

The Role of State-Owned Banks in Crises: Evidence from German Banks during COVID-19

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Motivation

- Political economy is an important source of distortions in financial markets (Lambert et al., 2021; De Haas et al., 2022)
 - ▶ Lenders' access to funding and borrowers' cost of credit
 - ▶ Resource allocation distorted by political purposes

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- Importance of bank lending during crises
 - ▶ Many governments nationalized banks during the global financial crisis
 - ▶ Abundant evidence on bank lending during COVID-19: heterogenous lending across bank size, liquidity, capitalization, technology adoption, and exposure to the virus (Berger and Demirgüç-Kunt, 2021; Chodorow-Reich et al., 2021; Beck and Keil, 2021; Kapan and Minoiu, 2021; Kwan et al., 2021; Li et al., 2020)
 - ▶ Few findings on the role of government ownership of banks

This Paper

- Research Questions

- ▶ Have state-owned banks lent more or less than other banks during the COVID-19 crisis?

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- Key Challenge

- ▶ Endogenously different mandates of state-owned banks
 - ← German savings banks and credit cooperatives; PSM & DID
- ▶ Difficult to separate credit supply from credit demand
 - ← saturate location-time and sector-time FE

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- Main Findings

- ▶ State-owned banks lend significantly **less**
- ▶ More pronounced in sectors that are more exposed to the pandemic
- ▶ The severity of the coronavirus spread and the political environment matter

Related Literature

- ① Political connections and ownership of banks
 - ▶ Political v.s. social goals of government-owned banks
 - ② Bank performance during the COVID-19 pandemic
 - ▶ “dash for cash”, bank performance in terms of lending, deposit growth, instability, loss provisions, non-performing loans, stock return, and real effects
 - ③ Role of politics during the COVID-19 crisis
 - ▶ Politics and risk perceptions, electorally important locations and sectors, partisan political connections of banks, trust in government
- New evidence on bank state ownership and lending in the COVID crisis

Institutional Background: Three Pillars in the German Banking Sector

- 1 Government-owned banks (383)
 - ▶ Landesbanks (6), Savings banks (377)
 - ▶ Mandates: foster economic development in the region
 - ▶ Profitability is not the main objective, retained earnings as the main source of funding
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- Savings banks (treated) + credit cooperatives (control) → 79.4% of total number and 28.2% of total assets, ~75% GDP

Data

- Microlevel bank data from *Deutsche Bundesbank*, from Oct 2019 to Dec 2020
- BISTA (monthly balance sheet)
 - ▶ Total corporate lending by each bank (bank-month)
 - ▶ Short- (< 5yr) and long-term (> 5yr) loans
 - ▶ Revolving and non-revolving loans
- VJKRE (quarterly borrower statistics)
 - ▶ Breakdown by sector (bank-sector-quarter)
 - ▶ 22 nonfinancial sectors Sectors

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- Main variables
 - ▶ Dependent: loan-to-asset ratio Koetter and Popov (2021)
 - ▶ Control: bank size, capital-to-asset ratio, deposit-to-asset ratio, liquidity-to-asset ratio
 - ▶ COVID-19 related: infection cases by location, mobility changes by location, work-from-home capacity by sector, employment by sector

Summary Statistics

	Panel A: Raw Data					Panel B: Matched Data				
	Savings Banks		Credit Cooperatives		Normalized	Savings Banks		Credit Cooperatives		Normalized
	Mean	SD	Mean	SD	Difference	Mean	SD	Mean	SD	Difference
<i>BISTA Data</i>										
<i>Dependent Variables</i>										
Total Loan (% Asset)	16.585	5.337	11.279	7.443	0.579	16.814	4.986	16.323	8.160	0.051
Short-term Loan (% Asset)	3.248	1.727	3.328	3.207	-0.022	3.363	1.657	4.738	3.482	-0.357
Long-term Loan (% Asset)	13.337	4.169	7.951	5.339	0.795	13.451	3.926	11.580	6.350	0.251
Revolving Loan (% Asset)	1.173	0.921	1.364	1.488	-0.109	1.226	0.912	1.936	1.864	-0.095
Non-Revolving Loan (% Asset)	15.411	4.919	9.915	6.628	0.666	15.588	4.639	14.387	7.409	0.137
<i>Control Variables</i>										
Size	14.680	0.905	13.220	1.202	0.970	14.637	0.921	14.684	1.026	-0.034
Capital Ratio	5.273	1.249	6.027	2.730	-0.251	5.385	1.188	5.141	1.505	0.127
Deposit Ratio	86.715	2.216	87.116	3.727	-0.092	86.660	2.238	86.885	4.388	-0.046
Liquid Asset Ratio	6.883	2.120	2.854	2.257	1.301	6.603	1.978	6.148	2.229	0.153
N	754		1664			594		588		
<i>VJKRE Data</i>										
Total Loan (% Asset)	1.269	1.524	1.080	1.532	0.087	1.310	1.553	1.102	1.592	0.094
Short-term Loan (% Asset)	0.189	0.290	0.201	0.371	-0.025	0.198	0.297	0.218	0.388	-0.041
Long-term Loan (% Asset)	1.080	1.351	0.878	1.275	0.109	1.112	1.374	0.883	1.322	0.120
N	16558		36344			13062		12664		

