The Distribution of Crisis Credit:
Effects on Firm Indebtedness and Aggregate Risk[a]

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Motivation

- During crises, governments seek to help firms to survive by providing "crisis credit"

- Trade-offs, intertemporal and distributional
    - Rapid implementation and scope to save many firms, with potential costs
    - Adverse selection, during crises and when governments offer assistance
    - Possible risk taking, indebtedness, debt overhang, default, banking crises, and fiscal burden
    - Important to understand how crisis credit works in practice and comprehensively

- What is the impact of the distribution of crisis credit on micro indebtedness and macro risks?
    1. How does credit (suddenly available) gets allocated across the full range of firms?
    2. How do incentives and economic environment influence demand, supply, and equilibrium allocation?
    3. How does micro-level indebtedness gets aggregated, affecting macro-level risk?

What We Do

- Chile offers unique opportunity to study the complete crisis credit allocation
    - Novel financial and real data from Chile's universe of formal firms and bank transactions
- Policy experiment
    - Large, sudden program to assist firms
    - Public credit guarantee program (FOGAPE COVID-19) disburses $\approx 4.6\%$ of GDP in few months
    - Concurrent alternative policy, i.e. employment protection program
    - Results not driven by COVID-19 pandemic, yielding general lessons
- Micro analyses
    - Evaluate applications and approvals to study demand and supply roles
    - Examine impact of program on firm leverage and credit flows by size, risk, and other firm attributes
    - Attempt to assess causality of the program and pandemic (dynamic lockdowns, RDD)
- Macro risk assessment
    - Empirically via aggregation of micro data and impact of risk for banks and the government
    - Quantitatively via counterfactual model simulations

What We Find

- Government program works as intended: Increases debt rapidly, substantially, broadly across firms

- Large (4.6% of GDP) credit allocation with adverse selection, but consequences for total aggregate indebtedness and risk remain small (0.44% of GDP)

- Lessons on mitigated aggregate risk
  1. Incentives for firms and banks
     - Firms respond to opportunities for cheap credit, especially risky ones
     - Banks disburse loans, engaging with risky clients, but also contain risk taking
  2. Economic environment
     - Low levels of default risk
     - Safe firms constitute mass of bank loans
     - Banking sector solvency improves
  3. Policy features
     - Forbids participation of riskiest tail
     - Risk sharing between government and banks (skin in the game): Only partial guarantees, mostly tail risk
     - Lower maximum interest rate makes credit attractive, but also triggers more screening

- Aggregate risk could be sizable with even larger, protracted GDP contraction and higher defaults

Structure of the Talk

1. Policy and data

2. Credit allocation

3. Roles of supply and demand

4. Aggregate implications

5. Robustness analyses

6. Conclusions

Policy and Data

# Institutional Details of the Public Credit Guarantee Program

- Expand credit guarantee program: Fiscal injection of US$3 billion (1.1% of GDP)

- Goal: Finance working capital up to 3 months of pre-pandemic sales

- Eligibility: Pre-pandemic sales < US$40 million

- Attractive conditions for firms
  - Nominal interest rate cap: Monetary policy rate (0.5%) + inflation target (3%)
  - 6-month grace period + payment horizon of 24-48 months
  - Loan not to be used to repay pre-existing debt, which needs to be restructured

- Some details on mitigating factors
  - Past due days < 30
  - Guarantee rate: 85% for small, 80% for medium, 70% for medium-large, and 60% for large firms
  - Deductible for first loss, varying by firm size

- Starts April 24, 2020

Data Sources

1. Credit flows and stocks from financial regulator (Financial Markets Commission, CMF), 2012-2020
   - Transaction-level loans, interest rates, credit outstanding, default behavior

2. Applications and approvals of credit guarantee loans during 2020 $\Rightarrow$ Unique!
   - Transaction-level information, including loans requested, bank responses, approved amounts

3. Firm-level real and employment data from tax authority, 2005-2020
   - Sales, net worth, assets, liabilities, materials, number of workers, sector, municipality

