

Take it to the bank!

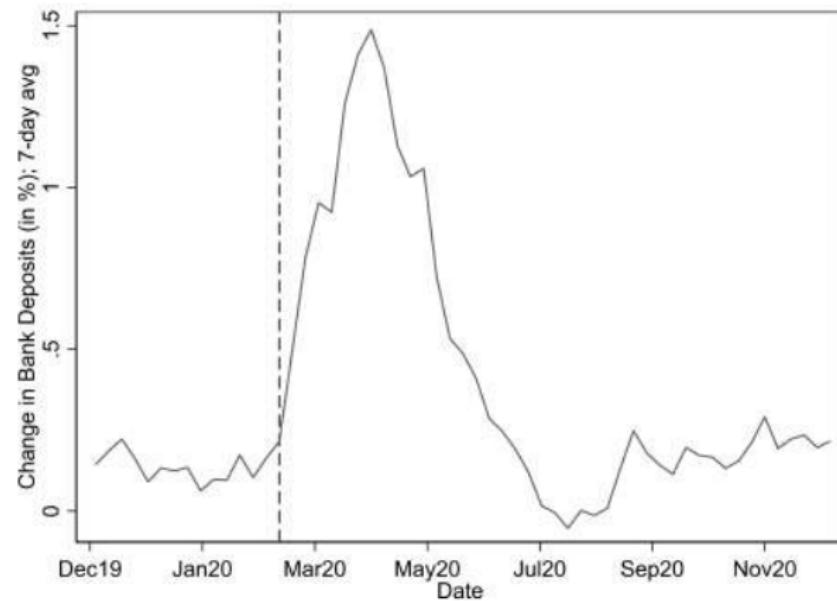
Local Discourse and Deposits

Oliver Rehbein

August 22nd, 2022

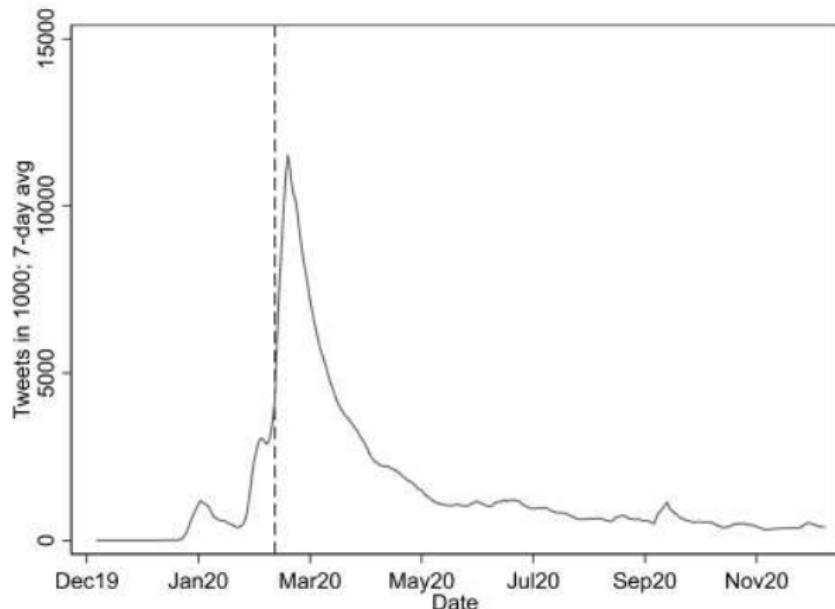
EEA (Bocconi)

Deposit growth spikes in March 2020



Change in deposits in U.S. banks during 2020

Simultaneous surge in exposure to information *about the pandemic*



Tweets containing "coronavirus" during 2020

Are they related?

Does **intensity** of information exposure influence depositor's behavior?

Pandemic: ↑ information exposure → precautionary savings ↑?

Importance

(Social) media environment has intensified

Similar information is repeated multiple times

(How) does financial behavior respond?

New data

Coverage intensity in local news

New data

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- Highly relevant in the U.S.

