

Usability of Bank Capital Buffers and Credit Supply Shocks at SMEs during the Pandemic

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Federal Reserve Board

Basel Committee on Banking Supervision
and the Committee on the Global Financial System

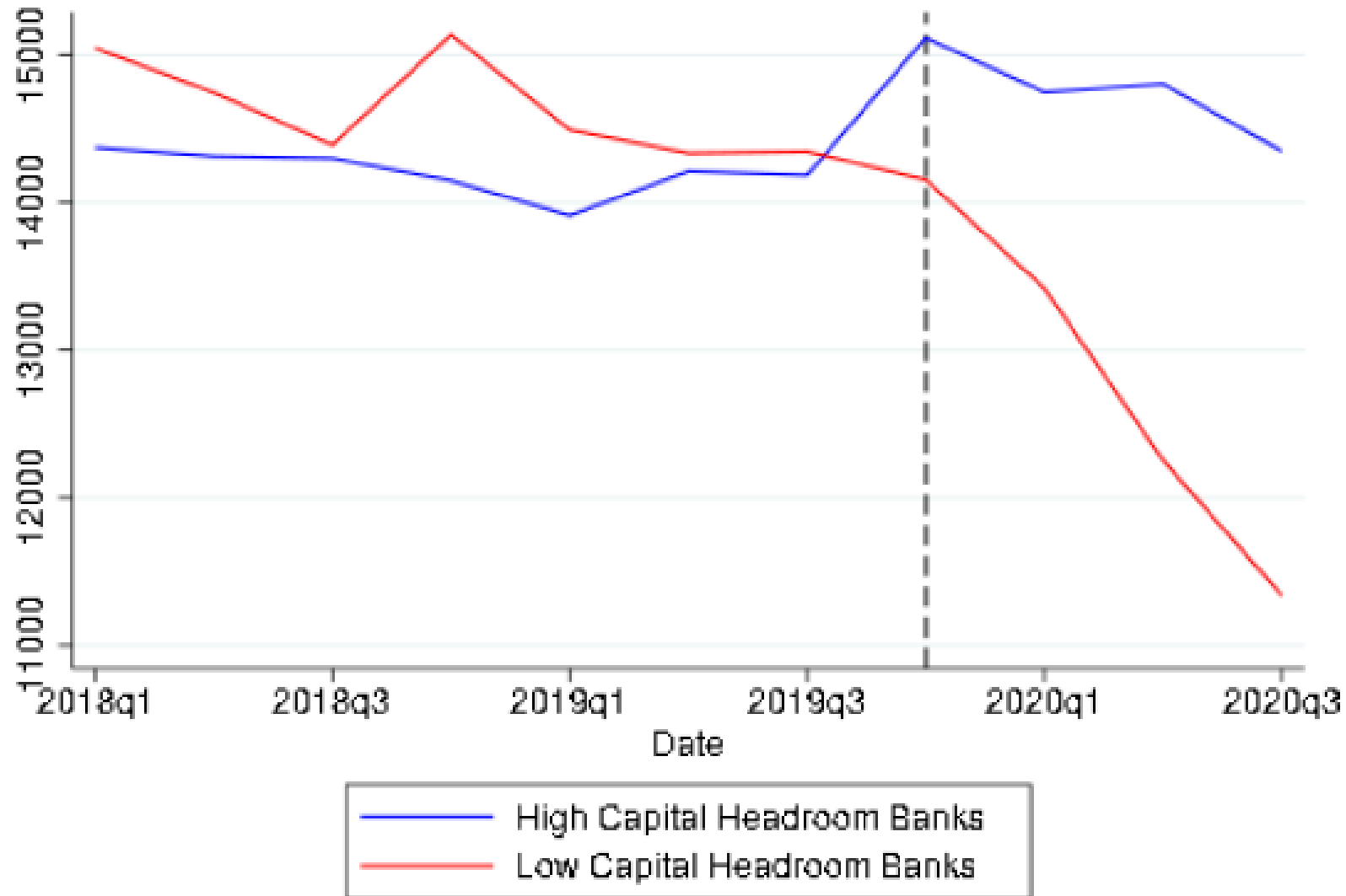
May 11, 2022

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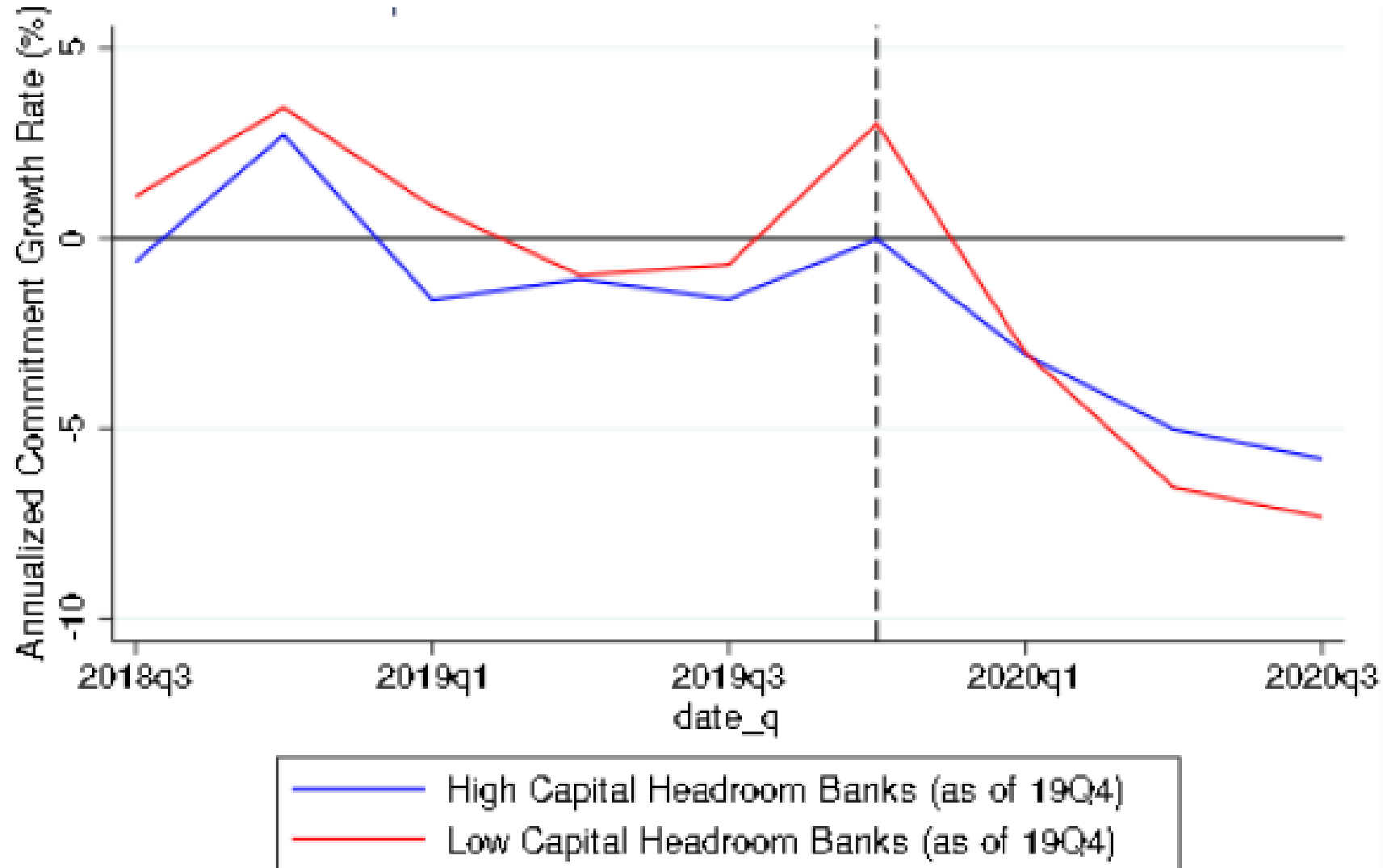
Introduction

- Regulatory capital buffers [GSIB surcharge, capital conservation buffer, etc.] were introduced as a feature of Basel III regulatory reforms
- The capital buffers are intended to absorb banks' losses and help maintain the flow of credit during a downturn
- Research Questions
 - Were regulatory capital buffers “usable” during the pandemic?
 - What may have incentivized banks to use or to avoid using their buffers?
 - Is there evidence of a credit supply shock related to the usability of buffers? Real Effects?
 - 4.9 p.p. slower credit growth [Intensive Margin], 10% higher probability of borrower exit [Extensive Margin]
 - Credit effects represent up to 16% of aggregate SME credit
 - Associated with 2 p.p. slower annual employment growth
- Empirical approach: use diff-in-diff to compare business loan commitment growth between two bank groups
 - Low capital headroom banks: banks entering the pandemic with a capital ratio close to their regulatory buffer threshold
 - High capital headroom banks: banks entering the pandemic with a capital ratio far from the regulatory buffer threshold

Low Capital Headroom Banks and Number of SMEs [Extensive Margin]