4. Firm-level use of employment protection program (unemployment insurance administrator)

- Samples of firms ▸ Summary Statistics
   1. Universe: Formal firms $\Rightarrow$ 602,874 firms
   2. Active: Universe + positive sales $\Rightarrow$ 449,615 firms (92% of employment, 82% of credit)
   3. Regression: Active + observables $\Rightarrow$ 119,153 firms
   4. Eligible: Regression + sales < US$40 MM + past due days < 30 $\Rightarrow$ 114,606 firms
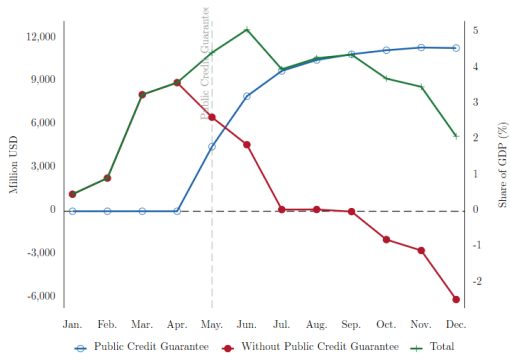
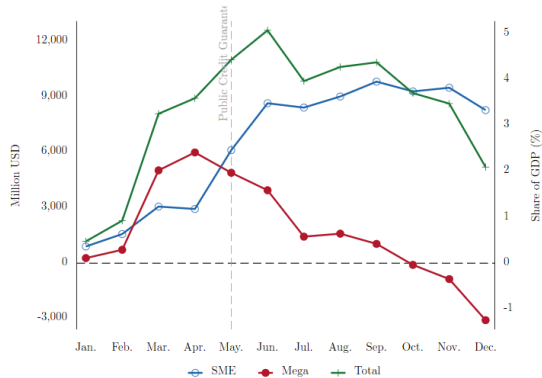# Credit Allocation

Size of Public Programs
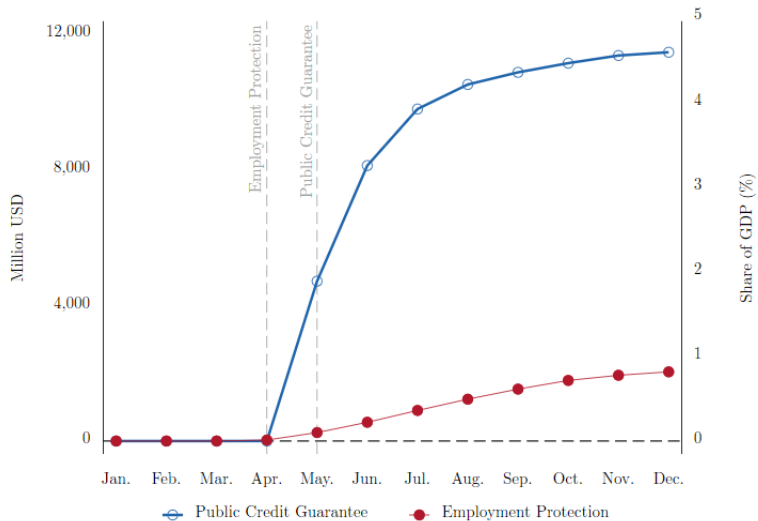
Share of Firms Using Public Programs
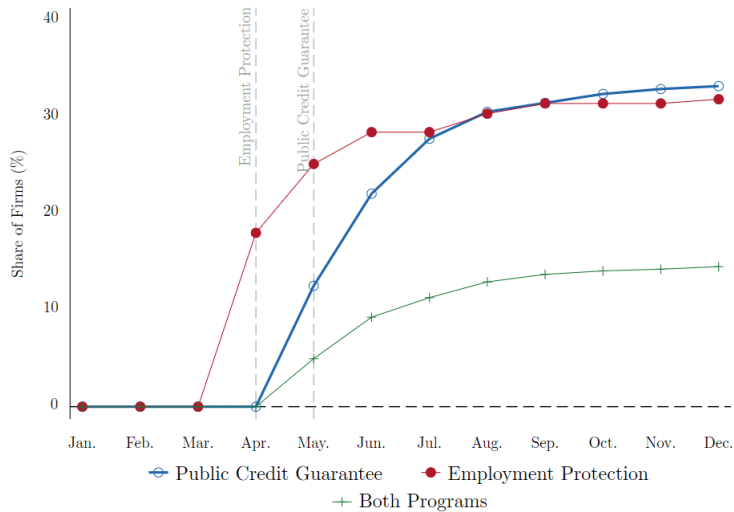
Cumulative Credit Granted during 2020

