Payout Restrictions and Bank Risk-Shifting

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Introduction

Bank payouts during the global financial crisis

- Many banks maintained or increased payouts (Acharya, Le and Shin, 2017)
- Same banks later required public assistance
- Risk-shifting motives (Jensen and Meckling, 1976)

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Bank payouts during the Covid crisis

- Fed imposes payout restrictions in June 2020
- Similar interventions in Eurozone, UK, Canada

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- Same banks later required public assistance
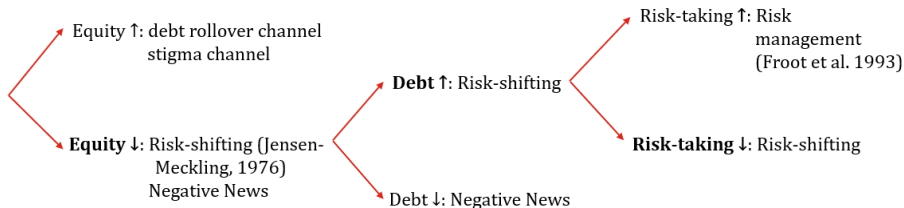- Risk-shifting motives (Jensen and Meckling, 1976)

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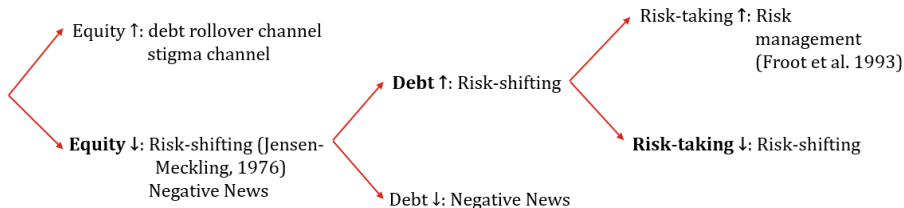- Similar interventions in Eurozone, UK, Canada

How do payout restrictions affect banks' equity prices, debt values, and risk-taking in lending at time of crisis?
- Natural experiment using payout restrictions imposed during the pandemic
- Theoretical framework to study the impact of payout restrictions

Hypotheses and Main Findings

Equity ↑: debt rollover channel
stigma channel

Equity ↓: Risk-shifting (Jensen-
Meckling, 1976)
Negative News

Debt ↓: Negative News

Debt ↑: Risk-shifting

Risk-taking ↑: Risk
management
(Froot et al. 1993)

Risk-taking ↓: Risk-shifting

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Risk-taking ↑: Risk management (Froot et al. 1993)

Risk-taking ↓: Risk-shifting

Main Findings

1. Payout restrictions lower bank equity prices
2. Payout restrictions raise bank debt values
3. Payout restrictions affect lending decisions of banks
   - Banks more affected (with higher ex-ante reliance on share buybacks relative to dividend payouts) reduce risk-taking differentially more
4. Effects revert when payout restrictions are lifted

Literature Review

Banking Regulation (Micro and Macro): Acharya et al (2011),
Acharya-Drechsler-Schnabl (2013), Acharya-Le-Shin (2016), Admati et al. (2012),
Atkeson et al. (2018), d'Avernas-Bigio (2019), Baron (2020), Begenau (2020),
Begenau-Landvoigt (2021), Bergant-Forbes (2021), Berndt-Duffie-Zhu (2025),
Corbae-D'Erasmo (2020), Flannery-Hirtle-Kovner (2017), Floyd-Li-Skinner (2015),
Gennaioli et al. (2014), Gropp et al. (2019), Hirtle (2014), Sarin-Summers (2016)

Here: Quantification of understudied regulatory tool

Corporate Finance: Payout Policy, Risk-Shifting and Multi-Tasking:
Acemoglu-Kremer-Mian (2008), Handjinicolaou-Kalay (1984), Jensen-Meckling (1976),
Kahle-Stulz (2020), Kroen (2021), Ma (2020), Maxwell-Stephens (2003), Mota (2021)