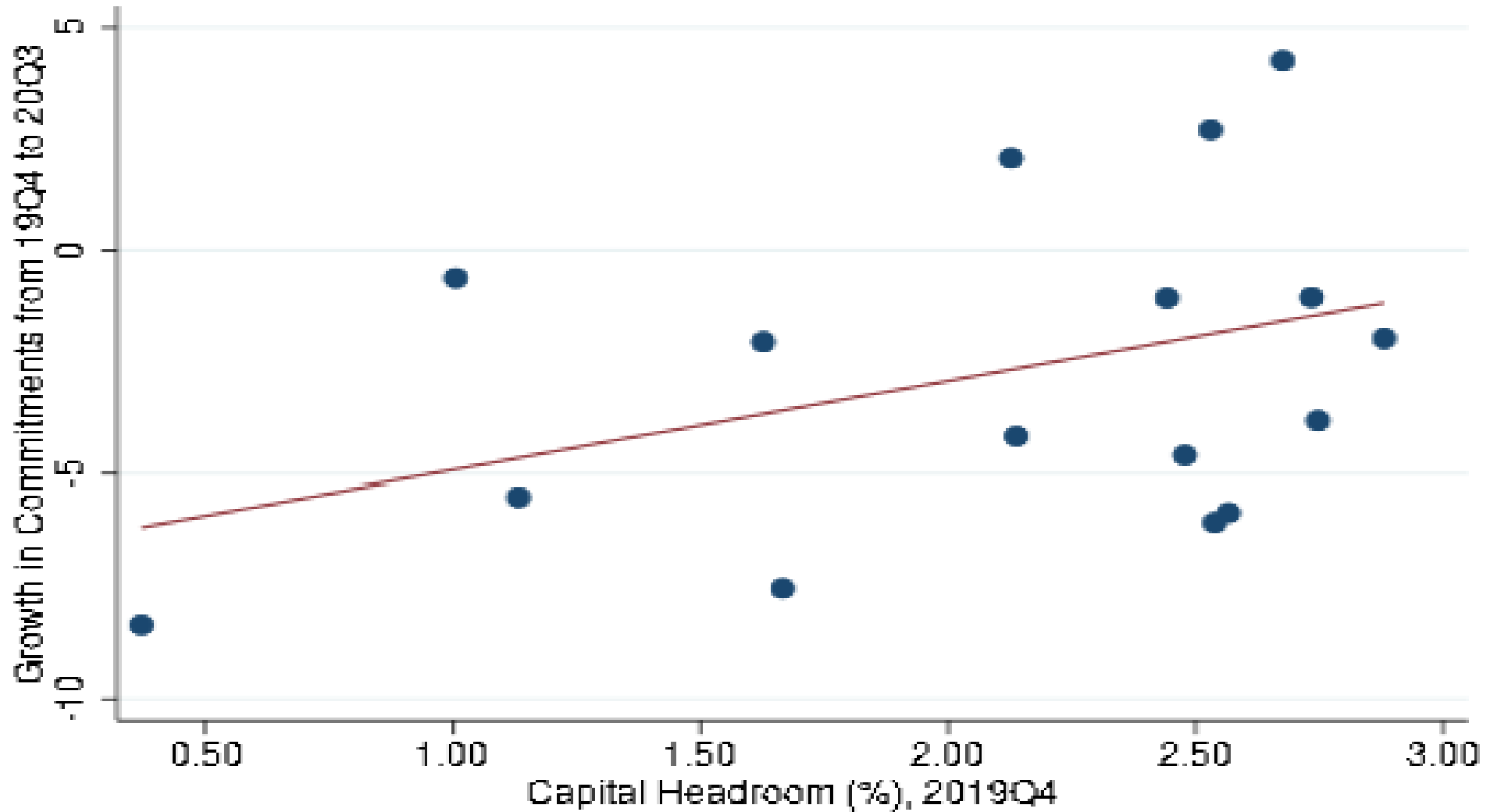


Low Capital Headroom Banks and Commitment Growth [Intensive Margin]



Note: Adjusted for bank size

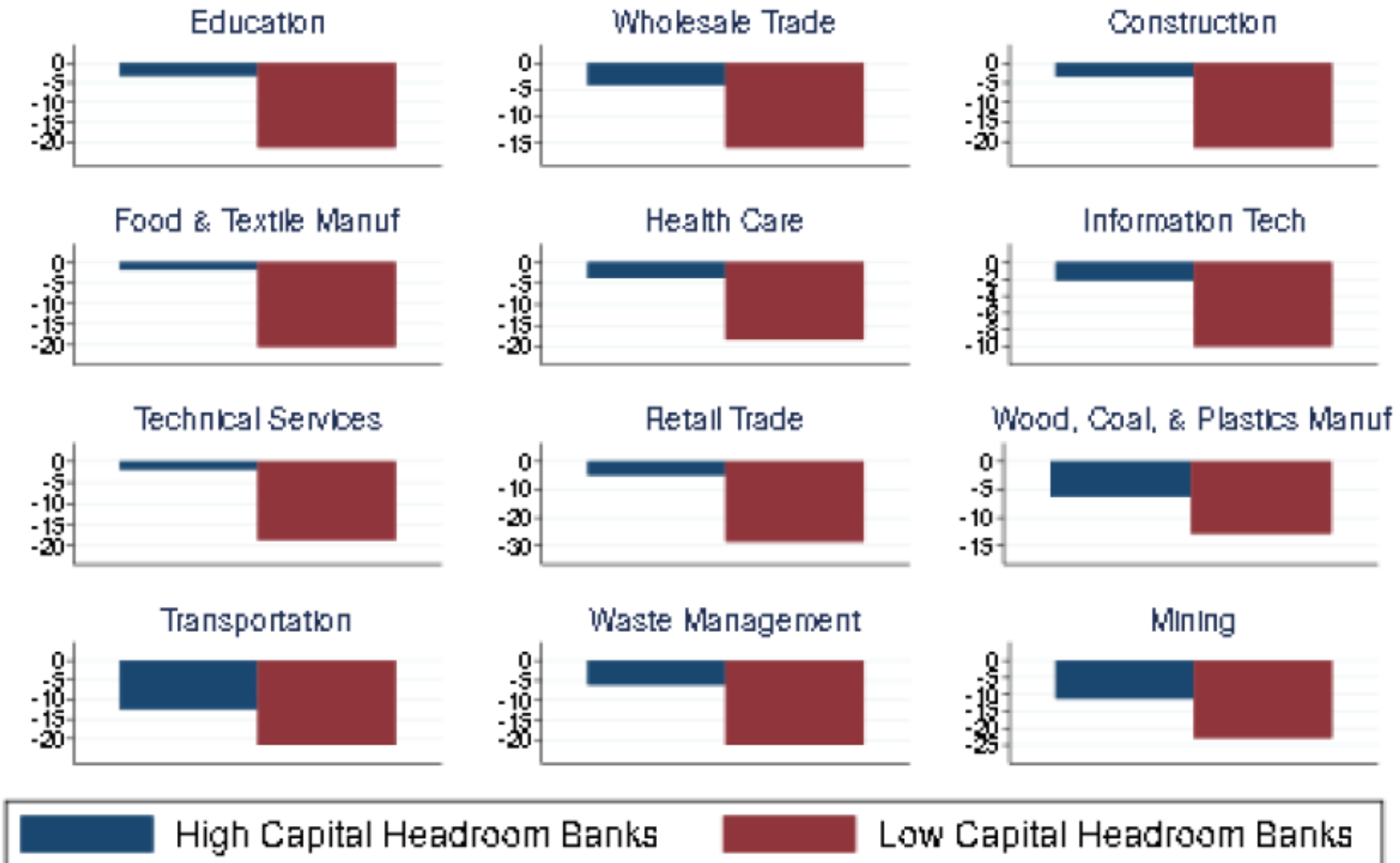
Pre-Crisis Capital Headroom vs. Post-Crisis Commitment Growth [Cross-section]



