact of Economic Shocks on Financial Access: Evidence from Covid-19 Pandemic

Anand Goel<sup>1</sup> , Shuang Wu<sup>1</sup>

<sup>1</sup>School of Business  
Stevens Institute of Technology

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# Background

## Financial Access is Important for Individuals and Society.

- Financial services improve social welfare by allowing people to smooth consumption and share risks. Households are more willing to engage in productive but risky economic activities if they can access credit and saving products from banks.
- Access to financial credit promotes economic growth and stability by making households and business resilient to economic shocks.

## However, the Market for Credit is Segmented.

- Many households and individuals are unable to tap financial services from traditional financial institutions such as banks or credit unions and resort to non-depository lenders such as payday lenders.
- Banks maybe unwilling to lend to some customers if lending to these consumers is not economically feasible or if there are costly frictions in the lending process.
- Consumer lenders complement mainstream banks by providing alternative loan products to underserved customers or in situations when bank credit is not available.

# What is Consumer Lending?

## Faster and More Efficient: Alternative Lenders vs. Banks

	Traditional Banks	Alternative Lending Platforms
Types and Purposes of Loans	<ul style="list-style-type: none"><li>• Consumer/Personal, typically unsecured loans used for debt consolidation, home improvement, and major purchases</li><li>• Small Business, typically below \$500,000</li><li>• Student loans via government programs</li></ul>	<ul style="list-style-type: none"><li>• Consumer/Personal, typically unsecured loans used for debt consolidation, home improvement, and major purchases</li><li>• Small Business, typically below \$500,000</li><li>• Student loan refinancing</li></ul>
Source of Funding for Loans	<ul style="list-style-type: none"><li>• Bank deposits</li></ul>	<ul style="list-style-type: none"><li>• Capital from investors, either individuals or institutions</li></ul>
Source of Data Provided for Underwriting and Verification	<ul style="list-style-type: none"><li>• Applicants provide paper copies of financial records, requiring manual input for review.</li></ul>	<ul style="list-style-type: none"><li>• Applicants provide direct access to online financial management software applications such as Mint.com, QuickBooks, or Intuit.</li><li>• Websites and social media postings are used to verify business viability.</li></ul>
Time to Process Loan	<ul style="list-style-type: none"><li>• 3–6 months</li></ul>	<ul style="list-style-type: none"><li>• 7 days</li></ul>
Operating Expenses for Underwriting Process	<ul style="list-style-type: none"><li>• 5%–7%</li></ul>	<ul style="list-style-type: none"><li>• 2%</li></ul>
Rates Paid for Capital	<ul style="list-style-type: none"><li>• Bank deposits earn 0%–1%</li></ul>	<ul style="list-style-type: none"><li>• 8% average historic return on portfolio of alternative loans<sup>1</sup></li></ul>

source: EVERCORE

- In 2017, there were 14,348 payday loan storefronts in the U.S., about the same as the number of Starbucks locations.<sup>1</sup>
- The welfare effect of access to credit from consumer lenders is **mixed** and depends on the reason that banks do not extend credit to the consumers.

<sup>1</sup>“Fast Cash and Payday Loans” by Jeannette N. Bennett

## Research Questions

- ▶ What economic factors drive borrowers to borrow from consumer lenders?
  - ▶ What is the impact of economic shocks and of the government's relief programs on financially underserved consumers.
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- Understanding the determinants of the demand for credit from consumer lenders sheds light on households' financing behaviors.
  - Understanding the impact of economic shocks and of government's response in the form of relief programs on the financially underserved consumers enables more efficient policy design and government interventions.

- The shelter-in-place order and the relief programs **reduce** demand for credit from consumer lenders.
  - ▶ supplemental paychecks (\$600/week) and PEUC have a complementary effect on demand for credit.
  - ▶ health concern outweighs the demand for credit → reduction in social welfare
- Economic shocks affect consumers in financially underserved areas and metropolitan areas differently.
  - ▶ ↑ unemployment rate → demand for credit increases in underserved areas relative to metropolitan areas.
  - ▶ ↑ internet access rate → demand for credit decreases in metropolitan areas relative to underserved areas.
- Economic shocks affect visits to consumer lenders and banks differently.
  - ▶ ↑ unemployment rate → visits to consumer lenders increases relative to visits to banks
  - ▶ ↑ PUA and PEUC coverage rates → greater reduction in visits to banks than to consumer lenders
- Consumer credit demand is positively related to the county's consumption level.

