

Did the Paycheck Protection Program Hit the Target?

João Granja

Chicago Booth

Christos Makridis

Arizona State

Constantine Yannelis

Chicago Booth

& NBER

Eric Zwick

Chicago Booth

& NBER

Introduction

Question: Did the PPP hit the target?

1. Did the funds flow to where the economic shock was greatest?
 - Benefits likely greatest in areas with more pre-policy economic dislocation and disease spread.
2. Given that the PPP used the banking system as a conduit to access firms, what role did the banks play in mediating policy targeting?
3. Did employment and firm outcomes improve in areas with better access to PPP funding?

Approach: Comprehensive program evaluation with focus on generalizable lessons

1. Simple descriptive analysis of ex ante program targeting
2. Evaluation of individual bank performance in deploying PPP
3. Response of employment and firm outcomes in different phases
4. Survey analysis of mechanisms

Policy Background

- 1. Design:** Forgivable loans for small, mid-sized businesses
 - Firms with 500 or fewer employees (per location for NAICS 72)
 - Maximum of 2.5X monthly payroll or \$10M
 - Funds used on payroll (75% → 60%) and some non-payroll costs (25% → 40%)
 - Applications processed through banks, approved by Small Business Administration
- 2. Timing:** Two rounds of funding, \$525B deployed in 2.5 months
 - April 3rd: \$349B; funds exhausted on April 16th
 - April 24th: \$320B; additional \$190B allocated mostly in May
- 3. Original Legislative Intent:** Help businesses and workers adversely affected
 - Support workers without crowding the unemployment insurance system
 - Prevent unnecessary firm shutdowns and help firms cover fixed costs
 - Promote faster economic recovery by preserving firm-worker links

Data

1. **SBA:** PPP loan counts and amounts for both rounds of funding
 - Size, lender, ZIP, NAICS, reported employment, borrower names (loans > \$150K)
2. **Bank public data:** Pre-policy small business lending, geographic footprint
 - Call reports
 - FDIC Summary of Deposits
3. **Other:** Hours worked, unemployment insurance filings, small business revenues, firm shutdowns, COVID cases, social distancing, PPP applications
 - Homebase
 - Womply
 - Safegraph
 - Census Pulse survey
 - State Labor Departments

PPP Performance and PPPE for the Largest 4 Banks

Financial Institution Name	(2) Share of total vol. PPP	(3) Share of SBL Market	(5) Share of loans in PPP	(6) Share of loans in SBL Market
JPMorgan Chase Bank, National Association	3.9%	6.5%	1.4%	10.5%
Bank of America, National Association	1.2%	9.5%	.56%	11.9%
Wells Fargo Bank, National Association	.04%	6.5%	.07%	4.3%
Citibank, N.A.	.33%	2.1%	.44%	9.7%

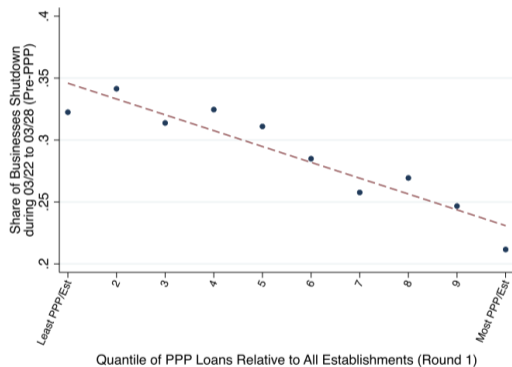
Did the Paycheck Protection Program (PPP) Hit the Target?