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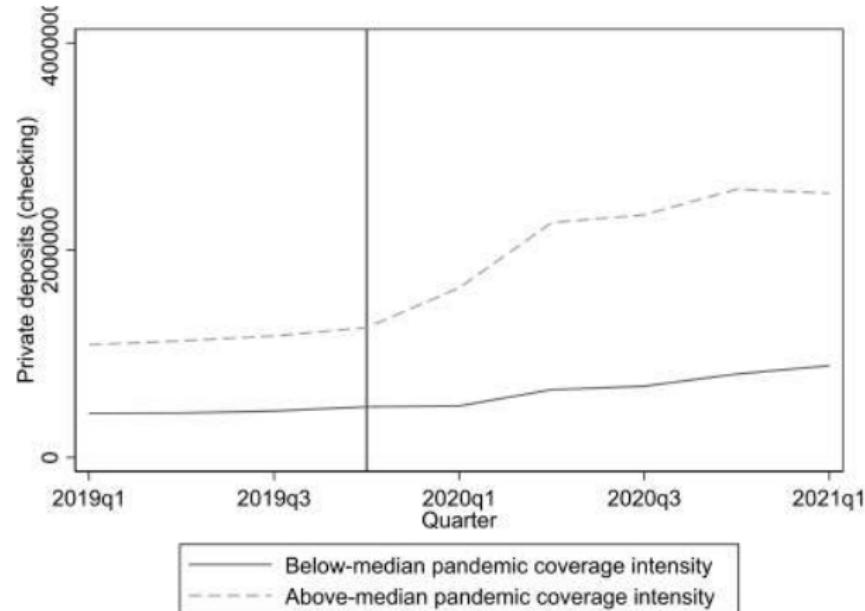
Manually scrape local news channels on YouTube

- 840,000 video / subtitle files
- in 138 media markets (out of 210)
- Jan. 2020 - March 2021

Research question

Relationship between the **intensity of coverage in local news**
and bank **deposits** during the pandemic?

Preview of results



Deposits over time, split by intensity of coverage

Organization of local television news *in the U.S.*

Major US networks run through **local affiliates**:

- ABC, CBS, NBC, FOX

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National signal & **independent programming**

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National signal & **independent programming**

- usually: early morning, midday and early evening

67% get news from local television (Pew Research, 2020)

- Newspapers: 27%, Network TV: 61%, Online: 65%

Scraping Process

Example: ABC Denver

Denver7 – The Denver Channel • 395K subscribers [SUBSCRIBE](#)

HOME VIDEOS PLAYLISTS COMMUNITY CHANNELS ABOUT 🔍 SORT BY

Uploads ▾ PLAY ALL

 Denver 7+ Colorado News: Latest Headlines (October... 2:36 344 views • 4 hours ago CC

 Denver 7+ Colorado News: Latest Headlines (October... 1:39 827 views • 8 hours ago CC

 Boulder grocery store asks community to bring in... 1:51 281 views • 8 hours ago CC

 Still chilly with rain and snow to start the week 3:11 16 views • 9 hours ago CC

 Much colder today, chances rain & snow tonight 2:36 236 views • 10 hours ago CC

 Denver 7+ Colorado News: Latest Headlines (October... 2:35 826 views • 1 day ago CC

 March cooler for Halloween-chances for rain/snow 1:46 146 views • 1 day ago CC

 Denver unveils Mortenson Connects free, on-demand... 2:07 383 views • 1 day ago CC

 Denver 7+ Colorado News: Latest Headlines (October... 1:23 962 views • 1 day ago CC

 Green burials? Parties in lieu of funerals? Old... 4:09 163 views • 2 days ago CC

 Checkpoint coming to TSA checkpoints at Denver's... 2:39 196 views • 2 days ago CC

 Southeast Denver residents complain about RVs park... 2:03 28 views • 2 days ago CC

 City of Lakewood signs water conservation... 2:40 821 views • 2 days ago CC

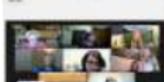
 Adams County treasurer responds to lawsuit alleging... 2:31 823 views • 2 days ago CC

 Rain and snow ahead - Sunday & Monday 1:46 1,161 views • 2 days ago CC

 Family recalls journey with infant RV case, all... 2:47 287 views • 2 days ago CC

 5 days after fire destroys major attraction, Flight Axis... 2:33 402 views • 2 days ago CC

 Boulder city councilwoman calls on governor to... 2:03 529 views • 2 days ago CC

 Colorado job counselors available at Denver 7+ call... 1:19 236 views • 2 days ago CC

 Colorado job counselor available at Denver 7+ call... 0:01 595 views • 2 days ago CC

 Colorado job counselors available at Denver 7+ call... 1:03 139 views • 2 days ago CC