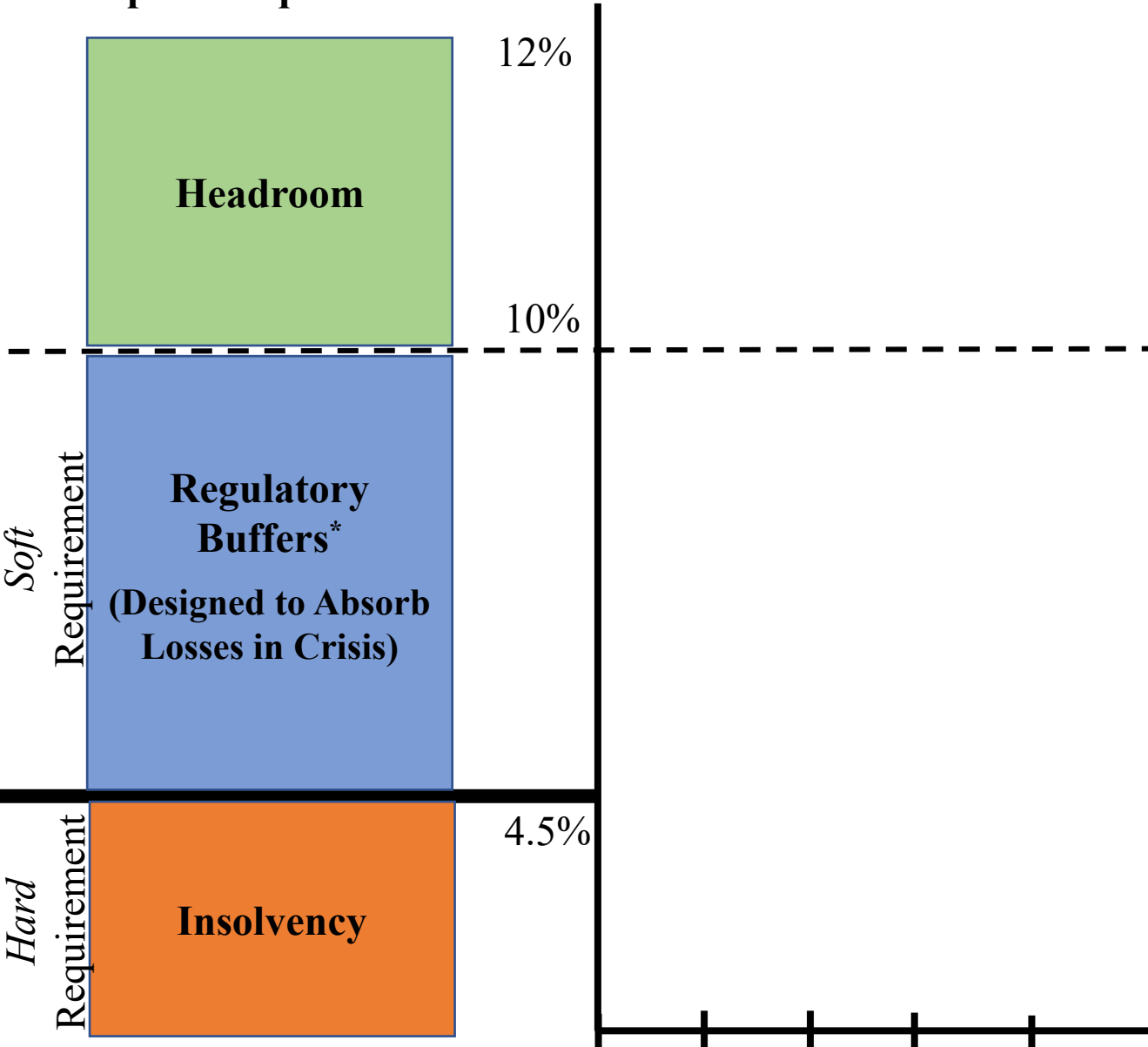
Excludes PPP Loans

SME Borrower Exits

% Change during Pandemic, by Industry & Lender Type



Capital Requirements

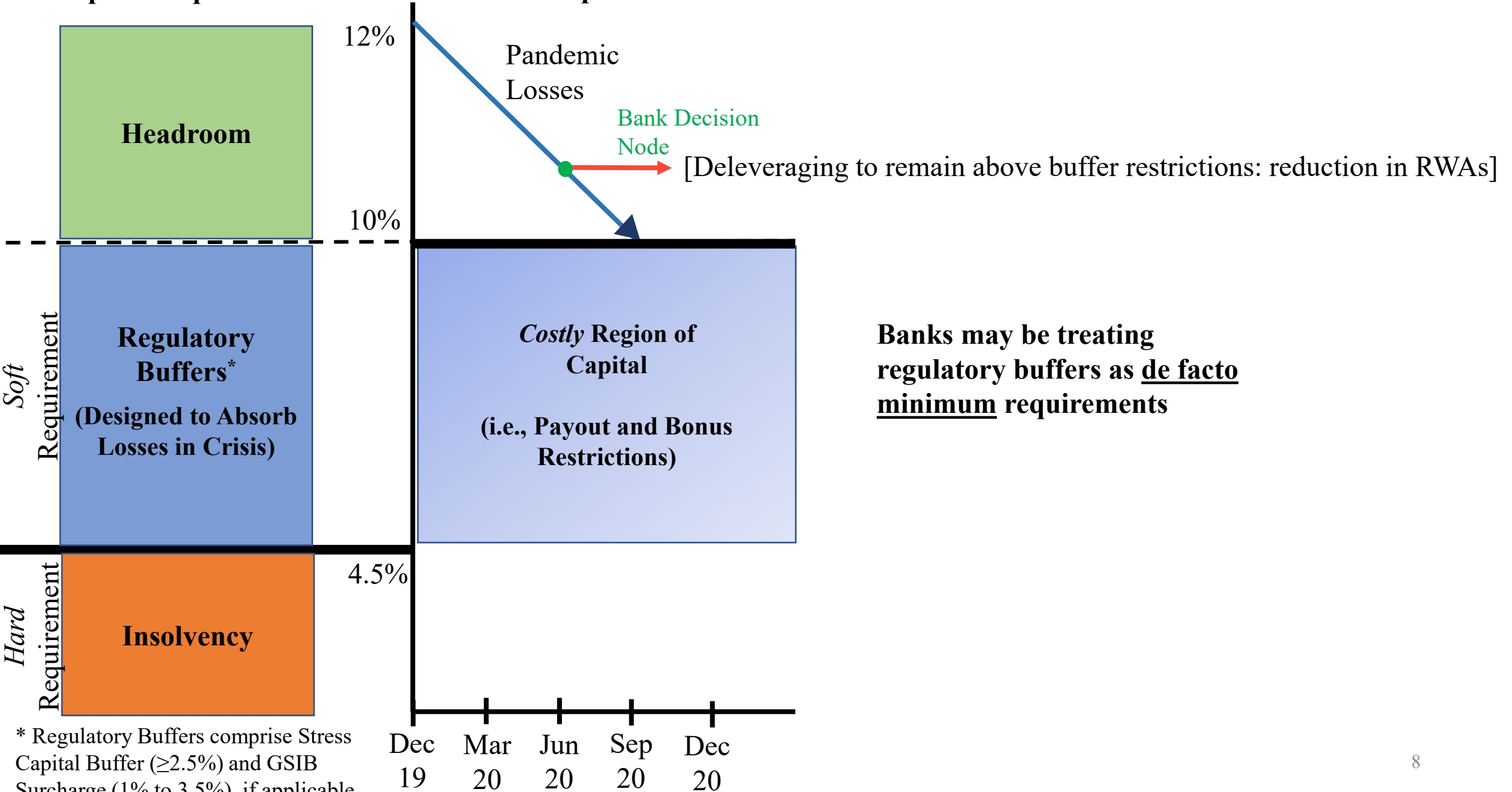


* Regulatory Buffers comprise Stress Capital Buffer ($\geq 2.5\%$) and GSIB Surcharge (1% to 3.5%), if applicable.

Dec 19 Mar 20 Jun 20 Sep 20 Dec 20

Capital Requirements

Capital Ratio



Low Headroom Banks Cut Credit to Non-core Borrowers

- Our analysis finds banks cut credit to non-core borrowers during the first few quarters of the pandemic:
 - Private, bank-dependent SMEs
 - Firms with young lending relationships
 - Firms with credit lines that contractually matured at the start of the pandemic and were up for renegotiation [low contractual cost of termination]

Difference in Difference Specification

$$\begin{aligned} \frac{\Delta \text{Commitments}_{bft}}{\text{Commitments}_{bf,t-1}} = & \beta_0 \text{POST}_t + \beta_1 \text{LowCapitalHeadroomBank}_{b,2019q4} + \beta_2 \theta + \dots \\ & + \beta_3 \text{POST}_t * \text{LowCapitalHeadroomBank}_{b,2019q4} * \theta \\ & + \beta_B \text{BankControls}_{b,t-1} \\ & + \beta_F \text{FirmControls}_{f,t-1} \\ & + \varphi_{\text{Bank} * \text{Firm} \text{FES}} + \alpha_{\text{Industry} * \text{Date} \text{FES}} + \gamma_{\text{Zip} * \text{Date} \text{FES}} + \delta_{\text{InvGradeRating} * \text{Date} \text{FE}} + \mu_{\text{FirmLeverage} * \text{Date} \text{FES}} \\ & + \varepsilon_{bft} \end{aligned}$$

θ : Different types of firms: (1) *Private, bank dependent SMEs,*
(2) *firms with young relationships,*
(3) *firms with CL maturing at onset of pandemic*