Useful metric: Geographic distribution across regions

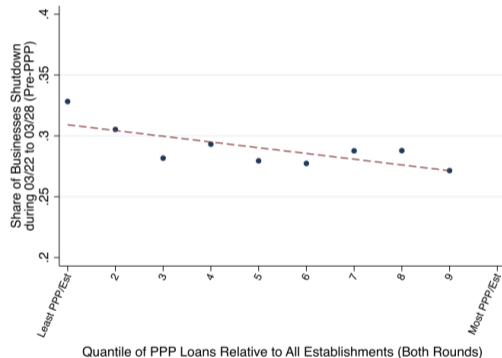
1. We do not find that funds flowed to areas that were more adversely affected by the economic effects of the pandemic, as measured by declines in hours worked or business shutdowns.
⇒ If anything, funds flowed to areas less hard hit, especially in first round.
2. Over both rounds of funding, $\text{corr}(\text{pre-policy economic dislocation, PPP}) \approx 0$
⇒ Likely reflects broad definition of eligibility.

Funds Initially Flowed to Less Hard Hit Areas

Round 1



Rounds 1 and 2



Pre-PPP business shutdown \equiv zero hours worked in Homebase in week prior to PPP launch

The Role of the Banking System

Round 1 Findings

Question: Given the PPP used the banking system as a channel to reach firms, what role did the banks play in affecting policy targeting?

1. Differences in lender size and type (or lender heterogeneity) contribute to the weak relationship between economic declines and PPP lending.
2. Underperforming banks—whose participation in the PPP underperformed their share of the small business lending market—account for two-thirds of the small business lending market but only twenty percent of total PPP disbursements.
3. Regions with a larger footprint from underperforming banks received disproportionately smaller allocations of PPP loans.

Paycheck Protection Program Exposure

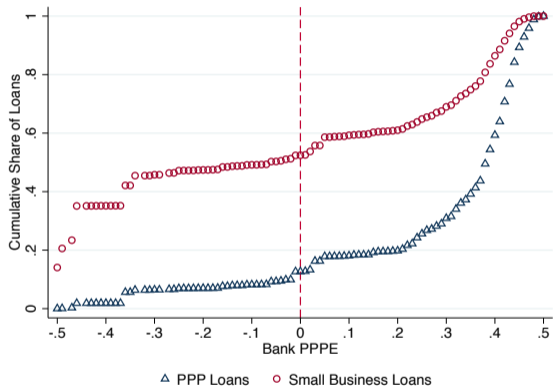
Relative bank performance or Paycheck Protection Program Exposure (PPPE):

$$PPPE_b = \frac{ShareNbr.PPP_b - ShareNbr.SBLMarket_b}{(ShareNbr.PPP_b + ShareNbr.SBLMarket_b)} \times 0.5$$

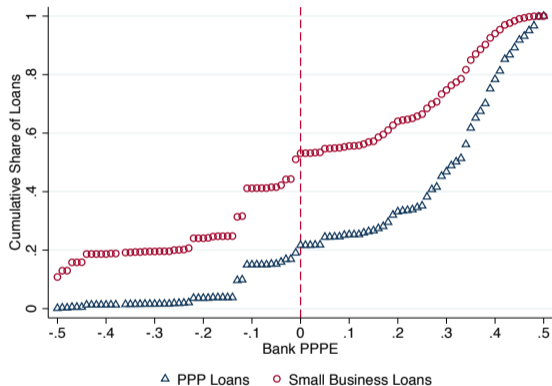
- $ShareNbr.PPP_b$ = the share of the number of PPP loans from bank b ,
- $ShareNbr.SBLMarket_b$ = is bank b 's small business loan market share