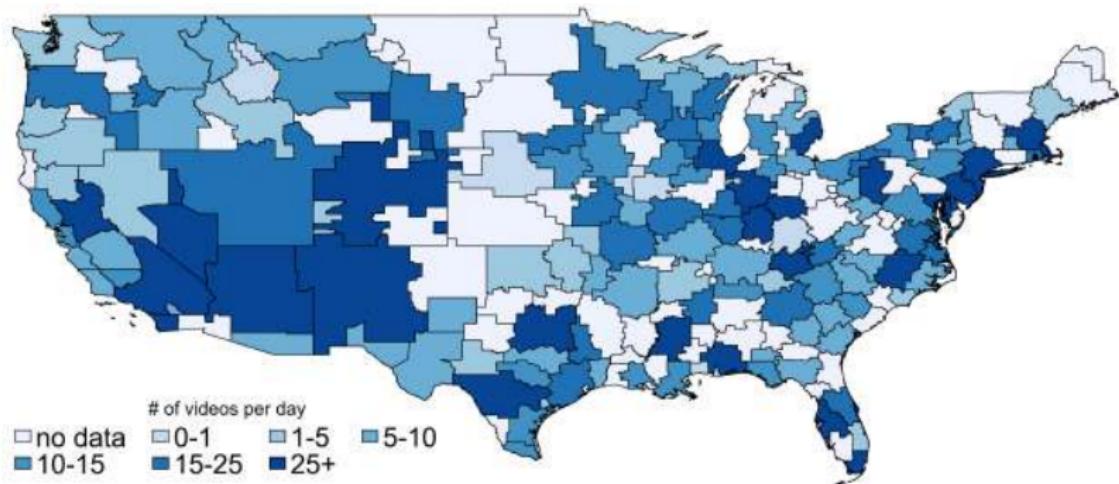
 We Don't Waste hosts free drive-thru market at Drifts... 2:47 247 views • 2 days ago CC

 Zoo Spin News 7:00 53° 47° 42° 7PM 9PM 10PM 0:40 261 views • 2 days ago CC

 Run your yawn off! The Turkey Trot is returning to... 1:19 131 views • 2 days ago CC

Data availability

Result of YouTube scraping



Measuring COVID-19 coverage

COVID-19 coverage share:

pandemic related stories
all stories

A **pandemic related story** contains any of the following words:

pandemic, covid, coronavirus, virus

Estimation

$$\ln(\text{deposits})_{iq} = \beta_1 \cdot \text{Covid coverage share}_{m(i)q} + \alpha_i + \alpha_q + \epsilon_{iq}$$

- i : county; $m(i)$: media market; q : quarter
- Period: Q1 2019 - Q1 2021

Estimation

$$\ln(\text{deposits})_{iq} = \beta_1 \cdot \text{Covid coverage share}_{m(i)q} + \alpha_i + \alpha_q + \epsilon_{iq}$$

- i : county; $m(i)$: media market; q : quarter
- Period: Q1 2019 - Q1 2021
- Covid coverage share: pandemic news stories / all news stories
- 0 in pre-pandemic period (Q1 2019 - Q4 2019)

▶ Other data

Baseline results

Dependent Variable:	Demand deposits		Savings deposits
	All	Private	All
	(1)	(2)	(3)
Covid coverage share	0.129** (0.053)	0.141** (0.055)	0.025 (0.023)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605
R ²	0.967	0.965	0.986
Within R ²	0.002	0.002	0.000

Clustered standard errors on the media market level in parentheses.

1 pp increase in covid coverage share:

- 0.13% increase in checking deposits
- 1 SD = 1/6 of the overall increase in deposits

Ruling out alternate explanations: summary

private deposits

Dependent variable:	Cases	Lockdown	Structural	Politics	All
	(1)	(2)	(3)	(4)	(5)
Covid coverage share	0.145** (0.056)	0.215*** (0.064)	0.112** (0.044)	0.121*** (0.046)	0.200*** (0.059)
Cases per capita	-0.817* (0.465)				-0.827 (0.658)
Deaths per capita (x1000)	-0.018 (0.012)				0.001 (0.014)
Post × mobility: retail		-0.001 (0.001)			0.000 (0.001)
Post × mobility: driving		0.000 (0.000)			0.000* (0.000)
Post × % pop over 64 yrs			-0.002 (0.003)		-0.001 (0.004)
Post × % pop no highschool			-0.000 (0.003)		0.000 (0.003)
Post × % pop w/ college degree			0.003 (0.002)		0.003 (0.003)
Post × % construction			0.007 (0.004)		0.002 (0.007)
Post × % manufacturing			0.004** (0.002)		0.002 (0.003)
Post × % service			0.004* (0.002)		0.001 (0.004)
Post × gini			0.199 (0.379)		0.320 (0.464)
Post × % Urban			0.000 (0.001)		0.001 (0.001)
Post × % Republican (00-16)				0.005 (0.003)	0.001 (0.003)
Post × % Republican 2020				-0.007*** (0.002)	-0.002 (0.003)
Quarter FE	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	13,605	9,859	13,605	13,596	9,859
R ²	0.965	0.962	0.966	0.966	0.962
Within R ²	0.003	0.003	0.013	0.012	0.011

Influence of media or discourse?