- SafeGraph provides aggregated and anonymized data obtained from more than 45 million mobile devices in the United States.
- We use “**Core Places**” dataset to identify credit lenders as POIs that are categorized as non-depository credit intermediaries and extract data on the visits to these consumer lenders from January 2019 to December 2020 from “**Weekly Pattern**” dataset.
- We use foot traffic data as a **measure of demand for credit from consumer lenders**.
  - ▶ Some literature already used foot traffic data to represent demand (Walmsket et al., 2020; Baker et al., 2020).
  - ▶ Advantage: representative, high frequency—→precise detection of the relationship between economic shock and demand for credit.
  - ▶ Limitations: not all visits are documented and we don't know the purpose of the trip.

	N	Mean	Std. Dev
pre-pandemic	298,603	7.518	65.416
pandemic	221,540	6.160	19.958
full sample	520,143	6.94	31.42

- Economic Data

- ▶ **United States Department of Labor:** state-level initial claims and continued claims for state unemployment insurance and Coronavirus related relief programs, including Pandemic Unemployment Assistance (PUA) and Pandemic Emergency Unemployment Compensation (PEUC).
- ▶ **Facteus:** transaction date, cardholder ZIP Code, number of cards, number of transactions, and total spending.

- Social-economic Data

- ▶ **Consumer Financial Protection Bureau:** county-level rural and underserved areas in 2020.
- ▶ **Census Bureau:** county-level car ownership, poverty level, internet access rate, renters-population percentage, and health insurance coverage in 2019.

- Epidemiological Data

- ▶ **New York Times:** new daily coronavirus cases and deaths.
- ▶ **Keystone Strategy:** the schedules for state-level shelter-in-place order.

- **Sample Size**

- ▶ # cellphones tracked by SafeGraph over our sample period.

- **Access to Online Financial Products**

- ▶ gg\_index: State-level Google Trends Index for keyword "Cash Loan"
- ▶ County-level internet access:  $\frac{\text{\#households in county } i \text{ have internet access}}{\text{\#households in county } i}$

- ▶ **Credit Supply**

- Supply Rate:  $\frac{\text{\#open consumer lenders in CBG } j \text{ in week } t}{\text{\#consumer lenders in CBG } j \text{ in week } t}$
- High\_Div: a dummy variable that takes value one when consumer lenders' county-level HHI is smaller than the average.

# Impacts of SIP Order & Relief Programs on Demand for Consumer Lending

<i>Dependent variable: ln(#visitors to consumer lenders)</i>		
	(1)	(2)
<i>SIP_dum</i>	-0.008*** (0.002)	-0.007*** (0.002)
<i>ln(#case + 1)</i>	-0.105*** (0.008)	-0.083*** (0.009)
<i>ln(#death + 1)</i>	-0.015*** (0.005)	-0.027*** (0.006)
<i>insured.rate</i>	-0.014*** (0.001)	-0.016*** (0.001)
<i>unemployment.rate</i>	-0.041*** (0.003)	-0.048*** (0.003)
<i>PUA.CC.rate</i>	0.002 (0.001)	0.003** (0.001)
<i>PEUC.CC.rate</i>	-0.011*** (0.002)	-0.019*** (0.004)
<i>ln(#devices_residing)</i>	0.089*** (0.003)	0.084*** (0.003)
<i>gg_index</i>		-0.001 (0.002)
<i>supply_rate</i>		0.022*** (0.001)
<i>SIP_dum × internet_access</i>		-0.005*** (0.001)
Week Fixed Effect	Yes	Yes
Location Fixed Effect	Yes	Yes
Observations	398,919	282,260
Adjusted R <sup>2</sup>	0.749	0.773

# Comparing Borrowing Patterns Pre-Pandemic and During-Pandemic

	Dependent variable: $\ln(\#\text{visitors to consumer lenders})$		
	Pre-pandemic (before 01/21/20)	During pandemic (after 01/21/20)	
	(1)	(2)	(3)
<i>SDI</i>	0.004** (0.002)	-0.017*** (0.001)	
<i>SIP_dum</i>			-0.005** (0.002)
$\ln(\#\text{case} + 1)$			-0.093*** (0.008)
$\ln(\#\text{death} + 1)$			-0.026*** (0.005)
<i>insured.rate</i>	-0.101*** (0.015)	0.019*** (0.005)	0.007 (0.005)
<i>unemployment.rate</i>	-0.161*** (0.023)	-0.027*** (0.009)	-0.035*** (0.009)
$\ln(\#\text{device\_residing})$	0.047*** (0.004)	0.096*** (0.003)	0.088*** (0.003)
<i>gg_index</i>	-0.001 (0.002)	-0.001 (0.001)	-0.003* (0.001)
<i>supply_rate</i>	0.040*** (0.001)	0.044*** (0.001)	0.044*** (0.001)
<i>pandemic</i>		-0.030*** (0.006)	-0.011* (0.007)
<i>PUA.CC.rate</i>		0.0002 (0.001)	0.002 (0.001)
<i>PEUC.CC.rate</i>		-0.007** (0.003)	-0.010*** (0.003)
<i>pandemic × insured.rate</i>		-0.022*** (0.003)	-0.014*** (0.003)
<i>pandemic × unemployment.rate</i>		-0.022*** (0.006)	-0.004 (0.006)
Week Fixed Effect	Yes	Yes	Yes
Location Fixed Effect	Yes	Yes	Yes
Observations	227,488	351,225	351,322
Adjusted R <sup>2</sup>	0.809	0.771	0.771