PPPE and PPP Allocation

Round 1



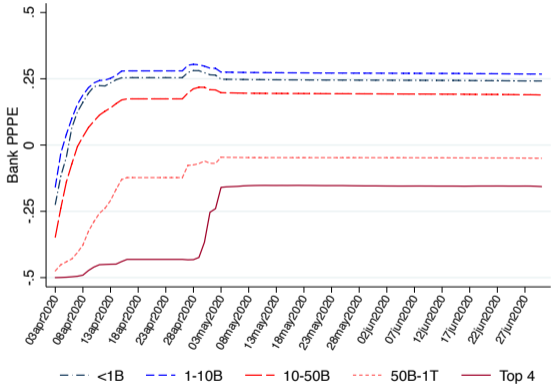
Rounds 1 and 2



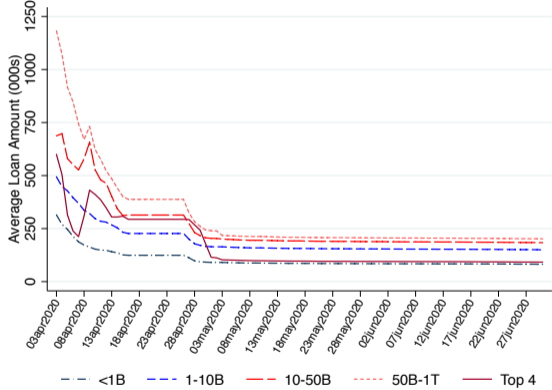
■ Partial reversal of round 1 pattern points to substantial reallocation across banks.

Evolution of PPPE and Average Loan Size by Bank Size

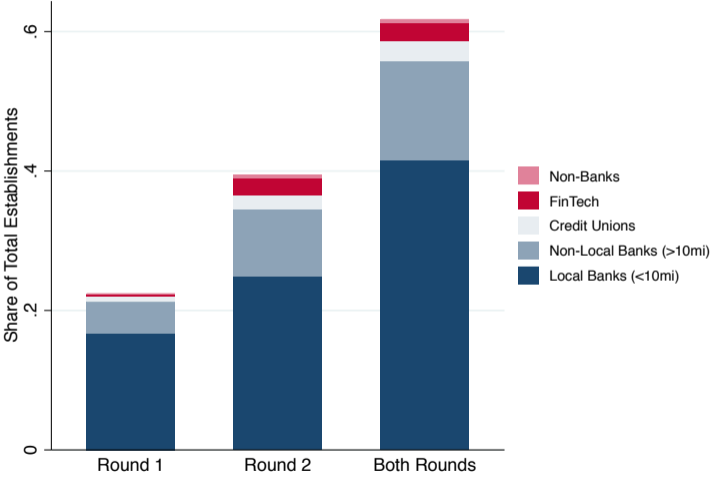
Number-based PPPE



Average Loan Size

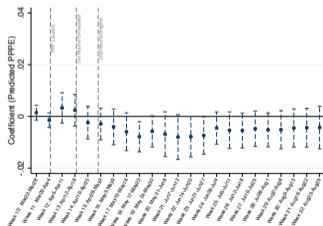
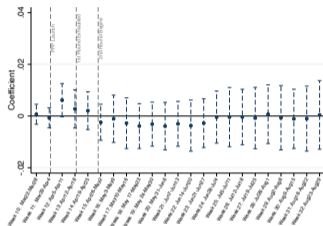


Share of Establishments Receiving PPP by Lender Type

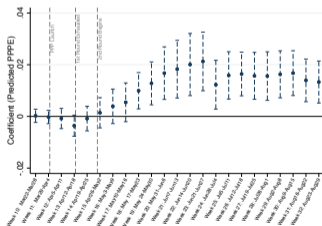
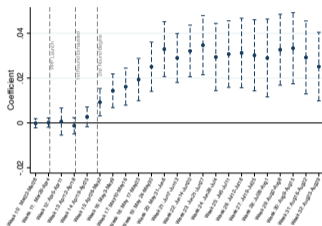


PPP and Employment Outcomes: Local Projections

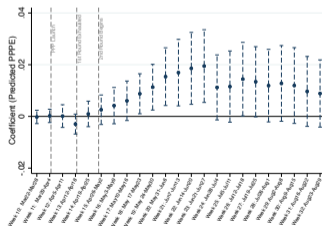
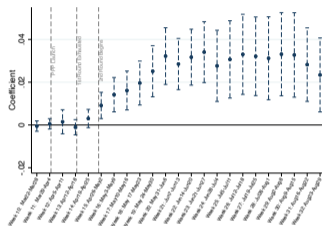
Panel A. Business Shutdowns