Indirect evidence that media reflects local discourse

Media or discourse?

	Social centrality	Early pandemic	Google Trends
Dependent variable:	Private demand deposits (1)	Private demand deposits (2)	Covid coverage share (3)
Social connectedness to non-local coverage	0.033** (0.015)		
Covid coverage share		0.122** (0.049)	
Post × early pandemic cases		0.085*** (0.017)	
Pandemic relevance in Google Trends			0.001* (0.001)
Cases per capita	-0.824* (0.467)	-0.762* (0.454)	0.188 (0.376)
Deaths per capita (x1000)	-0.019 (0.012)	-0.015 (0.011)	0.003 (0.007)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605
R ²	0.965	0.966	0.770
Within R ²	0.002	0.009	0.006

Effect amplified by **social context** not economic fundamentals

What is driving the effect?

economic fundamentals and social cohesion

	Economic Factors			Social Environment		
	Income p.c.	Gini	Age	Comm health	Organizations	Politics
Dependent variable:				Private demand deposits		
Covid coverage share	(1) 0.107** (0.046)	(2) 0.098* (0.058)	(3) 0.187*** (0.062)	(4) 0.198*** (0.067)	(5) 0.222*** (0.069)	(6) 0.316*** (0.060)
Covid coverage share × high income per capita	0.047 (0.058)					
Covid coverage share × high Gini		0.055 (0.057)				
Covid coverage share × high share of pop > 64			-0.117** (0.055)			
Covid coverage share × community health				-0.143** (0.067)		
Covid coverage share × membership in organizations					-0.184*** (0.066)	
Covid coverage share × share of Trump voters (2020)						-0.288*** (0.056)
Post × cases per capita	-1.055** (0.465)	-1.065** (0.470)	-1.122** (0.460)	-1.111** (0.466)	-1.090** (0.465)	-0.782* (0.447)
Post × deaths per capita	-0.024** (0.011)	-0.027** (0.011)	-0.023** (0.010)	-0.028** (0.011)	-0.025** (0.010)	-0.021** (0.010)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605	13,605	13,605	13,605
R ²	0.966	0.966	0.966	0.966	0.966	0.966
Within R ²	0.009	0.009	0.010	0.011	0.012	0.016

Conclusion

↑ Media coverage intensity → precautionary savings ↑

Could reflect intensifying discourse

Social structure important

Key insight: How **much** something is discussed matters

For banks (and the real economy)

Thank You!

Appendix

Literature I

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- Baker, Malcolm and Jeffrey Wurgler (2007). "Investor Sentiment in the Stock Market". *Journal of Economic Perspectives* 21.2, pp. 129–151. ISSN: 0895-3309. DOI: 10.1257/jep.21.2.129.
- Carroll, Christopher D. and Andrew A. Samwick (1998). "How Important Is Precautionary Saving?" *The Review of Economics and Statistics* 80.3, pp. 410–419. ISSN: 0034-6535. DOI: 10.1162/003465398557645.