Here: Identification from exogenously imposed payout restriction

Banking and Regulatory Response to COVID crisis: Acharya-Engle-Steffen (2020),
Ampudia et al. (2023), Chodorow-Reich et al. (2021), Dautovic et al. (2023),
Demirguc-Kunt et al. (2020), Greenwald-Krainer-Paul (2021), Haddad-Moreira-Muir
(2021), Hardy (2021), Kargar et al. (2020), Marsh (2023), Sanders et al. (2024),
Schrimpf-Shin-Sushko (2020), Svoronos-Vrbaski (2020)

Here: Effects of payout restrictions on risk-taking, macroprudential trade-off

Empirical Setting

Data

CRSP, TAQ
- Equity Prices
- TAQ: all trades on NYSE, NASDAQ

Markit, TRACE
- CDS spreads and Bond prices

FR Y9C, Compustat
- Bank balance sheets and income statements

FR Y14Q, Schedule H1
- Loan-level data on C&I loans of banks subject to stress tests

Institutional Setting in the US

CCAR: Largest US banks subject to stress test regime

Jun 25, 2020 16.30 ET - Introduction of Payout Restrictions
- $Div_{it} \leq \min\{Div_{i,t-1}, \bar{\Pi}_{i,t-4}^{t}\}$ & $BB_{it} = 0$
- Pre-Covid: 2/3 of payouts via share buybacks

Institutional Setting in the US

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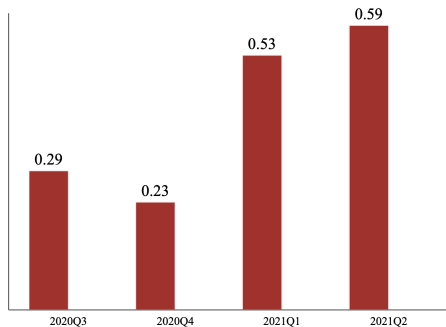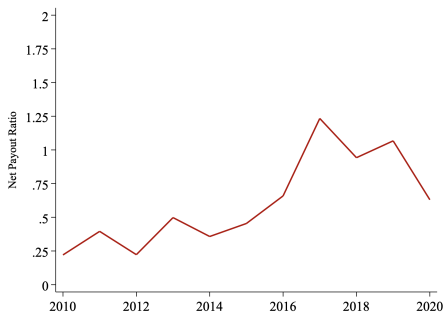**Jun 25, 2020 16.30 ET - Introduction of Payout Restrictions**
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Dec 18, 2020 16.30 ET - Substantial lifting of restrictions
- Substantial lifting of restrictions
    - $Div_{it} + BB_{it} \leq \bar{\Pi}_{i,t-4}^{t}$
- Several banks restart repurchases in 2021 Q1

Evolution of Payouts

$$\text{Net Payout Ratio} \quad = \frac{Div_t + BB_t - Iss_t}{\text{Net Income}_t}$$

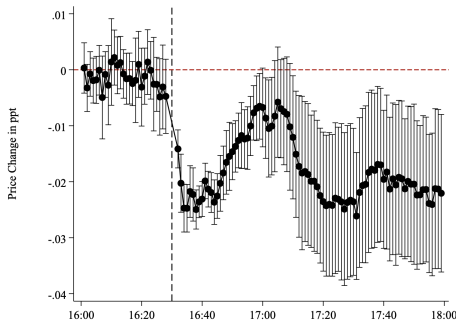# Results

Equity Response I

Methodology

- High-frequency data around announcements (at 16.30 ET)
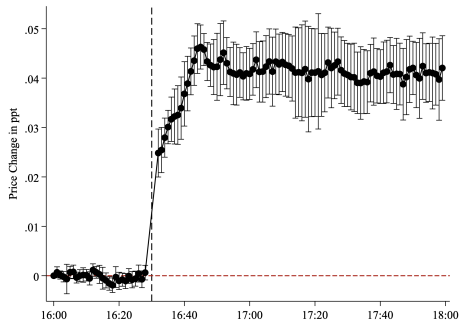- Normalize prices to one at 16:00

$$P_{it} = \alpha_i + \alpha_t + \sum_{\substack{\tau=16:00 \\ \tau \neq 16:30}}^{18:00} \beta_\tau \mathbf{1}_{t=\tau} CCARBank_i + \epsilon_{it}$$