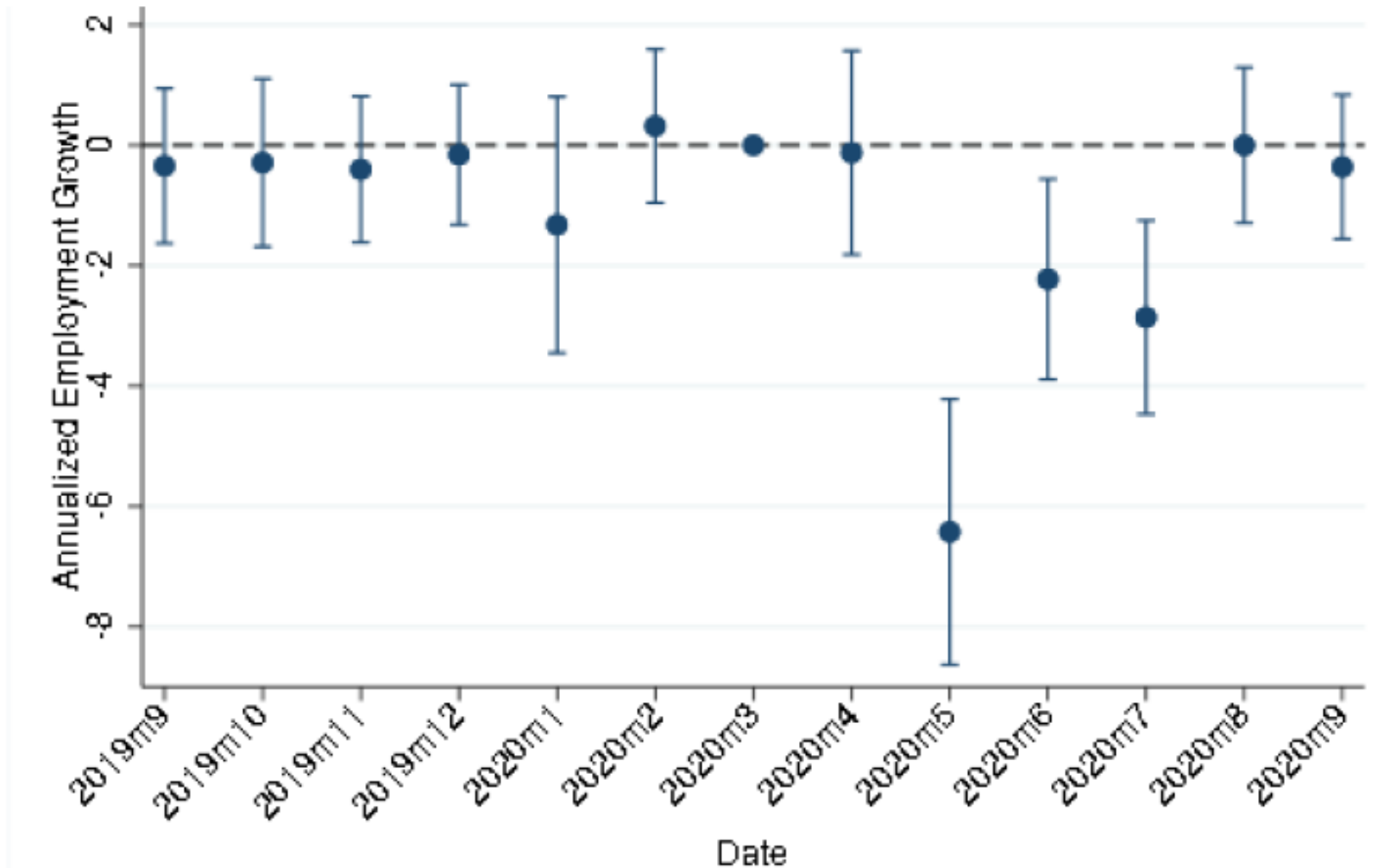
I. Results: Intensive Margin

Variables	C&I Loan Commitment Growth Rate [Percent]		
	(1)	(2)	(3)
POST * LowCapitalHeadroomBank	0.372		
POST * LowCapitalHeadroomBank * PrivBankDepSMEFirm	-4.981***		
POST * LowCapitalHeadroomBank		0.622	
POST * LowCapitalHeadroomBank* YoungLendingRelationship		-4.098***	
POST * LowCapitalHeadroomBank			0.008
POST * LowCapitalHeadroomBank * FirmCreditLineMaturingInPandemic			-22.380***
Bank Controls	Y	Y	Y
Firm Controls	Y	Y	Y
Bank-Firm FE	Y	Y	Y
Industry-Date FE	Y	Y	Y
Zip-Date FE	Y	Y	Y
Firm Leverage-Date FE	Y	Y	Y
Investment Grade-Date FE	Y	Y	Y
Observations	487,226	542,468	438,620
R-squared	0.281	0.286	0.287

II. Results: Termination of Relationship

Variables	Pr(Ending Lending Relationship)		
	(1)	(2)	(3)
POST * LowCapitalHeadroomBank	-0.013		
POST * LowCapitalHeadroomBank * PrivBankDepSMEFirm	0.099***		
POST * LowCapitalHeadroomBank		0.0162*	
POST * LowCapitalHeadroomBank* YoungLendingRelationship		0.022***	
POST * LowCapitalHeadroomBank			0.0232***
POST * LowCapitalHeadroomBank * FirmCreditLineMaturingInPandemic			0.0646***
Bank Controls	Y	Y	Y
Firm Controls	Y	Y	Y
Industry FE	Y	Y	Y
Zip FE	Y	Y	Y
Firm Leverage FE	Y	Y	Y
Investment Grade FE	Y	Y	Y
Observations	53,256	53,255	53,255
R-squared	0.219	0.222	0.220

III. Results: Real Effects [Local Employment Growth]



IV. Results: Summary

- Low capital headroom banks [relative to banks with high capital headroom]:
 - Reduced C&I loan commitments to SME firms an additional 4.9 p.p.
 - Were 10 percent more likely to end pre-existing lending relationships with SMEs
 - Were associated with real effects [local employment growth was about 2 percent slower annually]
- Why would banks view using their buffers as too expensive?
 - Costs associated with rating downgrades and dividend cuts are close to 300 basis points [3-day event window] during stress
 - Costs to rebuild the buffers if they were to be used [IMF GFSR]

Conclusions

- We find evidence that U.S. large banks did not use their regulatory capital buffers and consequentially cut credit to SMEs and other “non-core” borrowers during the pandemic
- Large negative abnormal returns [market stigma] associated with dividend cuts or ratings downgrades may disincentivize banks from using their capital buffers. Uncertainty around future cost of capital may deter banks from using their buffers