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Literature III

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Literature IV

- Gilje, Erik P., Elena Loutskina, and Philip E. Strahan (2016). "Exporting Liquidity: Branch Banking and Financial Integration". *The Journal of Finance* 71.3, pp. 1159–1184. ISSN: 1540-6261. doi: 10.1111/jofi.12387.
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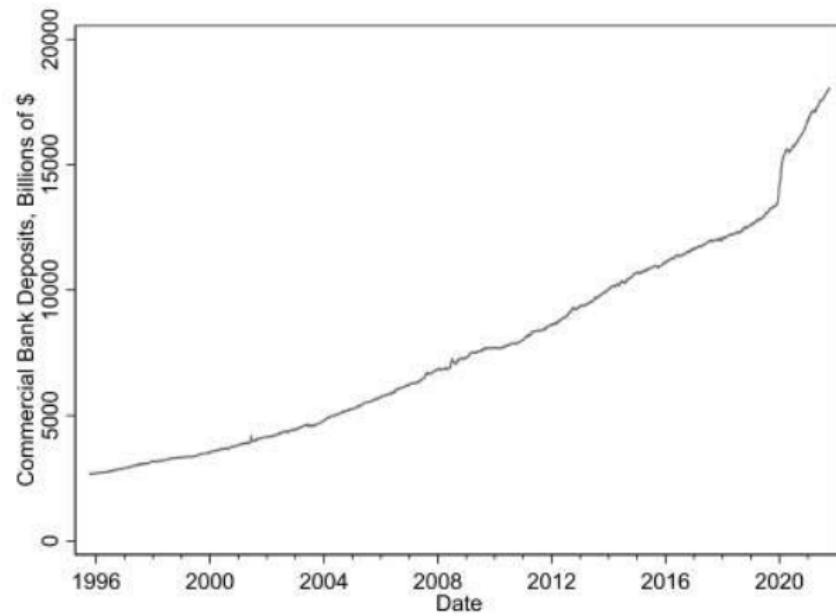
Literature V

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Motivation



Deposits in U.S. banks over time: 1996-2021

Related literature & Contribution III

Sentiment

▶ back

Related literature & Contribution III

Sentiment

1. stock prices

Long et al., 1990; Lemmon and Portniaguina, 2006; Baker and Wurgler, 2007; Edmans, García, and Norli, 2007; Kaplanski and Levy, 2010; Da, Engelberg, and P. Gao, 2015; Z. Gao, Ren, and Zhang, 2020; Chen et al., 2020; Edmans, Fernandez-Perez, et al., 2021