Panel B. Change in Hours Worked

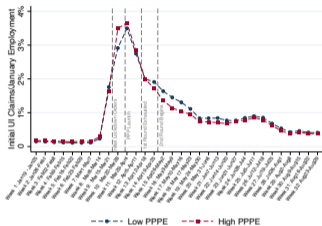


Panel C. Change in Nbr. Employees

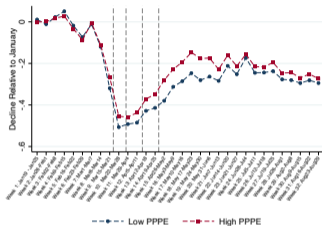


Evolution of Local Labor Market and Economic Outcomes

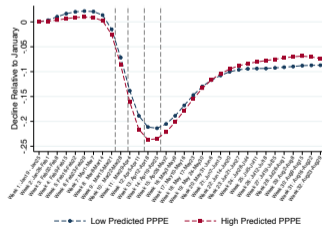
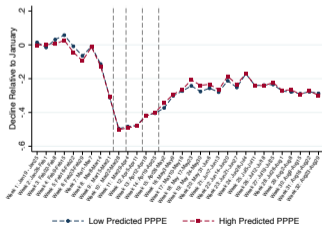
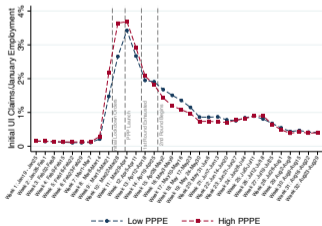
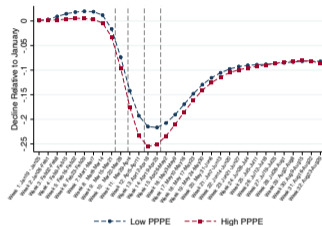
Panel A. UI Claims



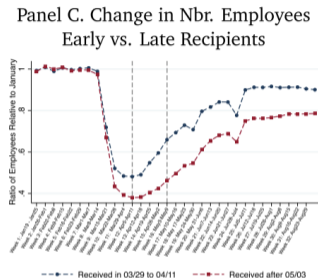
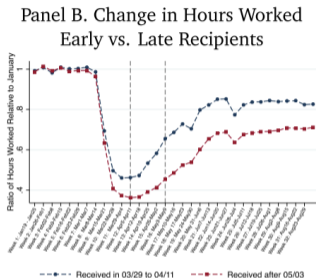
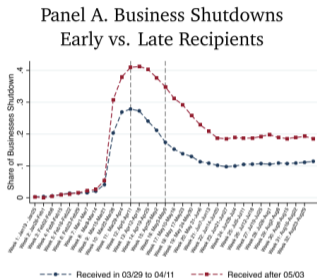
Panel B. Small Bus. Rev.



Panel C. OI Employment



PPP and Employment Outcomes (Matched Sample)



- Panel A: marginally significant effects; obtaining a PPP loan one week earlier leads to a decrease in shutdowns of between 1.4 and 2.6 percentage points
- Panel B: obtaining a PPP loan one week earlier leads to an increase in hours worked of between 4.6 and 5.9 percentage points for a firm receiving a PPP loan a week earlier.
- Panel C: obtaining a PPP loan one week earlier leading to an increase in the number of employees of between 4.0 and 4.7 percentage points

Aggregate Impacts

Follow Mian and Sufi (2012) and Berger, Turner, and Zwick (2020).

1. Estimate the total employment gains, exploiting only differences in cross-sectional exposure and using the group receiving the smallest shock as a counterfactual.
2. Use Homebase local projection estimates for change in hours worked.
3. PPP increased employment by 3.28 and 5.43 million
 - 4.7%–7.8% of pre-program employment.

Takeaway: Preferred response is 3.2–5.4 million (4.7%–7.8% of 70M eligible workers)

- More than 90% of covered jobs were inframarginal.
- Implies a cost-per-job of \$175,000.