APPENDIX

Data

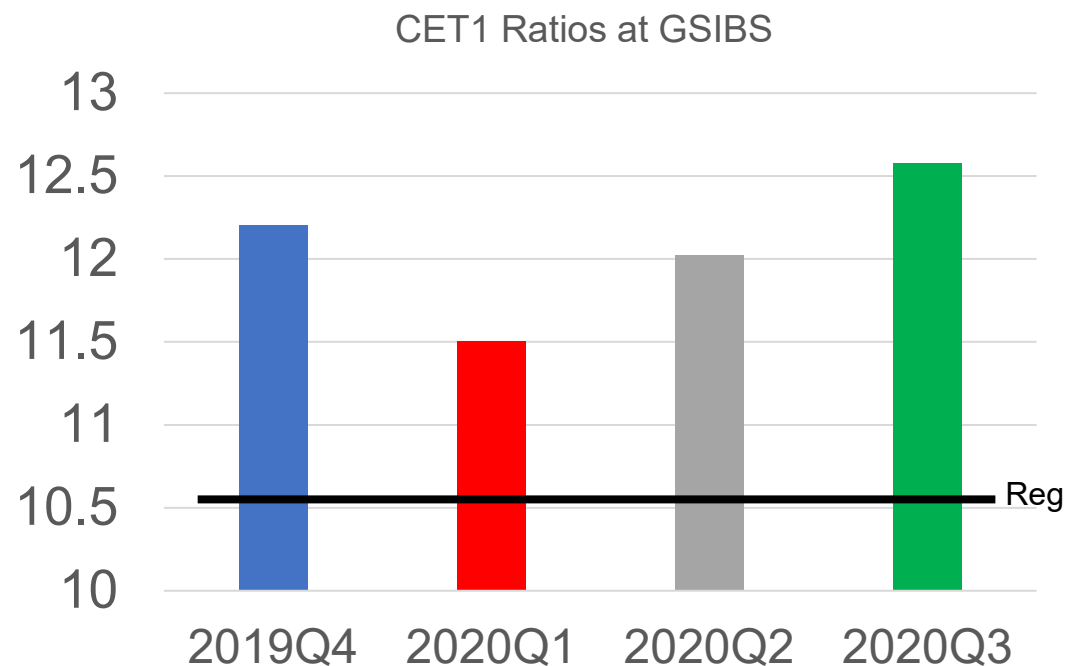
- Bank Balance Sheet information from regulatory reports between 2018Q1-2020Q3
 - FR Y-14
 - Provides loan-level information, lender identities, and firm identities
 - Includes private bank-dependent firms
 - FR Y-9C
 - Lender balance sheet data (bank controls)
 - Note: We look at growth in loan **commitments**, rather than outstanding loans.
 - Commitments are immune to credit line drawdowns and repayments

European Banks

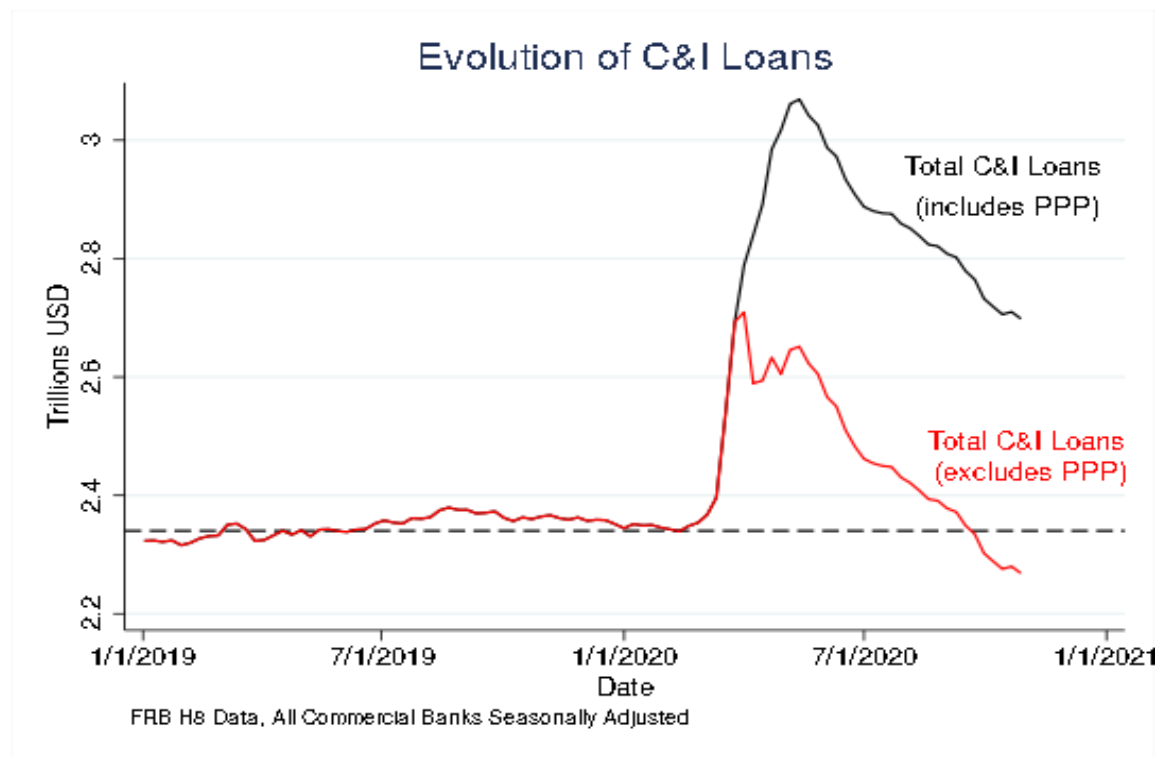
- *“There has been a concern that the buffers were not being used and there was a reluctance to use them.”*
 - **Andrea Enria, chair of the ECB’s Single Supervisory Mechanism, Financial Times, January 28, 2021**
- *“...lending to corporates by banks with a smaller capital headroom on top of the combined buffer requirement (CBR) has decreased significantly....”*
 - **ECB Financial Stability Review (May 2021)**
- *“...most banks have insufficient economic incentives to draw down their buffers if they are (or expect to be) asked to rebuild them later.”*
 - **IMF Global Financial Stability Report, April 2021**