2. business cycles

Lagerborg, Pappa, and Ravn, 2020

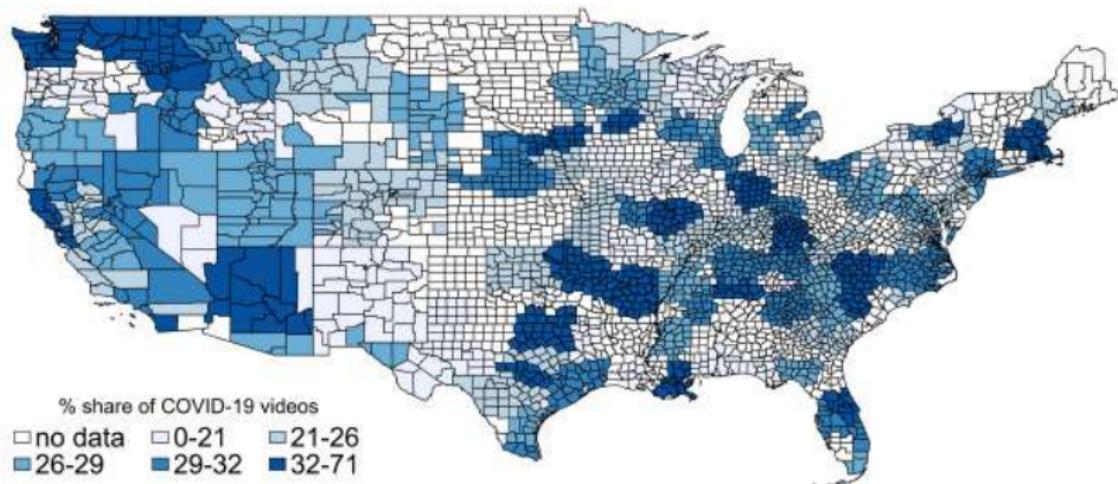
3. house prices

Soo, 2018

→ this paper: **deposits, intensity, local**

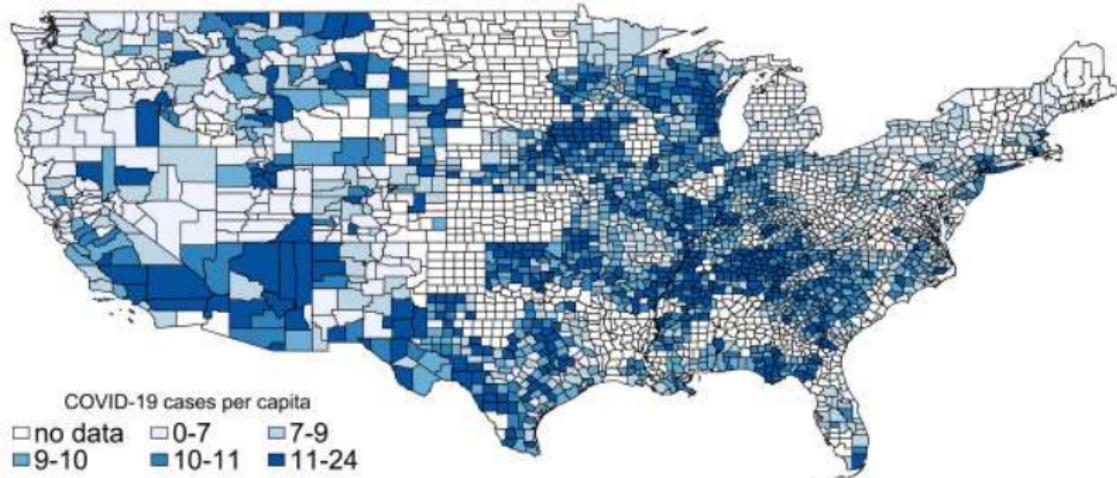
▶ back

COVID-19 coverage has wide variation...



Relative Frequency of Pandemic related stories in %

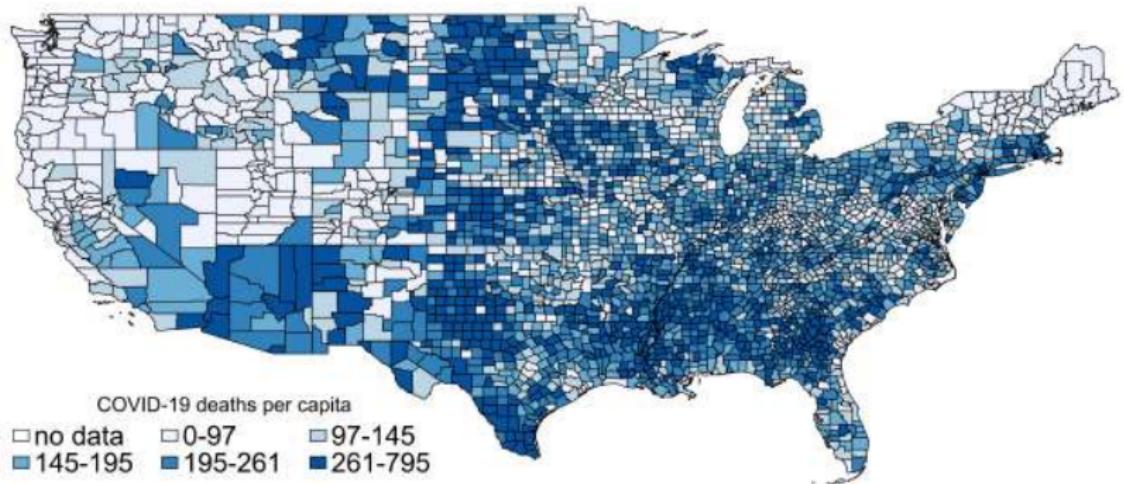
...with little relation to pandemic intensity



Total cases per capita until March 2021 in %
areas with no coverage omitted

► deaths

Total deaths per capita



Covid-19 related deaths per 100.000 population

▶ back

Other data

- Deposit data: quarterly call reports (FDIC / FFIEC)
- COVID-19 cases and deaths (JHU)
- Mobility (Google and Apple)
- County-level structural variables (Census, congress)

Descriptive statistics I

	N	Mean	Median	SD
Media coverage measure:				
Covid coverage share	13,605	0.15	0.13	0.17
Main dependent variables				
Deposits (checking)	13,605	1,310	144	14,055
Private deposits (checking)	13,605	1,181	122	12,810
Deposits (saving)	13,605	5,109	271	48,429
Control variables				
Total cases per capita	13,605	0.09	0.10	0.03
Total deaths per capita (x1000)	13,605	1.76	1.65	0.92
Mobility: retail	12,220	-13.06	-11.47	12.01
Mobility: driving	10,263	34.86	32.32	27.52
% pop over 64 yrs	13,605	15.13	14.70	3.83
% pop no high school	13,605	16.35	14.70	7.22
% pop w/ college degree	13,605	27.48	25.60	9.79
% construction	13,605	7.84	7.53	2.41
% manufacturing	13,605	13.58	12.86	7.02
% service	13,605	73.04	73.06	7.85
Gini	13,605	0.43	0.43	0.03
% Urban	13,605	48.08	47.78	30.56
% Republican (00-16)	13,605	59.10	60.94	13.47
% Republican 2020	13,596	63.77	67.26	16.27