Identification Strategy

$$Lending_{bt} = \alpha + \beta After_t \times Savings Bank_b + \Gamma X_{bt-1} + \eta_{st} + \delta_b + \epsilon_{bt}$$

- b, s, t indicate bank, the state where the bank is located, and time
- $After_t = 1$ if $t \geq 2020M3$ and 0 if $t < 2020M3$
- $Savings Bank_b = 1$ if savings banks, and 0 if credit cooperatives
- η_{st} and δ_b : state-time and bank FE
 - ▶ Partially mitigate concerns on credit demand
- A significant and positive (negative) β indicates that savings banks' lending during the COVID-19 crisis is stronger (weaker) than that of credit cooperatives
- Collapse the data into a “pre-” and “post-” period for each bank (Bertrand et al., 2004)

Identification Strategy

① Exogeneity of the shock with respect to bank lending and the parallel trends

▶ Unexpected health crisis that is not rooted in the bank sector

▶ $Lending_{bt} = \alpha' + \sum_{-5, \neq -1}^{+9} \beta'_k Month\ to\ COVID_k \times Savings\ Bank_b + \Gamma' X_{bt-1} + \eta'_{st} + \delta'_b + \epsilon_{bt}$

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- ② Valid comparison between treated and control banks
 - ▶ Savings banks are larger in size, have lower capital ratios and more liquid assets [Summary](#)
 - ▶ Propensity score matching (PSM)

Identification Strategy

1 Exogeneity of the shock with respect to bank lending and the parallel trends

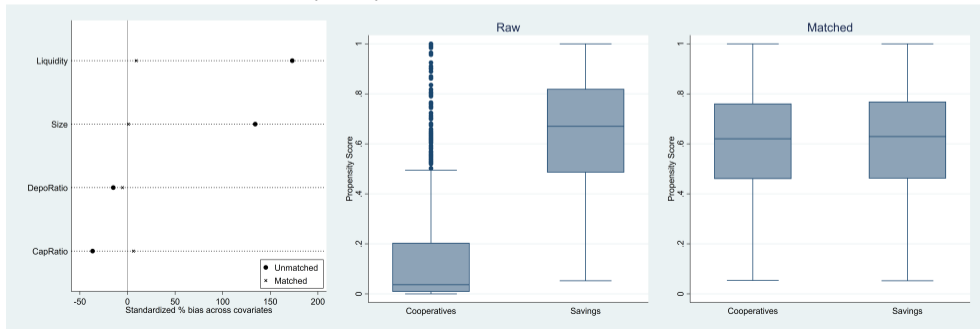
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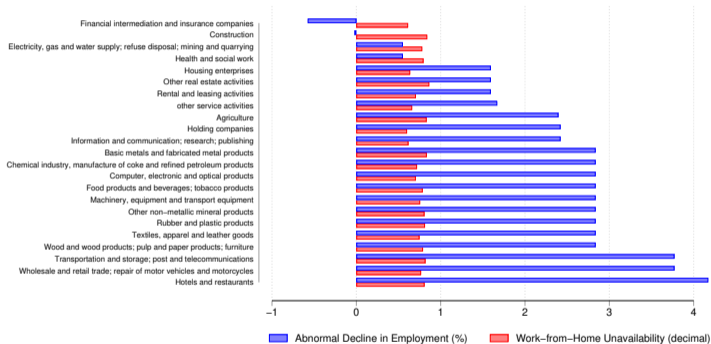
Summary



Identification Strategy

3 Isolation of credit supply from demand

- Sector exposure: Abnormal decline in sector employment Chodorow-Reich et al. (2021); Work-from-home (WFH) unavailability Alipour et al. (2020)



- Sector-time FE and bank-sector FE

$$Lending_{bjt} = \alpha + \beta_1 After_t \times Savings Bank_b \times Exposure_j + \beta_2 After_t \times Savings Bank_b + \Gamma X_{bt-1} + \eta_{jt} + \delta_{bj} + \epsilon_{bjt}$$