- The puzzling negative relationship between the unemployment rate and foot traffic to consumer lenders has existed even before the pandemic.
- Unemployment benefits lead to a greater reduction in the demand for credit during the pandemic than before the pandemic.
- The results are robust to different measures of activity restrictions as shown in column 3.

# Two Experiments

Dependent variable:  $\ln(\#\text{visitors to consumer lenders})$

	dum=SIP (1)	dum=FPUC (2)
<i>SIP_dum</i>	-0.010*** (0.002)	-0.008*** (0.002)
$\ln(\#\text{case} + 1)$	-0.095*** (0.008)	-0.093*** (0.008)
$\ln(\#\text{death} + 1)$	-0.025*** (0.005)	-0.028*** (0.005)
<i>insured.rate</i>	-0.008*** (0.002)	-0.008** (0.003)
<i>unemployment.rate</i>	-0.049*** (0.003)	-0.071*** (0.007)
<i>PUA.CC.rate</i>	0.001 (0.001)	0.004 (0.003)
<i>PEUC.CC.rate</i>	-0.009*** (0.003)	0.003 (0.005)
<i>dum</i> × <i>insured.rate</i>	-0.003*** (0.001)	-0.003* (0.002)
<i>dum</i> × <i>unemployment.rate</i>	0.003** (0.001)	0.014*** (0.003)
<i>dum</i> × <i>PUA.CC.rate</i>	0.003*** (0.001)	-0.002 (0.001)
<i>dum</i> × <i>PEUC.CC.rate</i>	0.004 (0.004)	-0.011*** (0.003)
$\ln(\#\text{device\_residing})$	0.088*** (0.003)	0.088*** (0.003)
<i>gg_index</i>	-0.002 (0.001)	-0.002 (0.001)
<i>supply_rate</i>	0.044*** (0.001)	0.044*** (0.001)
Week Fixed Effect	Yes	Yes
Location Fixed Effect	Yes	Yes
Observations	351,322	351,322
Adjusted R <sup>2</sup>	0.771	0.771

- The SIP order suppresses customers' financial access: the reduction in foot traffic is less in areas with high unemployment rate and PUA continued claim rate.
- Complementary effect: the effect of PEUC is pronounced in decreasing foot traffic to consumer lenders when people receive the extra \$600/week.

# Differential Impacts in Underserved Areas and in Metropolitan Areas

	<i>Dependent variable: ln(#visitors to consumer lenders)</i>	
	area= underserved areas (1)	area= metropolitan areas (2)
<i>SIP_dum</i>	-0.005** (0.002)	-0.006*** (0.002)
<i>ln(#case + 1)</i>	-0.095*** (0.010)	-0.095*** (0.010)
<i>ln(#death + 1)</i>	-0.013** (0.006)	-0.010 (0.006)
<i>ln(#device_residing)</i>	0.082*** (0.003)	0.082*** (0.003)
<i>supply_rate</i>	0.046*** (0.001)	0.046*** (0.001)
<i>insured_rate</i>	-0.016*** (0.002)	-0.016*** (0.002)
<i>unemployment_rate</i>	-0.039*** (0.004)	-0.041*** (0.003)
<i>PUA_CC_rate</i>	-0.002 (0.002)	0.001 (0.002)
<i>PEUC_CC_rate</i>	-0.015*** (0.002)	-0.015*** (0.002)
<i>area × SIP_dum</i>	0.005 (0.004)	-0.002 (0.002)
<i>area × insured_rate</i>	0.007** (0.003)	-0.005** (0.002)
<i>area × unemployment_rate</i>	0.013** (0.005)	-0.008*** (0.003)
<i>area × PUA_CC_rate</i>	-0.015** (0.006)	0.002 (0.003)
<i>area × PEUC_CC_rate</i>	-0.005 (0.004)	0.004 (0.003)
<i>SIP_dum × internet_access</i>	-0.005*** (0.001)	-0.005*** (0.001)
<i>area × SIP_dum × internet_access</i>	0.005*** (0.001)	-0.004*** (0.001)
Week Fixed Effect	Yes	Yes
Location Fixed Effect	Yes	Yes
Observations	319,955	319,955
Adjusted R <sup>2</sup>	0.751	0.751