Equity Response II

Announcement June 25, 2020

Announcement December 18, 2020

Equity Response III

CAR Weighted Regressions (banks only)

| CAR after 06/25/2020			CAR after 12/18/2020		
Date	Coefficient	SE	Date	Coefficient	SE
06/26/2020	-.0135***	(.0050)	12/21/2020	.03196***	(.0049)
06/29/2020	-.0305***	(.0037)	12/22/2020	.01844***	(.0047)
06/30/2020	-.0336***	(.0047)	12/23/2020	.02493***	(.0055)
07/01/2020	-.0351***	(.0047)	12/24/2020	.02299***	(.0051)
07/02/2020	-.0380***	(.0053)	12/28/2020	.02279***	(.0053)
07/06/2020	-.0350***	(.0066)	12/29/2020	.02646***	(.0055)
07/07/2020	-.0423***	(.0073)	12/30/2020	.02332***	(.0054)
07/08/2020	-.0423***	(.0090)	12/31/2020	.02873***	(.0053)
07/09/2020	-.0422***	(.0099)	01/04/2021	.02893***	(.0067)
07/10/2020	-.0211**	(.0087)	01/05/2021	.02701***	(.0072)

Debt Response I

Methodology

- US \$-denominated CDS on senior unsecured debt
- Daily Event-Study

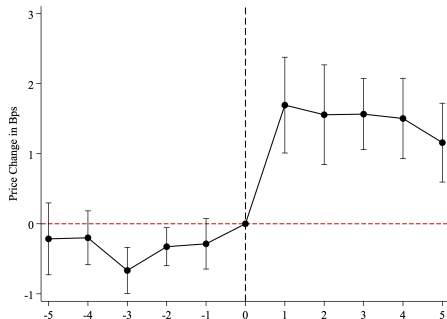$$CDS\ Spread_{it} = \alpha_i + \alpha_{t,r} + \sum_{\substack{\tau=-5 \\ \tau \neq 0}}^{5} \gamma_\tau \mathbf{1}_{t=\tau} CCARBank_i + \boldsymbol{\delta}' \, \boldsymbol{X_{it}} + \epsilon_{it}$$

Debt Response II

Announcement June 25, 2020
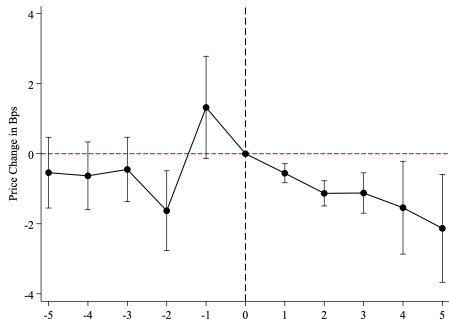
Announcement December 18, 2020

Lending Response

Methodology

- New loans originated
- Aggregate data at the firm-bank-quarter level
- 2020Q1-2021Q2
- Exploit within-CCAR bank variation in exposure to payout restrictions

$log(Loans_{ibstc}) = \beta_1 IntroPolicy_t PD_{ibt} BuyPay_b^{17-19} + \beta_2 PD_{ibt} BuyPay_b^{17-19} +$
$\beta_3 IntroPolicy_t BuyPay_b^{17-19} + \beta_4 PD_{ibt} IntroPolicy_t +$
$\gamma_1 LiftPolicy_t PD_{ibt} BuyPay_b^{17-19} + \gamma_2 LiftPolicy_t BuyPay_b^{17-19} +$
$\gamma_3 PD_{ibt} LiftPolicy_t + \alpha_{s,t} + \alpha_{c,t} + \delta_1 X_{i,t-4} + \delta_2 W_{b,t-1} + \epsilon_{ibstc}$

Buyback-to-Payout Ratios (BuyPay)