(d) Guaranteed and Non-guaranteed Credit

(e) By Firm Size

Characteristics of Firms Using Public Programs

	Used Public Credit Guarantee					Used Employment Protection			
	(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)
Panel A: Probit Estimation									
(i) Ex-ante Risk Characteristics									
Risk	0.647***	0.536***	0.400***	0.337***		0.085***	0.075***	-0.014	-0.016
	(0.043)	(0.035)	(0.033)	(0.034)		(0.023)	(0.022)	(0.022)	(0.022)
(ii) COVID-19-Shock Characteristics									
Increase in Sales Dummy	0.216***	0.211***	0.197***	0.195***		0.051***	0.052***	0.057***	0.058***
	(0.008)	(0.008)	(0.008)	(0.008)		(0.007)	(0.007)	(0.007)	(0.007)
Decrease in Sales Dummy	0.210***	0.205***	0.195***	0.193***		0.122***	0.120***	0.115***	0.115***
	(0.008)	(0.008)	(0.008)	(0.008)		(0.007)	(0.006)	(0.006)	(0.006)
Used Employment Protection	0.098***	0.102***	0.088***	0.095***					
	(0.005)	(0.005)	(0.005)	(0.005)					
Used Public Credit Guarantee						0.059***	0.061***	0.052***	0.056***
						(0.003)	(0.003)	(0.003)	(0.003)
Dependent Variable Mean	0.505	0.505	0.505	0.505		0.182	0.184	0.183	0.184
Dependent Variable Std. Dev.	0.500	0.500	0.500	0.500		0.386	0.387	0.386	0.388
Number of Firms	62,927	62,881	62,917	62,871		67,303	66,580	67,097	66,378
R^2	0.020	0.031	0.036	0.045		0.019	0.055	0.052	0.080
Industry FE	No	No	Yes	Yes		No	No	Yes	Yes
Municipality FE	No	Yes	No	Yes		No	Yes	No	Yes
Panel B: Predicted Default Probability									
Banked Firms	0.084	0.084	0.084	0.084		0.086	0.086	0.086	0.086

▸ Default Model

Roles of Supply and Demand

Firm Credit Applications and Bank Approvals

$$\text{Banked Firms + Eligible Sample}: \Pr(Program\ Use_i = 1) = \Phi(\alpha_s + \alpha_c + \beta_1 Risk_i + \beta_3 X_i + u_i) \tag{1}$$

	Public Credit Guarantee Applications				Public Credit Guarantee Approvals			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(i) Ex-ante Risk Characteristics								
Risk	0.845***	0.733***	0.599***	0.538***	-0.222***	-0.245***	-0.226***	-0.257***
	(0.048)	(0.037)	(0.034)	(0.035)	(0.018)	(0.019)	(0.02)	(0.021)
(ii) COVID Shock Characteristics								
Increase in Sales Dummy	0.206***	0.201***	0.189***	0.186***	0.019***	0.020***	0.018***	0.019***
	(0.007)	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)
Decrease in Sales Dummy	0.204***	0.198***	0.190***	0.188***	0.019***	0.020***	0.019***	0.019***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Used Employment Protection	0.122***	0.126***	0.111***	0.117***	-0.011***	-0.011***	-0.011***	-0.010***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Dependent Variable Mean	0.649	0.649	0.649	0.649	0.920	0.918	0.919	0.918
Dependent Variable Std. Dev.	0.477	0.477	0.477	0.477	0.272	0.274	0.274	0.275
Number of Firms	62,927	62,862	62,913	62,848	36,701	36,025	36,593	35,918
R^2	0.032	0.045	0.050	0.061	0.008	0.024	0.016	0.033
Industry FE	No	No	Yes	Yes	No	No	Yes	Yes
Municipality FE	No	Yes	No	Yes	No	Yes	No	Yes
(ii) Predicted Default Probability:								
Banked Firms	0.084	0.084	0.084	0.084	0.090	0.090	0.090	0.090

Demand (Supply) Forces Dominate in Guaranteed (Non-Guaranteed) Credit

$$\text{Eligible Sample} + \text{Credit Guarantee Users}: \quad \frac{\Delta Debt_i}{Sales_{i,2019}} \quad = \quad \alpha_s + \alpha_c + \beta_1 Risk_i + \beta_2 Sales\ Growth_i + u_i \qquad (2)$$