- Traditional unemployment program may not effectively reduce the demand for consumer credit in underserved areas, but it alleviates the financial stress of those who live in metropolitan areas.
- The demand for credit in underserved areas is more sensitive to newly funded relief programs.

- Other factors that may impact foot traffic measure:
  - ▶ credit supply
  - ▶ the consumption level
  - ▶ general change in people's willingness to travel
  - ▶ travel distance to consumer lenders
  - ▶ demand for credit from banks
- Test:
  - ▶ We compare the geographically diversified consumer lenders' and less diversified consumer lenders' reactions to economic shock.
  - ▶ for the second and third concerns, we include proxies for potential factors as control variables.
  - ▶ for the last two concerns, we replace the foot traffic to consumer lenders with the ratio of visits to local consumer lenders to neighbor consumer lenders, and the ratio of visits to consumer lenders to visits to banks, respectively.

- **Demand for credit is sensitive to economic shock and government relief programs.**
  - ▶ 1% ↑ in the unemployment rate during the SIP order → 0.3%↑ in demand for credit
  - ▶ 1% ↑ in the traditional unemployment program (insured rate) → 1.59%↓ in demand for credit
  - ▶ 1% ↑ in the Covid-19 relief program (PEUC) → 1.88%↓ in demand for credit
- **Impacts of government order and responses differ between underserved areas and metropolitan areas.**
  - ▶ The high insured unemployment rate and unemployment rate reduce more foot traffic in metropolitan areas than in underserved areas.
  - ▶ The effect of relief program is larger during SIP in underserved areas than in metropolitan areas.
  - ▶ Having great internet access during SIP reduces more foot traffic in metropolitan areas than in underserved areas.
- **Low-income households in affluent areas need more credit than low-income peer in other areas.**
- **Borrowers of consumer lenders are financially constrained and assign a greater marginal benefit to financing than bank customers.**

- The government interventions (SIP and relief programs) trade off public health and economic outcomes. SIP decreases mortality rates but hurts access to credit for financially underserved consumers. Relief programs relieve households' financial stress.
- The differential impacts in underserved areas and metropolitan areas indicate that government interventions and the policy design should be tailored towards different specific populations based on their access to credit.

Thank You!  
Questions and Comments are welcome

# Impact of Credit Supply

<i>Dependent variable: ln(#visitors to consumer lenders)</i>	
	(1)
<i>SIP_dum</i>	-0.013*** (0.002)
<i>ln(#case + 1)</i>	-0.083*** (0.011)
<i>ln(#death + 1)</i>	-0.044*** (0.008)
<i>insured.rate</i>	-0.015*** (0.001)
<i>unemployment.rate</i>	-0.040*** (0.004)
<i>PUA.CC.rate</i>	0.003** (0.001)
<i>PEUC.CC.rate</i>	-0.019*** (0.004)
<i>ln(#device.residing)</i>	0.089*** (0.003)
<i>gg_index</i>	0.0003 (0.002)
<i>high_div</i>	-0.368 (0.231)
<i>high_div × SIP_dum</i>	0.015*** (0.002)
<i>high_div × case</i>	-0.003 (0.010)
<i>high_div × death</i>	0.041*** (0.010)
<i>high_div × unemployment.rate</i>	-0.011*** (0.004)
<i>SIP_dum × internet_access</i>	-0.004*** (0.001)
Week Fixed Effect	Yes
Location Fixed Effect	Yes
Observations	282,260
Adjusted R <sup>2</sup>	0.772

- The results are not solely driven by  $\Delta supply \rightarrow \beta$ 's on interaction terms are of the opposite signs as the signs of corresponding uninteracted variables.