More constrained banks adjust risk-taking more

Sample	(1)	(2)	(3)	(4)
Dependent variable			Excluding disposed loans	
			log(committed amount)	
PD x IntroPolicy (20Q3-20Q4)	10.285***	10.122***	10.924***	10.960***
	(1.83)	(1.81)	(2.16)	(1.94)
PD x LiftPolicy (21Q1-21Q2)	-21.129***	-18.031***	-16.620**	-14.501***
	(3.68)	(2.55)	(4.35)	(2.52)
PD x Buyback/Payout (17-19)	-6.966**	-9.457**	-8.651*	-10.699**
	(2.71)	(2.85)	(3.49)	(3.59)
PD x IntroPolicy (20Q3-20Q4) x Buyback/Payout (17-19)	-11.890***	-11.562***	-12.717***	-12.711***
	(2.25)	(2.55)	(2.37)	(2.51)
PD x LiftPolicy (21Q1-21Q2) x Buyback/Payout (17-19)	30.354***	26.151***	24.162**	21.181***
	(5.15)	(3.85)	(6.21)	(3.74)
N	14819	14818	14736	14735
R-sqr	0.5139	0.5265	0.5171	0.5288
Bank & Firm Controls	x	x	x	x
County x Quarter FE	x	x	x	x
Industry x Quarter FE	x	x	x	x
Bank x Quarter FE		x		x

- Marginal effect for borrower with 1sd higher PD at 1sd more constrained bank:
  - Introduction: 3.4% smaller loan
  - Lifting: 8.8% larger loan
- Buyback/Payout Ratio correlates positively with Tier-1 capital ratio
  ⇒ Channel via binding capital constraints less plausible

Background and Robustness

- Model   Model 1   Model 2

- Summary Statistics   TAQ   CDS Spreads   Loan Data

- Raw Data Responses   Equity   CDS

- Corporate Bond Responses   Bond Response

- CAR Robustness Checks   CARs

- Evidence from Other Jurisdictions   Euro Area, UK

Concluding Remarks

This Paper

- Study how payout restrictions affect risk-shifting incentives of banks
  - Natural experiment: payout restrictions imposed on large US banks in 2020

Lessons

- Consistent with risk-shifting, when the Fed limits payouts for CCAR banks in June 2020:
  1. Equity prices drop
  2. Debt values increase
  3. Banks more affected by the restrictions reduce risk-taking in lending relative to less affected banks

- When restrictions are lifted in December 2020, these effects revert

Backup

Model I

Setup

- Building on Acharya, Le and Shin (2017)
- One bank, Two periods: $t = 0, 1$
- Assets and Liabilities at $t = 0$

Bank	
Cash c	Liabilities ℓ
Assets a	

- $a \sim U(\underline{a}, \bar{a})$
- Franchise value $V > 0$ if solvent at $t = 1$

Optimization problem

- $\max_d \underbrace{d}_{t=0 \text{ Payoff}} + \underbrace{Pr(a \geq \hat{a}(d))}_{\text{Survival Probability}} \underbrace{(E[a - \hat{a}|a \geq \hat{a}(d)] + V)}_{t=1 \text{ Payoff}}$
- Dividend $d \in [0, c]$ paid at $t = 0$
- Solvency at $t = 1$ requires $a \geq \hat{a}(d)$, where $\hat{a}(d) = \ell + d - c$

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Model II

Prediction

- There is a region ($V < V^*$) where debtholders and shareholders strictly disagree
    - Equity Value ↓ if payout restriction
    - Debt Value ↑ if payout restriction

Extension: Risk-taking decision

- 2nd choice asset distribution
    1. $a \sim U(\underline{a}, \overline{a})$
    2. $a \sim U(\underline{a} - \epsilon, \overline{a} + \epsilon)$
- Complementarity of payouts and risk-taking for intermediate values of V and ℓ
    - No restriction: $\quad d = c, a \sim U(\underline{a} - \epsilon, \overline{a} + \epsilon)$
    - Payout restriction: $d = 0, a \sim U(\underline{a}, \overline{a})$

Summary Statistics - TAQ

Panel A: June 25, 2020			
Variable	Obs.	Mean	Std. Dev.
Normalized Price	57295	1.001	.038
Shares Outstanding in 1,000s	57295	410542	989621.1
Size of Trade	57295	4541.726	32242.83
Market Value in $1,000	57295	3.03e+07	1.30e+08
Panel B: December 18, 2020			
Variable	Obs.	Mean	Std. Dev.
Normalized Price	85372	1.003	.022
Shares Outstanding in 1,000s	85372	368535.3	1044442
Size of Trade	85372	24146.8	156202.9
Market Value in $1,000	85372	3.20e+07	1.34e+08