Aggregate Impacts (Cumulative through August)

Estimation Window	(1) Week 15, Millions (%)	(2) Week 22, Millions (%)	(3) Week 29, Millions (%)	(4) Cumulative through August, Millions (%)	(5)
Homebase, Industry Weights					
A. Relative to Bottom 1%	1.57 (2.2%)	3.55 (5.1%)	2.71 (3.9%)	2.02 (2.9%)	2.11 (3.0%)
B. Relative to Zero	2.55 (3.6%)	5.76 (8.2%)	4.40 (6.3%)	3.28 (4.7%)	5.43 (7.8%)
C. Average of A and B	2.06 (2.9%)	4.66 (6.7%)	3.56 (5.1%)	2.65 (3.8%)	3.77 (5.4%)
D. C with Firm Size	1.72 (2.5%)	3.88 (5.5%)	2.96 (4.2%)	2.21 (3.2%)	3.14 (4.5%)
Heterogeneity					
Opportunity Insights					
A. Relative to Bottom 1%	0.72 (1.0%)	1.80 (2.6%)	2.16 (3.1%)	1.97 (2.8%)	1.77 (2.5%)
B. Relative to Zero	0.99 (1.4%)	2.49 (3.6%)	2.98 (4.3%)	4.52 (6.5%)	4.18 (6.0%)
C. Average of A and B	0.86 (1.2%)	2.15 (3.1%)	2.57 (3.7%)	3.25 (4.6%)	2.98 (4.3%)
Combined Estimates					
A. Average of HB.D and OI.C	1.29 (1.8%)	3.01 (4.3%)	2.77 (4.0%)	2.73 (3.9%)	3.06 (4.4%)
Exposure Measure	PPPE	PPPE	PPPE	PPPE	Predicted PPPE

How are Firms using PPP Funds?

- No aggregate employment effects in areas exposed to better performing banks in April
 - Widens to modest employment effects in May and June
 - Given limited targeting, perhaps many recipients were inframarginal

- How are firms using PPP funds if not for payroll?
 1. Holding PPP funds as liquidity support?
 2. Making loan or other scheduled payments?

Census Small Business Pulse Survey: % Firms Missing Loan Payments

PPP and Firms Missing Loan Payments

	(1)	(2)	(3)	(4)	(5)
	OLS	IV 1st Stage	IV 2nd Stage	IV 1st Stage	IV 2nd Stage
LHS Variable	% Miss Loan Pmt	% PPP Rec.	% Miss Loan Pmt	% PPP Rec.	% Miss Loan Pmt
% PPP Received	-0.013 (0.011)		-0.166*** (0.035)		-0.184*** (0.039)
State PPPE		31.238*** (2.910)			
State Predicted PPPE				62.610*** (7.630)	
Observations	3659	3659	3659	3659	3659
Adjusted R^2	0.518	0.614	-0.119	0.601	-0.147
FStat			115.265		67.343

Census Small Business Pulse Survey: % Firms Missing Payments

PPP and Firms Missing Scheduled Payments

LHS Variable	% Miss Schd Pmt	% PPP Rec.	% Miss Schd Pmt	% PPP Rec.	% Miss Schd Pmt
% PPP Received	-0.082*** (0.018)		-0.492*** (0.066)		-0.492*** (0.063)
State PPPE		31.014*** (2.880)			
State Predicted PPPE				62.154*** (7.447)	
Observations	3612	3612	3612	3612	3612
Adjusted R^2	0.646	0.619	-0.128	0.606	-0.128
FStat			115.934		69.656

Census Small Business Pulse Survey: Firm Liquidity

PPP and Firms' Cash on Hand

LHS Variable	% Cash 3 mths	% PPP Rec.	% Cash 3 mths	% PPP Rec.	% Cash 3 mths
% PPP Received	0.009 (0.030)		0.380** (0.143)		0.316** (0.149)
State PPPE		26.992*** (2.961)			
State Predicted PPPE				58.403*** (6.815)	
Observations	1445	1445	1445	1445	1445
Adjusted R ²	0.603	0.774	-0.270	0.767	-0.200
FStat			83.103		73.435
Controls	Yes	Yes	Yes	Yes	Yes
Industry×Week Fixed Effects	Yes	Yes	Yes	Yes	Yes