# Impacts of Consumption Level and Visits to Other Brands

	Dependent variable: $\ln(\#\text{visitors to consumer lenders})$			
	(1)	(2)	(3)	(4)
$\ln(\$tot\_spending)$	0.164*** (0.008)	0.155*** (0.008)		
$\ln(\$spending / order)$	-0.031*** (0.002)	-0.029*** (0.002)		
<i>SIP_dum</i>		-0.009*** (0.002)		-0.011*** (0.001)
$\ln(\#\text{device\_residing})$	0.110*** (0.003)	0.107*** (0.003)		
<i>SIP_dum</i> × $\ln(\$tot\_spending)$		0.005*** (0.001)		
<i>SIP_dum</i> × $\ln(\$spending / order)$		-0.012*** (0.001)		
<i>Walmart</i>			0.183*** (0.001)	0.183*** (0.001)
<i>Dollar.General</i>			0.064*** (0.001)	0.064*** (0.001)
<i>McDonald.s</i>			0.093*** (0.001)	0.093*** (0.001)
<i>SIP_dum</i> × <i>Walmart</i>				-0.001 (0.001)
<i>SIP_dum</i> × <i>Dollar.General</i>				0.003*** (0.001)
<i>SIP_dum</i> × <i>McDonald.s</i>				-0.00003 (0.001)
Week Fixed Effect	Yes	Yes	Yes	Yes
Location Fixed Effect	Yes	Yes	Yes	Yes
Observations	349,200	349,200	520,119	520,119
Adjusted R <sup>2</sup>	0.769	0.770	0.803	0.803

- Low-income households encounter greater financial difficulties in wealthy ZIP Codes, such as distress is more pronounced during the SIP order.
- SIP led to a greater reduction in visits to consumer lenders than that predicted by the reduction in visits to other stores.

# Impact of Distance to Consumer Lenders

	Dependent variable: $\ln(\#local\_visitors\_CL) - \ln(\#nearby\_visitors\_CL)$	
	(1)	(2)
<i>SDI</i>	0.016*** (0.004)	0.018*** (0.005)
$\ln(\text{median\_distance})$	-0.296*** (0.004)	-0.307*** (0.004)
$\ln(\#local\_visitors\_bank) - \ln(nearby\_visitors\_bank)$	0.004 (0.004)	0.005 (0.005)
$\ln(\$tot\_spending)$	-0.068*** (0.020)	-0.078*** (0.024)
<i>SIP_dum</i>	0.013** (0.006)	0.009 (0.007)
<i>SIP_dum</i> × $\ln(\text{median\_distance})$	0.007*** (0.002)	0.011*** (0.003)
<i>SIP_dum</i> × %workbycar		-0.008*** (0.003)
<i>SIP_dum</i> × %poverty		-0.014** (0.007)
<i>SIP_dum</i> × %internet_access		-0.010 (0.007)
<i>SIP_dum</i> × %health_insurance		-0.003 (0.004)
<i>SIP_dum</i> × %renters		0.005 (0.004)
Week Fixed Effect	Yes	Yes
Location Fixed Effect	Yes	Yes
Observations	113,654	80,052
Adjusted R <sup>2</sup>	0.389	0.410

- The proportion of local customers change during SIP order → the decline in visits to consumer lenders is not driven solely by supply effects.
- In suburban areas, share of local visitors to consumer lenders ↑ during the SIP order.
- Higher car ownership rate and poverty rate are associated with a drop in the share of local visitors.

# Visits to Consumer Lenders versus Banks

	Dependent variable: $\ln(\#visitors\_CL) - \ln(\#visitors\_bank)$		
	(1)	(2)	(3)
<i>SDI</i>	0.011*** (0.001)	0.009*** (0.001)	
<i>SIP_dum</i>			0.003*** (0.001)
$\ln(\#case)$			0.062*** (0.005)
$\ln(\#death)$			0.015*** (0.003)
<i>insured.rate</i>	0.006*** (0.001)	0.005*** (0.001)	0.002*** (0.001)
<i>unemployment.rate</i>	0.025*** (0.002)	0.014*** (0.002)	-0.002 (0.002)
<i>PUA.CC.rate</i>	0.005*** (0.001)	0.004*** (0.001)	0.002*** (0.001)
<i>PEUC.CC.rate</i>	-0.002 (0.001)	-0.018*** (0.003)	-0.014*** (0.002)
$\ln(\$tot\_spending)$		-0.022*** (0.005)	-0.019*** (0.004)
Week Fixed Effect	Yes	Yes	Yes
Location Fixed Effect	Yes	Yes	Yes
Observations	383,180	336,747	434,963
Adjusted R <sup>2</sup>	0.852	0.870	0.870

- Increase in coverage of the unemployed through the unemployment insurance and relief program → greater reduction in visitors to banks than in visitors to consumer lenders.
- SIP restrictions do not reduce the visits to consumer lenders as much as they reduce the visits to banks.