	Δ Guaranteed Debt / Sales 2019		Δ Non-guaranteed Debt / Sales 2019	
	(1)	(2)	(3)	(4)
	Banked	Unbanked	Banked	Unbanked
Ex-ante Risk	0.068***	0.101***	-0.072***	-0.015
	(0.007)	(0.017)	(0.009)	(0.010)
Increase in Sales Dummy	-0.001	0.007**	0.008**	0.005**
	(0.002)	(0.004)	(0.003)	(0.002)
Decrease in Sales Dummy	-0.004**	0.003	0.007**	0.003
	(0.002)	(0.004)	(0.003)	(0.002)
Dependent Variable Mean	0.134	0.112	-0.014	0.011
Dependent Variable. Std. Dev.	0.071	0.072	0.101	0.045
Number of Firms	32,124	8,977	32,118	9,080
R^2	0.029	0.083	0.026	0.071
Industry FE and Municipality FE	Yes	Yes	Yes	Yes

▶ Eligible Sample

Aggregate Implications

Linking Micro and Macro Debt

- Program: $\quad \Delta$Guaranteed Debt/GDP=4.6
- Formal firms: $\quad \Delta$Guaranteed Debt/GDP=3.6, $\quad \Delta$Debt/GDP=1.2, $\quad \Delta$Debt/Sales=0.44
- Users: $\quad \Delta$Guaranteed Debt/GDP=3.6, $\quad \Delta$Debt/GDP=2.9, $\quad \Delta$Debt/Sales=1.35

$$\underbrace{\frac{\Delta D_t}{Y_{t-1}}}_{Aggregate\ Change} = \sum_{g \in G} \underbrace{\left(\omega_{gt-1} \frac{D_{gt} - D_{gt-1}}{Y_{gt-1}} \right)}_{Group\ Change} \tag{3}$$

$$\underbrace{\omega_{gt-1} \frac{D_{gt} - D_{gt-1}}{Y_{gt-1}}}_{Group\ Change} = \underbrace{\omega_{gt-1}}_{Weights} \underbrace{\frac{D_{gt} - D_{gt-1}}{Y_{gt-1}}}_{Within\ Change} \tag{4}$$

- Y_{t-1} is GDP (2019) or Sales (2019)
- Groups: (i) users/non-users, (ii) banking status, (iii) firm size, (iv) risk

Decomposition of Macro Debt-to-Sales Ratio

	ΔDebt/ Sales		ΔDebt/ Sales
	(1) Group Change (p.p.)	(2) Weights (%)	(3) Within Change (p.p.)
(i) Active Firms			
Panel D: Risk Groups			
High Risk	0.08	1.8	4.34
Medium Risk	0.13	4.1	3.18
Medium-Low Risk	0.19	8.4	2.26
Low Risk	-0.09	59.3	-0.15
No Risk Data	0.13	26.4	0.48
Aggregate	0.44	100.0	
(ii) Public Credit Guarantee - Users			
Panel E: Risk Groups			
High Risk	0.11	7.1	10.70
Medium Risk	0.16	12.7	9.29
Medium-Low Risk	0.26	19.3	9.70
Low Risk	0.53	41.2	9.18
No Risk Data	0.29	19.7	10.75
Aggregate	1.35	100.0	

Expected Loss

	(1) Total Public Credit Guarantee Program (Million USD)	(2) Total Public Credit Guarantee Program (%)	(3) Default Probability (%)	(4) Effective Guarantee (%)	(5) Expected Loss/GDP (=(2)×(3)/GDP) (%)	(6) Government's Expected Loss/GDP (=(4)×(5)) (%)	(7) Bank's Expected Loss/GDP (=(5)-(6)) (%)
Risk Groups							
High Risk	606	8	18.17	35.8	0.05	0.02	0.03
Medium Risk	1,085	14	9.86	32.3	0.05	0.02	0.03
Medium-Low Risk	1,867	25	5.68	28.2	0.05	0.01	0.04
Low Risk	3,975	53	2.05	21.1	0.04	0.01	0.03
No Risk Data	1,489	17	18.17	35.8	0.11	0.04	0.18
Total	9,022 (3.6% GDP)	100	7.48	27.3	0.27	0.09	0.18
All Firms + Natural Persons							
All Firms	9,022	79	7.48	27.3	0.27	0.09	0.18
Natural Persons	2,445	21	18.17	35.8	0.17	0.06	0.11
All Firms + Natural Persons	11,467 (4.6% GDP)	100	9.76	29.1	0.44	0.15	0.29

Macroeconomic Risk

- Overall macroeconomic risk stays relatively small

- Riskiest firms in the economy excluded, even when program targets SMEs ▸ Risk Samples

- Non-tail risk (expected loss): $\approx 2/3$ absorbed by banks (66%=0.29/0.44)
    - Guarantees decrease with firm size ▸ Table 11
    - Banks curtail non-tail risk by being more sensitive to risk from large firms ▸ Rejections