Alternative Mechanisms of Small Employment Effects

1. Crowd-out

- The risk of government loan programs crowding out private lending has long been a concern for loan guarantee programs.
- While we do find some evidence of crowd-out, magnitudes are small and private lending would not have offset PPP lending

2. Eligible firms might expand at the expense of local competitors.

- Business stealing spillovers could account for small employment effects at the labor market level
- Positive local demand effects on the suppliers of treated firms
- Employment effects are generally similar or greater in regions where a larger share of establishments are eligible for funds, inconsistent with a business stealing effect and possibly consistent with the presence of some local demand effects

3. Unemployment Insurance (UI) Expansion

- Historically high levels of UI made it difficult for firms to recall workers
- Workers saw UI replacement rates above their usual salaries due to an additional \$600 per week in federal benefits
- However, we do not find different effects for states with high vs low UI replacement rates. The results do not support the hypothesis that the responses are greater in states with less generous UI

How do our results compare to other evidence?

1. Employment outcomes: Modest positive effect

- ACCGLMPRVY find employment effects of 3% starting immediately after PPP launched.
 - ▶ Broader ADP sample, measure of employment based on pay not hours.
- Chetty-Friedman-Hendren-Stepner-OI Team find slightly smaller results.
 - ▶ Similar sample to ours.
- Both studies use 500 employee threshold design.
 - ▶ Does not permit regional analysis
 - ▶ Accounts for small share of PPP borrowers
- Cf. Faulkender-Jackman-Miran, Doniger-Kay find larger effects under strong assumptions.

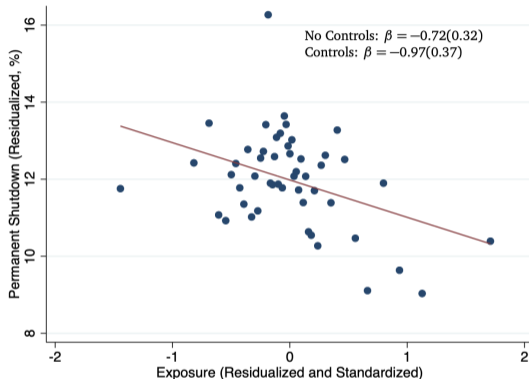
2. Financial outcomes: More substantial effect

- BCGLSS et al find expected failure rates decrease by 14–30 percent.
- ChodorowReich-Darmouni-Luck-Plosser find that firms used funds to pay down outstanding debts.

Bottom line: Most papers point to modest employment effects relative to the size of the program.

- Consistent with low targeting
- Possibly stronger effects in terms of financial support
- Evidence on permanent closures remains to be seen

PPP Exposure and Permanent Shutdowns



- Binned scatter plots of the share of small business establishments that permanently closed versus ZIP-level PPPE
- Permanent shutdowns: establishment closed for all weeks from the beginning of the PPP through the end of August

Concluding Remarks

1. We do not find evidence that funds flowed to areas more adversely affected by the economic effects of the pandemic. **If anything, funds flowed to areas less hard hit.**
 - Not driven by differences in loan demand.
 - Likely reflects the absence of conditionality in the program's design.
2. Significant **heterogeneity across banks** in terms of disbursing PPP funds.
 - The top-4 banks alone account for 36% of total pre-policy small business loans, but disbursed less than 3% of all PPP loans.
 - Areas that were significantly more exposed to low-PPP banks received much lower loan allocations.
 - Differences closed partly in second round, as borrowers switched to new lenders.
3. **Modest employment effects** imply PPP was not an escape valve for pressures on unemployment insurance systems.
 - Null effects in April evolve to modest effects in May and June
 - Firms with more PPP report missing fewer payments, more cash on hand

The evidence suggests the PPP functioned **less as social insurance** to support the hardest hit areas and **more as liquidity support** for all small and mid-sized firms.