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Summary Statistics - CDS

	June 25, 2020		December 18, 2020	
	Mean	Std. Dev.	Mean	Std. Dev.
Spread - 1Y	0.75	1.37	0.62	1.22
Spread - 2Y	0.91	1.43	0.76	1.28
Spread - 3Y	1.08	1.56	0.92	1.43
Spread - 5Y	1.40	1.70	1.23	1.61
Spread - 10Y	1.70	1.70	1.54	1.60
Spread - 20Y	1.70	1.55	1.58	1.50
Spread - 30Y	1.72	1.52	1.59	1.46
Observations	5847		8195	

Summary Statistics - Y14

Panel A: Firm-Bank-Quarter Level				
	Obs.	Mean	Std. Dev.	Median
Committed amount ($000,000)	32196	30.195	135.281	4.072
PD	27941	0.016	0.031	0.008
Interest rate	23806	0.030	0.015	0.029
Firm assets t-4 ($000,000)	21978	12,921.978	112,037.855	116.113
Firm ROA t-4 (%)	19049	7.479	8.161	5.424
Panel B: Bank-Quarter Level				
	Obs.	Mean	Std. Dev.	Median
Bank assets t-1 ($000,000)	120	808,501.801	933,389.115	421,742.438
Bank ROE t-1 (%)	120	9.398	5.985	9.538
Bank Liquidity ratio t-1	120	0.135	0.099	0.106
Bank Tier 1 ratio t-1 (%)	120	12.972	2.113	12.638

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Corporate Bond Response

- TRACE data on secondary market corporate bond trading
- Question: Are bonds issued by CCAR banks affected by restrictions?

	06/25/2020		12/18/2020	
	(1)	(2)	(3)	(4)
Post	0.04**		-0.03**	
	(0.02)		(0.01)	
CCAR Bank	-0.89***		-0.42***	
	(0.19)		(0.15)	
CCAR Bank x Post	-0.09***	-0.08***	0.04**	0.05***
	(0.03)	(0.02)	(0.02)	(0.02)
Constant	3.02***	2.95***	2.16***	2.11***
	(0.09)	(0.00)	(0.06)	(0.00)
N	47171	47126	33576	33574
R^2	0.01	0.79	0.00	0.64
Firm FE		x		x
Time FE		x		x

$* * *p < .01, * * p < .05, *p < .1$

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Robustness for CARs

Estimate CARs with Fama-French 3-factor model

CAR Weighted Regressions (Banks Only)

| CAR after 06/25/2020			CAR after 12/18/2020		
Date	Coefficient	SE	Date	Coefficient	SE
06/26/2020	-.0098**	(.0048)	12/21/2020	.03262***	(.0050)
06/29/2020	-.0278***	(.0034)	12/22/2020	.02883***	(.0049)
06/30/2020	-.0315***	(.0046)	12/23/2020	.03230***	(.0055)
07/01/2020	-.0306***	(.0046)	12/24/2020	.02946***	(.0051)
07/02/2020	-.0334***	(.0050)	12/28/2020	.02562***	(.0051)
07/06/2020	-.0334***	(.0065)	12/29/2020	.02286***	(.0053)
07/07/2020	-.0391***	(.0067)	12/30/2020	.02452***	(.0050)
07/08/2020	-.0372***	(.0082)	12/31/2020	.02526***	(.0057)
07/09/2020	-.0337***	(.0084)	01/04/2021	.02600***	(.0070)
07/10/2020	-.0216**	(.0086)	01/05/2021	.02865***	(.0075)

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Appendix - Buyback to Payout Ratio