- Tail risk: $\approx 1/3$ absorbed by banks, if default rate increased above 25%
    - Program deductible covers initial losses
    - Effective guarantee increases with default rate ▸ Simulations
    - Solvency of the banking industry increases by $\uparrow$ capital, $\downarrow\downarrow$ risk-weighted-assets (RWA) ▸ Solvency

- Central bank backs lending by banks through liquidity support ▸ Liquidity Support

Robustness Analyses

- A number of robustness tests performed
    - Variations in specifications
    - Different samples
    - Different aggregations

- Results are not COVID-19-specific
    - Comparisons with the employment protection program
    - Effect of firm performance since the onset of the pandemic (sales change)
    - Effect of lockdown policies ▸ Maps   ▸ RD Results   ▸ RD Sales

- Model simulations: Counterfactual roles of policy elements

Conclusions

Conclusions

- Credit guarantee program rapidly delivers crisis credit to broad range of firms
    - Incentives for firms to borrow due to low interest rates
    - Incentives for banks to lend due to risk sharing and liquidity support
    - Opportunity to get to know new and risky clients

- Aggregate risk remains low, despite ….
    - Expansion of credit during crisis episode (GDP contracted 5.8% in 2020)
    - Redistribution toward smaller, riskier firms
    - Leverage increases the most for riskiest firms

Conclusions

- Mitigating factors by design
    - Riskiest tail excluded (not just mega firms)
    - Risk sharing through guarantee scheme cushions banking sector from tail risk
    - Partial guarantee and initial loss foster bank screening, especially of large risky firms

- Mitigating factors in practice (not obvious *ex ante*)
    - Low interest rates attracts borrowers, but pushes banks to exclude riskiest firms
    - Most credit flows toward large, safer borrowers
    - Low *ex ante* and *ex post* default rates, partly due to weight of safer firms
    - Basel rules on RWA improve bank capitalization

- Granular micro data, universal coverage, and type of analyses important for micro $\iff$ macro

- New light on: (i) Academic debate on causes and consequences of high indebtedness; (ii) Policy debate about the trade-offs and risks of government programs to help firms in need

Thank you!

	(1) Number of Firms	(2) Share of Total Number of Firms (%)	(3) Share of Employment (%)	(4) Credit Stock (%)	(5) Share of Value Added (%)
Sample Selection					
All Firms	602,874	100	100	100	100
Active Firms (positive sales)	449,615	75	92	82	100
Regression Sample					
Total	119,153	18	50	44	74
Eligible	114,606	17	35	21	19
Credit Guarantee Users	40,901	6	14	9	7
Firm Size Distribution of Active Firms					
Small and Medium Enterprises	437,750	97	43	27	17
Large Firms	10,265	2	30	32	17
Mega Firms	1,600	0	27	41	66
All Active Firms	449,615	100	100	100	100
Ex-ante Banking Status of Active Firms					
Banked	163,676	36	79	100	87
Unbanked	285,939	64	21	0	13
All Active Firms	449,615	100	90	0	100

Credit Default Probability Model ▸ Return

$$\text{Baseline Sample}: \ \Pr(Default_{i,t} = 1) = \Phi(\alpha_s + \alpha_c + \beta Characteristics_{i,t-1} + u_{i,t}) \tag{5}$$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Net Worth)	-0.011***	-0.010***	-0.010***	-0.010***	-0.009***	-0.009***	-0.008***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log(Value Added / Number of Workers)	-0.021***	-0.020***	-0.018***	-0.018***	-0.019***	-0.019***	-0.017***	-0.017***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Firm Age	-0.001***	-0.001***	-0.001***	-0.001***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Wage Bill)	-0.009***	-0.009***	-0.008***	-0.008***	-0.008***	-0.008***	-0.007***	-0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log(Annual Sales)	0.007***	0.006***	0.002**	0.002**	0.000	-0.000	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log(Credit Stock)					0.013***	0.013***	0.013***	0.013***
					(0.001)	(0.001)	(0.001)	(0.001)
Spread Ex-ante					0.003***	0.003***	0.003***	0.003***
					(0.000)	(0.000)	(0.000)	(0.000)
Number of Firms	96,424	96,424	96,424	96,424	96,424	96,424	96,424	96,424
R²	0.051	0.061	0.064	0.073	0.095	0.103	0.104	0.112
Industry FE	No	No	Yes	Yes	No	No	Yes	Yes
Municipality FE	No	Yes	No	Yes	No	Yes	No	Yes
Pred. Default Prob. Banked Firms	0.088	0.088	0.088	0.088	0.089	0.089	0.089	0.089
Pred. Default Prob. Unbanked Firms	0.113	0.113	0.107	0.107				

$$\text{Banked Firms} + \text{Different Samples}: \ \Pr(\textit{Program Use}_i = 1) = \Phi(\alpha_s + \alpha_c + \beta_1 Risk_i + \beta_3 X_i + u_i) \tag{6}$$