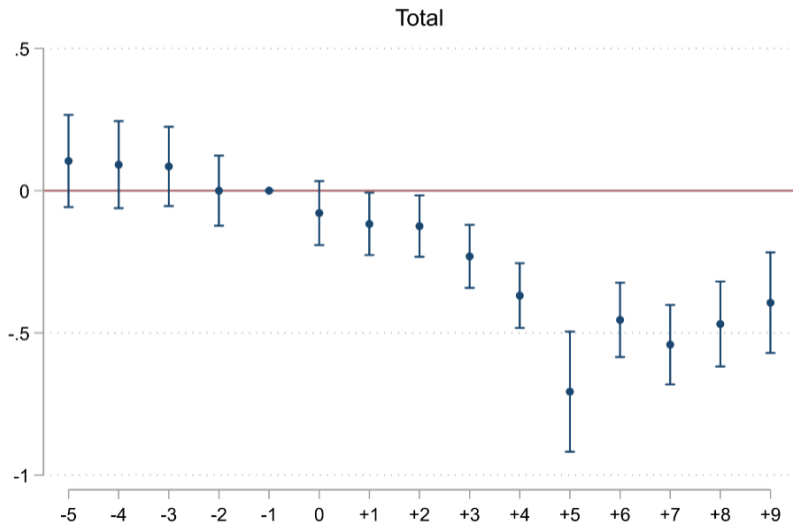
Empirical Results

Baseline

	Total		Short		Long		Revolving		Non-Revolving	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All	Matched	All	Matched	All	Matched	All	Matched	All	Matched
<i>Panel A: Longer Window [-5,+9]</i>										
After × Savings Banks	-0.224***	-0.254***	-0.067*	-0.091**	-0.156***	-0.152***	-0.006	0.017	-0.218***	-0.270***
	(0.055)	(0.064)	(0.035)	(0.039)	(0.041)	(0.047)	(0.022)	(0.024)	(0.051)	(0.059)
Observations	2418	1182	2418	1182	2418	1182	2418	1182	2418	1182
Adjusted R-Square	0.993	0.994	0.979	0.985	0.994	0.996	0.968	0.984	0.993	0.994
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Panel B: Shorter Window [-3,+3]</i>										
After × Savings Banks	-0.149***	-0.191**	-0.029	-0.064	-0.119***	-0.120**	0.004	0.009	-0.154***	-0.200***
	(0.032)	(0.077)	(0.021)	(0.051)	(0.023)	(0.049)	(0.014)	(0.029)	(0.029)	(0.071)
Observations	2418	1182	2418	1182	2418	1182	2418	1182	2418	1182
Adjusted R-Square	0.997	0.997	0.991	0.993	0.998	0.998	0.983	0.992	0.997	0.997
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

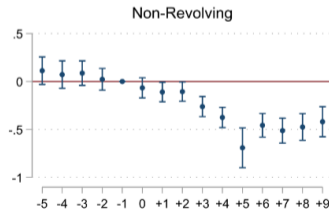
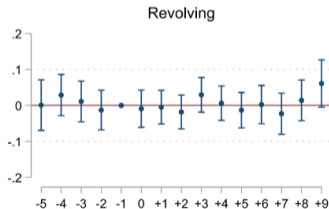
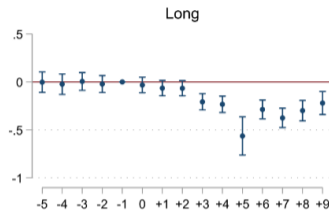
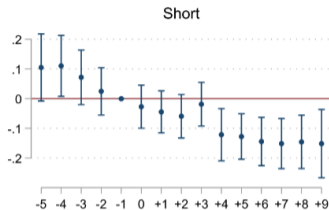
Empirical Results

Dynamic Effects



Empirical Results

Dynamic Effects



- The weaker lending of savings banks is dominated by long-term and nonrevolving loans

Empirical Results

Heterogeneous Effects

	WFH						EMP					
	Total		Short		Long		Total		Short		Long	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Longer Window: [-2,+3] quarters</i>												
After × Sector Exposure × Savings Bank	-0.020** (0.008)	-0.021*** (0.008)	0.004* (0.002)	0.004* (0.002)	-0.024*** (0.007)	-0.025*** (0.007)	-0.010** (0.004)	-0.011** (0.004)	0.006** (0.002)	0.006*** (0.002)	-0.016*** (0.004)	-0.017*** (0.004)
After × Savings Bank	0.012** (0.006)		-0.002 (0.002)		0.015*** (0.005)		0.012** (0.006)		-0.002 (0.002)		0.015*** (0.005)	
Observations	25726	25726	25726	25726	25726	25726	25726	25726	25726	25726	25726	25726
Adjusted R-Square	0.981	0.981	0.963	0.964	0.979	0.979	0.981	0.981	0.963	0.964	0.979	0.979
Bank-Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector-Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank-Time FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
<i>Shorter Window: [-1,+1] quarters</i>												
After × Sector Exposure × Savings Bank	-0.027*** (0.007)	-0.028*** (0.007)	-0.000 (0.002)	-0.001 (0.002)	-0.027*** (0.007)	-0.028*** (0.007)	-0.016** (0.008)	-0.017** (0.008)	0.005 (0.004)	0.005 (0.003)	-0.021*** (0.007)	-0.022*** (0.007)
After × Savings Bank	0.018*** (0.005)		-0.003 (0.002)		0.020*** (0.005)		0.018 (0.012)		-0.003 (0.003)		0.020* (0.011)	
Observations	25710	25710	25710	25710	25710	25710	25710	25710	25710	25710	25710	25710
Adjusted R-Square	0.984	0.984	0.970	0.971	0.982	0.982	0.984	0.983	0.970	0.970	0.982	0.981
Bank-Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector-Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank-Time FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES

Discussion: Banks' Exposure to COVID-19

	Mobility-Grocery		Mobility-Transit		Infection Rates	
	(1)	(2)	(3)	(4)	(5)	(6)
	Low	High	Low	High	Low	High
<i>Panel A: Longer Window [-5,+9]</i>						
After × Savings Banks	-0.217	-0.258*	-0.241	-0.229*	-0.107	-0.318**
	(0.201)	(0.142)	(0.219)	(0.137)	(0.184)	(0.154)
Observations	454	728	402	780	422	760
Adjusted R-Square	0.995	0.994	0.995	0.994	0.995	0.993
Bank FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
<i>Panel B: Shorter Window [-3,+3]</i>						
After × Savings Banks	-0.117	-0.207**	-0.142	-0.178**	-0.020	-0.212**
	(0.100)	(0.089)	(0.105)	(0.086)	(0.101)	(0.099)
Observations	454	728	402	780	422	760
Adjusted R-Square	0.998	0.997	0.998	0.997	0.998	0.997
Bank FE	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES

- COVID-19 community mobility report by Google & infection rates from the JHU CSSE Dataset
- The weaker lending by savings banks only appears in places that are highly exposed

Discussion: Political Role of State-Owned Banks

	Time in Office		Time in Office		Party Ideology	
	(1) Short (<12M)	(2) Long (>=12M)	(3) Short (<24M)	(4) Long (>=24M)	(5) Left	(6) Right
<i>Panel A: Longer Window [-5,+9]</i>						
After × Savings Banks	-0.257 (0.603)	-0.230* (0.124)	-0.077 (0.155)	-0.353** (0.175)	-0.244 (0.270)	-0.263* (0.136)
Observations	52	1130	440	742	262	920
Adjusted R-Square	0.999	0.994	0.995	0.994	0.996	0.993
Bank FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
<i>Panel B: Shorter Window [-3,+3]</i>						
After × Savings Banks	-0.318 (0.249)	-0.160** (0.074)	-0.096 (0.104)	-0.232** (0.096)	-0.144 (0.124)	-0.184** (0.084)
Observations	52	1130	440	742	262	920
Adjusted R-Square	0.999	0.997	0.997	0.998	0.999	0.997
Bank FE	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES

- Time-in-office and political ideology of the party or coalition before the pandemic
- The weaker lending by savings banks is only observable in states in which the current ruling parties have been in office for a relatively long time and hold a pro-right political position

Conclusion

- Main Findings

- ▶ A significantly weaker role of government-owned savings banks compared to matched credit cooperatives in corporate lending during the COVID-19 crisis
- ▶ Particularly pronounced for long-term and nonrevolving loans
- ▶ For sectors and regions that are more exposed to the COVID-19 shock
- ▶ The political environment plays a role in the performance gap

- Policy Implications

- ▶ Incentives of state-owned banks should be taken into account when allocating public funding and channeling credit to borrowers in need

Sector Classification

Industry Group	Main Activity
1	Agriculture, forestry, fishing, and aquaculture
2	Electricity, gas and water supply; refuse disposal, mining and quarrying
3	Chemical industry, manufacture of coke and refined petroleum products
4	Manufacture of rubber and plastic products
5	Manufacture of other non-metallic mineral products
6	Manufacture of basic metals and fabricated metal products
7	Manufacture of machinery and equipment; manufacture of transport equipment; repair and installation of machinery and equipment
8	Manufacture of computer, electronic and optical products
9	Manufacture of wood and wood products; manufacture of pulp, paper and paper products, printing; manufacture of furniture; manufacturing nec
10	Manufacture of textiles, apparel and leather goods
11	Manufacture of food products and beverages; manufacture of tobacco products
12	Construction
13	Wholesale and retail trade; repair of motor vehicles and motorcycles
14	Transportation and storage; post and telecommunications
15	Financial intermediation (excluding MFIs) and insurance companies
16	Housing enterprises
17	Holding companies
18	Other real estate activities
19	Hotels and restaurants
20	Information and communication; research and development; membership organisations; publishing activities; other business activities
21	Health and social work (enterprises and self-employment)
22	Rental and leasing activities
23	Other service activities