Ex-ante buyback to payout ratios and ex-post increase in buybacks
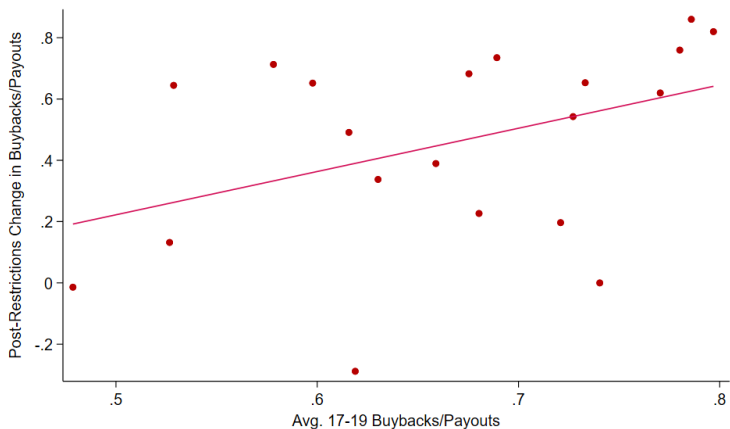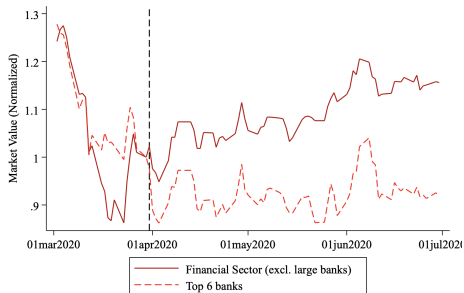
Evidence from Other Jurisdictions

Euro Area
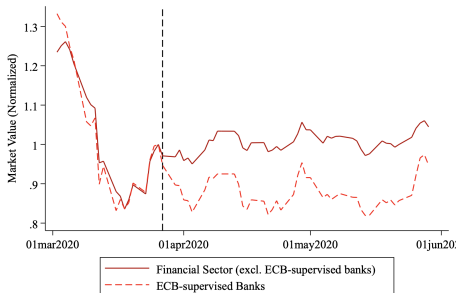
Source: Compustat Global and own calculations
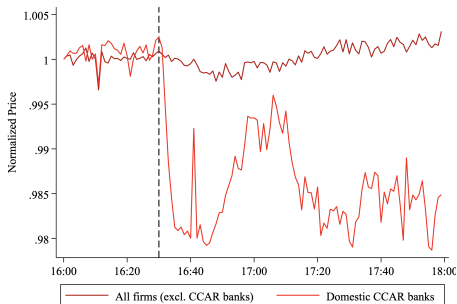Market values normalized on 03/26/2020. Dashed line indicates 03/27/2020.

UK

Source: Compustat Global and own calculations
Market values normalized on 03/30/2020. Dashed line indicates 03/31/2020.
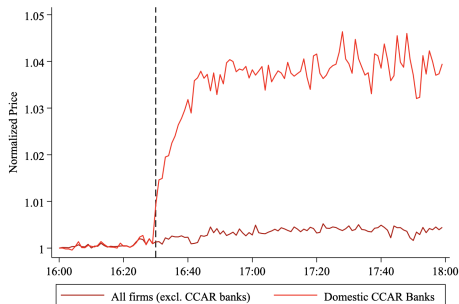
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Appendix - Equity Response

Announcement June 25, 2020

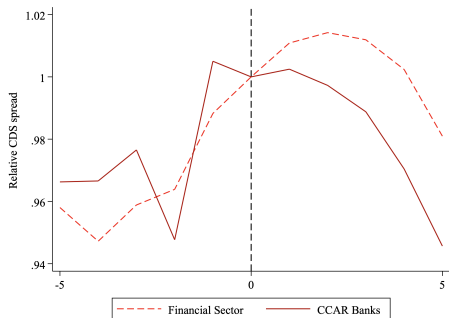Announcement December 18, 2020

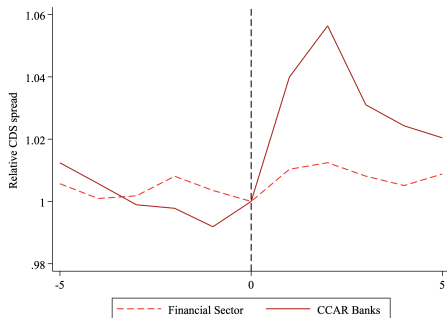Source: TAQ, own calculations

Source: TAQ, own calculations

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Raw Data - Debt Response

Announcement June 25, 2020

Announcement December 18, 2020

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