	Used Public Credit Guarantee			
	(1) Only Eligible Firms	(2) Eligible Firms + Firms with Overdue Payment	(3) Eligible Firms + Mega Firms	(4) All Firms
(i) Ex-ante Risk Characteristics				
Risk	0.337***	0.084***	0.412***	0.147***
	(0.034)	(0.032)	(0.034)	(0.033)
(ii) COVID Shock Characteristics				
Increase in Sales Dummy	0.195***	0.206***	0.193***	0.210***
	(0.008)	(0.008)	(0.008)	(0.008)
Decrease in Sales Dummy	0.193***	0.208***	0.190***	0.211***
	(0.008)	(0.008)	(0.008)	(0.008)
Used Employment Protection	0.095***	0.088***	0.098***	0.095***
	(0.005)	(0.005)	(0.005)	(0.005)
Dependent Variable Mean	0.505	0.478	0.498	0.483
Dependent Variable Std. Dev.	0.500	0.500	0.500	0.500
Number of Firms	62,871	66,407	63,758	67,240
R^2	0.045	0.039	0.048	0.043
Industry FE and Municipality FE	Yes	Yes	Yes	Yes
(ii) Predicted Default Probability:				
Banked Firms	0.084	0.087	0.083	0.086
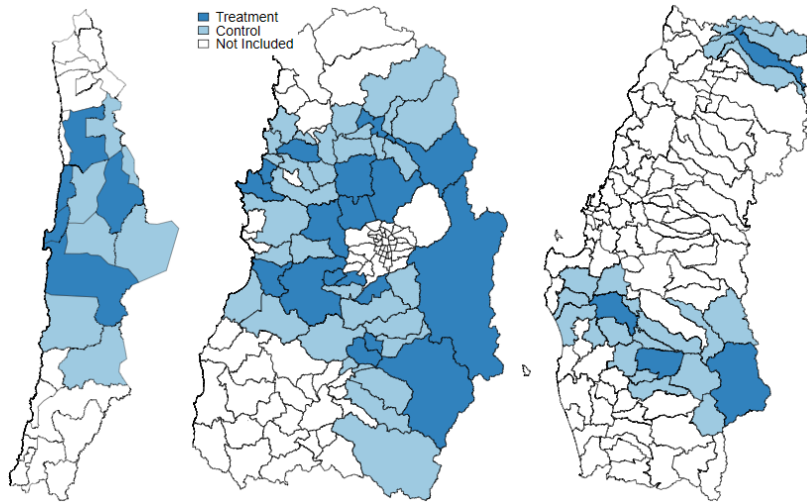
(f) Northern   (g) Central   (h) Southern