Descriptive statistics II

	N	Mean	Median	SD
Additional variables				
Credit card loans	13,605	301	0	5,233
Consumer loans	13,605	166	5	2,079
Commercial loans	13,605	358	41	1,660
Real estate loans	13,605	2,281	244	15,114
Total loans	13,605	4,569	323	38,411
Amplification variables				
Per capita income 2014-2019	13,575	43,174	40,722	12,614
Cases Q1 2020 (x1000)	13,605	226.59	84.47	625.27
Community health	13,605	-0.14	-0.30	0.84
Share of single households	13,605	27.80	27.90	4.22

▶ back

Effects on mobility

Dependent variable:	Work (1)	Transit (2)	Retail & rec. (3)	Grocery (4)	Residential (5)	Parks (6)
Covid coverage share	-1.049 (1.008)	-6.360 (5.008)	-4.066 (2.854)	-4.142* (2.275)	1.185** (0.583)	-13.785 (8.747)
L1.log(NewCases)	-0.139*** (0.051)	-0.435*** (0.123)	-0.076 (0.062)	-0.137** (0.053)	0.093*** (0.021)	-0.149 (0.247)
L1.log(NewDeaths)	-0.013 (0.080)	-0.128 (0.184)	-0.109 (0.088)	-0.123 (0.075)	0.002 (0.037)	-1.569*** (0.345)
Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Lags	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	121,303	121,303	121,303	121,303	121,303	121,303
No. of media markets	133	133	133	133	133	133
R ²	0.806	0.330	0.644	0.532	0.739	0.319

▶ back

No region FEs

	Checking	Saving	
Dependent Variable (deposits):	All (1)	Private (2)	All (3)
Covid coverage share	0.833** (0.389)	0.868** (0.411)	1.237** (0.571)
Cases per capita	-0.767 (2.143)	-1.188 (2.214)	-3.003 (2.890)
Deaths per capita (x1000)	-0.201** (0.094)	-0.216** (0.095)	-0.222 (0.135)
Quarter FE	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605
No. of media markets	138	138	138
R ²	0.021	0.022	0.007

▶ back

Baseline: median split

$$\ln(\text{deposits})_{iq} = \beta_1 \cdot \text{Post}_q \cdot \text{Covid coverage share}_{m(i)} + \alpha_i + \alpha_q$$

	Checking	Saving	
Dependent Variable (deposits):	All (1)	Private (2)	All (3)
Post × high covid coverage	0.041* (0.021)	0.043* (0.022)	0.024 (0.016)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,533	13,533	13,533
No. of media markets	137	137	137
R ²	0.967	0.965	0.986

Determinants of pandemic coverage

Dependent variable:	Covid coverage share				
	Cases (1)	Mobility (2)	Structural (3)	Politics (4)	All (5)
Cases per capita	0.231 (0.429)				0.307 (0.466)
Deaths per capita (x1000)	-0.003 (0.008)				-0.000 (0.011)
Mobility: retail		-0.000 (0.000)			-0.000 (0.000)
Mobility: driving		-0.000 (0.000)			-0.000 (0.000)
% pop no high school			0.001** (0.001)		0.001** (0.001)
% pop w/ college degree			0.001*** (0.000)		0.001** (0.000)
% construction			0.002** (0.001)		0.003*** (0.001)
% manufacturing			0.001** (0.000)		0.002** (0.001)
% service			0.001* (0.000)		0.001** (0.001)
Gini			0.047 (0.053)		-0.014 (0.062)
% Urban			-0.000 (0.000)		-0.000 (0.000)
% Republican (00-16)				0.000 (0.001)	-0.000 (0.001)
% Republican 2020				-0.001 (0.000)	0.000 (0.001)
Quarter FE	Yes	Yes	Yes	Yes	Yes
County FE	No	No	No	No	No
No. of obs.	13,605	10,245	13,605	13,596	10,245
No. of media markets	138	138	138	138	138
R ²	0.709	0.750	0.713	0.710	0.753

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Ruling out alternate explanations

pandemic intensity

Dependent Variable:	Demand		Savings
	deposits		deposits
	All	Private	All
	(1)	(2)	(3)
Covid coverage share	0.133** (0.054)	0.145** (0.056)	0.026 (0.023)
Cases per capita	-0.871* (0.451)	-0.817* (0.465)	-0.226 (0.276)
Deaths per capita (x1000)	-0.019 (0.012)	-0.018 (0.012)	-0.005 (0.014)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605
R ²	0.968	0.965	0.986
Within R ²	0.003	0.003	0.000