	Public Credit Guarantee			Employment Protection
	(1)	(2)	(3)	(4)
	Used Credit Guarantee	Applications	Approvals	Used Employment Protection
Panel A: Municipality Border - Region FE				
Post	0.057	0.043	0.200	0.030
	(0.000)	(0.000)	(0.000)	(0.000)
Lockdown	0.007	0.013*	-0.056**	-0.010*
	(0.001)	(0.001)	(0.004)	(0.001)
Lockdown × Post	0.008	0.025*	0.014	0.027**
	(0.002)	(0.003)	(0.007)	(0.001)
Number of Observations	14,796	13,419	3,978	17,172
Number of Firms	1,644	1,491	442	1,908
R^2	0.006	0.005	0.054	0.005
Panel B: Municipality Border - Pair of Neighbors FE				
Post	0.057***	0.043***	0.200***	0.030***
	(0.002)	(0.002)	(0.005)	(0.001)
Lockdown	0.096***	0.039***	-0.111***	0.073***
	(0.005)	(0.004)	(0.008)	(0.003)
Lockdown × Post	0.008	0.025***	0.014	0.027***
	(0.009)	(0.007)	(0.015)	(0.005)
Number of Observations	14,796	13,419	3,978	17,172
Number of Firms	1,644	1,491	442	1,908
R^2	0.012	0.012	0.066	0.012
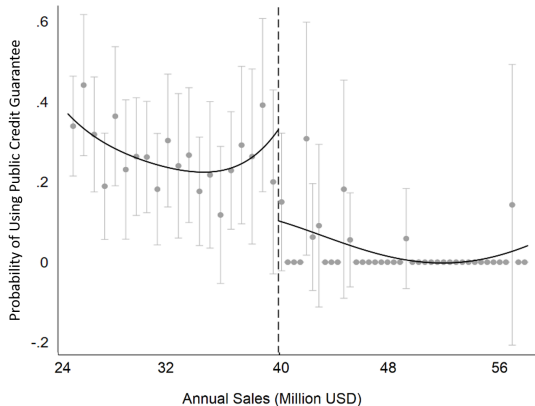
(i) Used Credit Guarantee
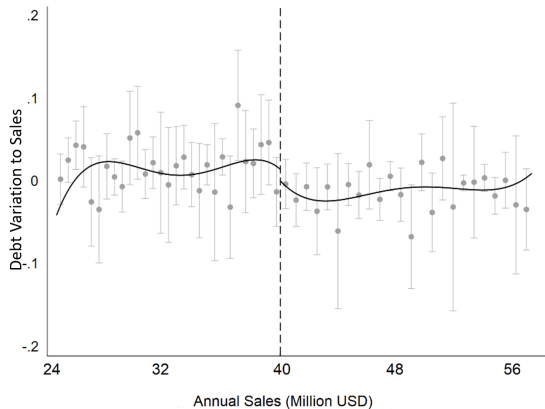
(j) Leverage: Debt-to-Sales

Banked (Unbanked): Non-Guarantee Credit Complement (Substitute) [Return]

$$\text{Eligible Sample}: \quad \frac{\Delta Debt_i}{Sales_{i,2019}} \quad = \quad \alpha_s + \alpha_c + \beta_1 Program\ Use_i + \beta_2 Sales\ Growth_i + u_i \tag{7}$$

	(Δ Guaranteed Debt) / Sales (2019)		(Δ Non-guaranteed Debt) / Sales (2019)	
	(1) Banked	(2) Unbanked	(3) Banked	(4) Unbanked
Used Credit Guarantee	0.135***	0.113***	0.003***	0.008***
	(0.000)	(0.001)	(0.001)	(0.001)
Used Employment Protection	0.001***	0.000*	0.004***	0.002***
	(0.000)	(0.000)	(0.002)	(0.000)
Used Employment Protection $\times$ Used Credit Guarantee	-0.002**	-0.007***	-0.004**	-0.005***
	(0.001)	(0.002)	(0.002)	(0.001)
Increase in Sales Dummy	0.000	0.001**	0.015***	0.002***
	(0.001)	(0.000)	(0.002)	(0.000)
Decrease in Sales Dummy	-0.002**	0.000	0.014***	0.002***
	(0.001)	(0.000)	(0.002)	(0.000)
Dependent Variable Mean	0.068	0.019	-0.016	0.005
Dependent Variable Std. Dev.	0.084	0.052	0.102	0.030
Number of Firms	62,530	51,535	61,864	51,538
R^2	0.649	0.670	0.022	0.023
Industry FE and Municipality FE	Yes	Yes	Yes	Yes

|	ΔDebt/ Sales		ΔDebt/ Sales
	(1) Group Change (p.p.)	(2) Weights (%)	(3) Within Change (p.p.)
(i) Active Firms			
Panel A: Used Public Credit Guarantee Program			
Users	1.35	13.9	9.71
Non-users	-0.91	86.1	-1.06
Aggregate	0.44	100.0	
Panel B: Banked Status			
Banked	0.41	85.2	0.49
Newly Banked	0.37	3.2	11.45
Newly Unbanked	-0.35	3.4	-10.14
Unbanked Firms	0.00	8.2	0.00
Aggregate	0.44	100.0	
Panel C: Firm Size			
Small	0.42	8.0	5.25
Medium	0.31	7.6	4.14
Medium-Large	0.21	13.9	1.48
Large	-0.01	4.6	-0.23
Mega	-0.49	65.9	-0.75
Aggregate	0.44	100.0	