Ruling out alternate explanations

lockdowns and mobility

Dependent Variable:	Demand		Savings
	deposits		deposits
	All	Private	All
	(1)	(2)	(3)
Covid coverage share	0.165*** (0.063)	0.215*** (0.064)	0.055* (0.033)
Post × mobility: retail	-0.001** (0.001)	-0.001 (0.001)	0.000 (0.000)
Post × mobility: driving	0.000* (0.000)	0.000 (0.000)	0.000 (0.000)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	9,859	9,859	9,859
R ²	0.964	0.962	0.985
Within R ²	0.003	0.003	0.001

Ruling out alternate explanations

structural factors

Dependent Variable:	Demand deposits		Savings deposits
	All	Private	All
	(1)	(2)	(3)
Covid coverage share	0.101** (0.042)	0.112** (0.044)	0.025 (0.021)
Post × % pop no highschool	0.001 (0.002)	0.001 (0.003)	0.001 (0.002)
Post × % pop w/ college degree	0.004* (0.002)	0.004 (0.002)	0.001 (0.002)
Post × % construction	0.007** (0.004)	0.007* (0.004)	0.006 (0.004)
Post × % manufacturing	0.003** (0.002)	0.004** (0.002)	0.002** (0.001)
Post × % service	0.003 (0.002)	0.004** (0.002)	-0.002 (0.001)
Post × gini	0.190 (0.327)	0.139 (0.372)	-0.378 (0.283)
Post × % Urban	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605
R ²	0.968	0.966	0.986
Within R ²	0.012	0.013	0.005

Ruling out alternate explanations

political affiliation

Dependent Variable:	Demand		Savings
	deposits		deposits
	All	Private	All
	(1)	(2)	(3)
Covid coverage share	0.110** (0.043)	0.121*** (0.046)	0.028 (0.021)
Post × % Republican (00-16)	0.004 (0.003)	0.005 (0.003)	0.000 (0.002)
Post × % Republican 2020	-0.006** (0.002)	-0.007*** (0.002)	0.000 (0.002)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	13,596	13,596	13,596
R ²	0.968	0.966	0.986
Within R ²	0.012	0.012	0.001

Ruling out alternate explanations: all factors

Dependent Variable:	Demand deposits		
	Savings deposits		
	All (1)	Private (2)	All (3)
Covid coverage share	0.152** (0.058)	0.200*** (0.059)	0.050* (0.030)
Cases per capita	-0.882 (0.642)	-0.812 (0.670)	-0.422 (0.452)
Deaths per capita (x1000)	0.000 (0.014)	0.001 (0.014)	0.017 (0.014)
Post × mobility: retail	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.000)
Post × mobility: driving	0.000** (0.000)	0.000* (0.000)	0.000 (0.000)
Post × % pop no highschool	0.001 (0.003)	0.000 (0.003)	0.002 (0.002)
Post × % pop w/ college degree	0.003 (0.003)	0.003 (0.003)	0.002 (0.002)
Post × % construction	0.002 (0.006)	0.002 (0.007)	0.006 (0.006)
Post × % manufacturing	0.001 (0.003)	0.002 (0.003)	0.003* (0.002)
Post × % service	-0.001 (0.004)	0.001 (0.004)	-0.001 (0.002)
Post × gini	0.190 (0.413)	0.296 (0.452)	-0.479 (0.393)
Post × % Urban	0.001 (0.001)	0.001 (0.001)	0.000 (0.000)
Post × % Republican (00-16)	0.001 (0.003)	0.002 (0.004)	0.002 (0.003)
Post × % Republican 2020	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)
Quarter FE	Yes	Yes	Yes
County FE	Yes	Yes	Yes
No. of obs.	9,859	9,859	9,859
R ²	0.964	0.962	0.985
Within R ²	0.010	0.011	0.008

Effect on total deposits and other liabilities

Dependent variable:	Total deposits (1)	Borrowing (2)	Other liab. (3)	Total liab. (4)	Total equity (5)
Covid coverage share	0.047* (0.025)	-0.328 (0.202)	0.147*** (0.037)	0.033 (0.023)	0.028 (0.024)
Quarter FE	Yes	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	13,605	13,605	13,605	13,592	13,592
R ²	0.986	0.872	0.966	0.986	0.986
Within R ²	0.000	0.000	0.001	0.000	0.000

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