	(1) Total Public Credit Guarantee Program (Million USD)	(2) Total Public Credit Guarantee Program (%)	(3) Default Probability (%)	(4) Effective Guarantee (%)	(5) Expected Loss/GDP (=(2)×(3)/GDP) (%)	(6) Government's Expected Loss/GDP (=(4)×(5)) (%)	(7) Bank's Expected Loss/GDP (=(5)-(6)) (%)
Panel A: By Firm Size							
Small	2,264	25	9.22	39.0	0.08	0.03	0.05
Medium	2,371	27	5.97	33.0	0.06	0.02	0.04
Medium-Large	3,322	37	3.45	19.0	0.05	0.01	0.04
Large	1,008	11	2.49	0.0	0.01	0.00	0.01
No Sales Data	55	0	9.22	39.0	0.0	0.0	0.0
Total	9,022 (3.6% GDP)	100	5.47	25.6	0.20	0.06	0.14

	Public Credit Guarantee Approvals			
	(1)	(2)	(3)	(4)
	All	Small	Medium	Large
Panel A: Probit Estimation				
(i) Ex-ante Risk Characteristics				
Risk	-0.257***	-0.246***	-0.439***	-0.755***
	(0.021)	(0.025)	(0.082)	(0.238)
(ii) COVID-19-Shock Characteristics				
Increase in Sales Dummy	0.019***	0.022***	0.008	-0.010
	(0.006)	(0.008)	(0.019)	(0.035)
Decrease in Sales Dummy	0.019***	0.022***	0.005	0.002
	(0.006)	(0.007)	(0.019)	(0.034)
Used Employment Protection	-0.010***	-0.008*	-0.015*	-0.026
	(0.004)	(0.004)	(0.008)	(0.020)
Dependant Variable Mean	0.918	0.913	0.918	0.902
Dependant Variable Std. Dev.	0.275	0.282	0.275	0.298
Number of Firms	35,918	26,623	5,916	1,392
R^2	0.033	0.036	0.082	0.171
Industry FE and Municipality FE	Yes	Yes	Yes	Yes
Panel B: Predicted Default Probability				
Banked Firms	0.09	0.102	0.061	0.036
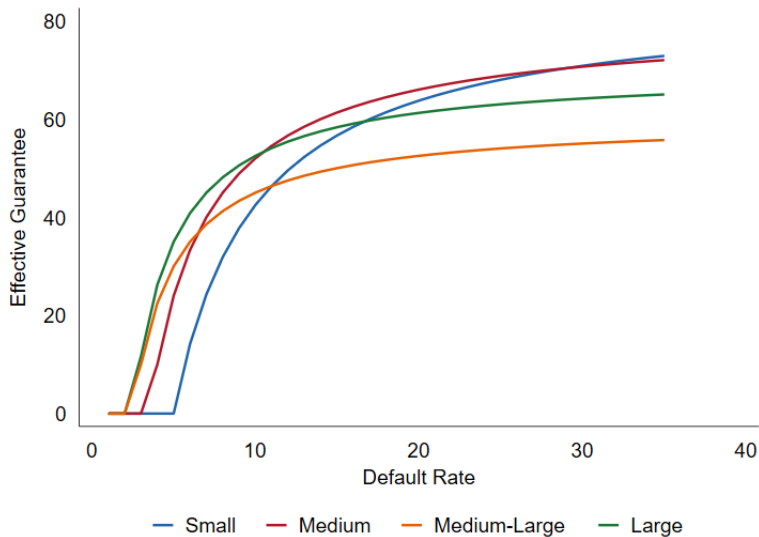
Solvency of the Banking Industry Increases During the Pandemic

	2019	2020	Change
Capital/Total RWA	12.8%	14.7%	1.8%
Capital (MM USD) =	37,514	41,275	3,761
Common Equity Tier 1	28,645	30,163	1,519
+ Subordinated Bonds	8,050	9,423	1,373
+ Additional Provisions	820	1,689	869
Total RWA (MM USD) =	292,292	281,554	-10,738
RWA 1 (0%)	0	0	0
+ RWA 2 (10%)	1,969	4,562	2,592
+ RWA 3 (20%)	4,867	3,849	-1,018
+ RWA 4 (60%)	66,675	68,726	2,052
+ RWA 5 (100%)	218,781	204,417	-14,364
Total Assets (Million USD) =	373,931	383,825	9,894
Assets 1	0	0	0
+ Assets 2	19,690	45,620	25,920
+ Assets 3	24,335	19,245	-5,090
+ Assets 4	111,125	114,543	3,418
+ Assets 5	218,781	204,417	-14,364

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