Bank Capital and Lending

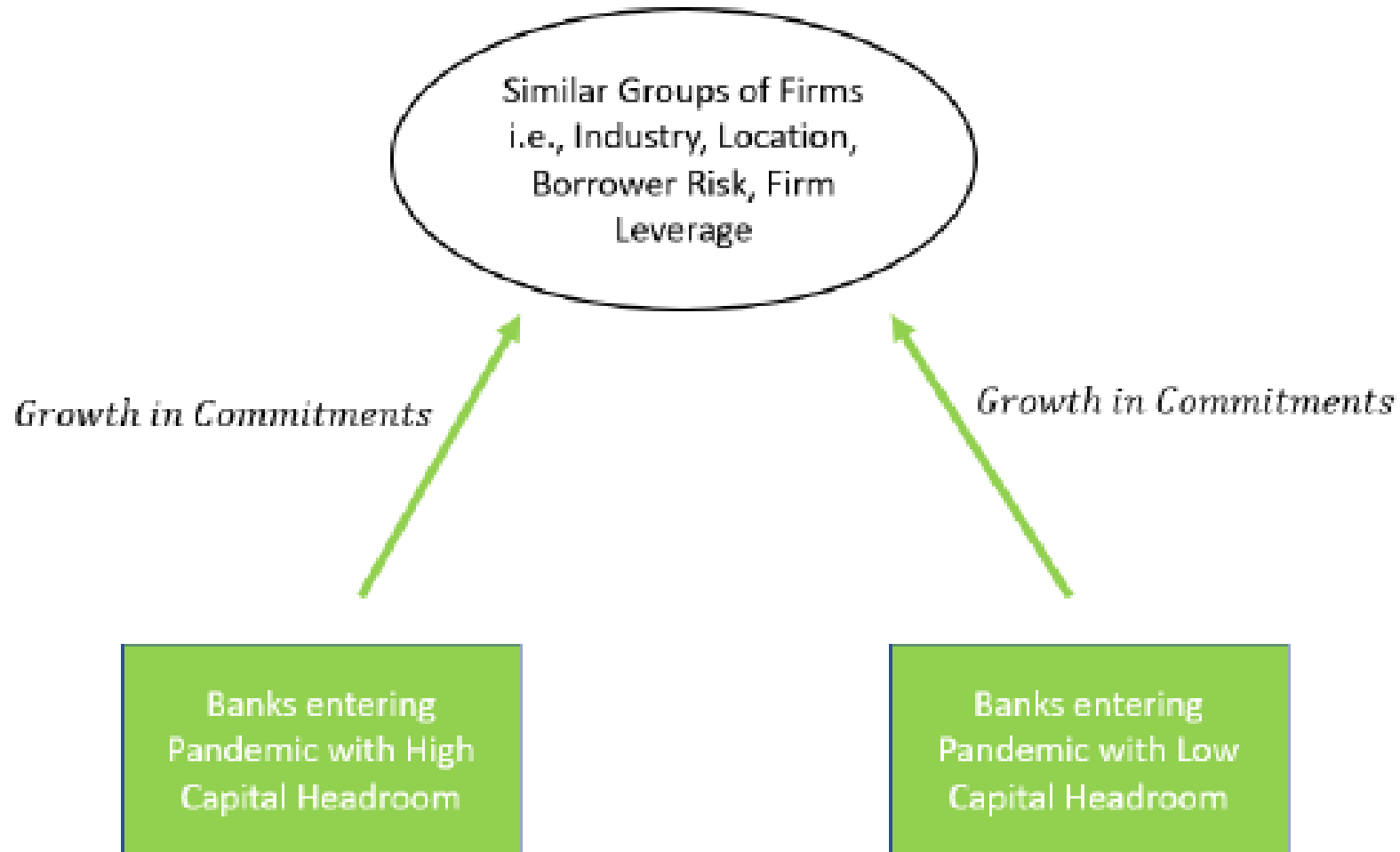
Despite the recession, CET1 ratios remain high and at pre-pandemic levels:



- In 2020, bank C&I lending remains weak:
 - Decline in loan demand: (Drawdowns and Repayments of credit lines)
 - Increased Borrower Risk
 - Credit supply factors?



Empirical Strategy



Why would banks view buffer use as costly?

- Pre-pandemic, the costliness of regulatory buffers helped incentivize banks to raise CET1 ratios to historic highs
- During the pandemic, these same costs may have made buffers *difficult to use*:
 - (1) Credit Ratings Agency Pressure
 - (2) Payout Restrictions
 - (3) Investor Stigma from Buffer Usage (need to rebuild buffer soon enough)
- Use bank equity returns in an event-study type of analysis (calculate cumulative abnormal returns):

$$R_{it} = \beta_i + \gamma_{it}(Mkt - Rf)_t + \alpha_2 HML_t + \tau_3 SMB_t + \varepsilon_{it}$$

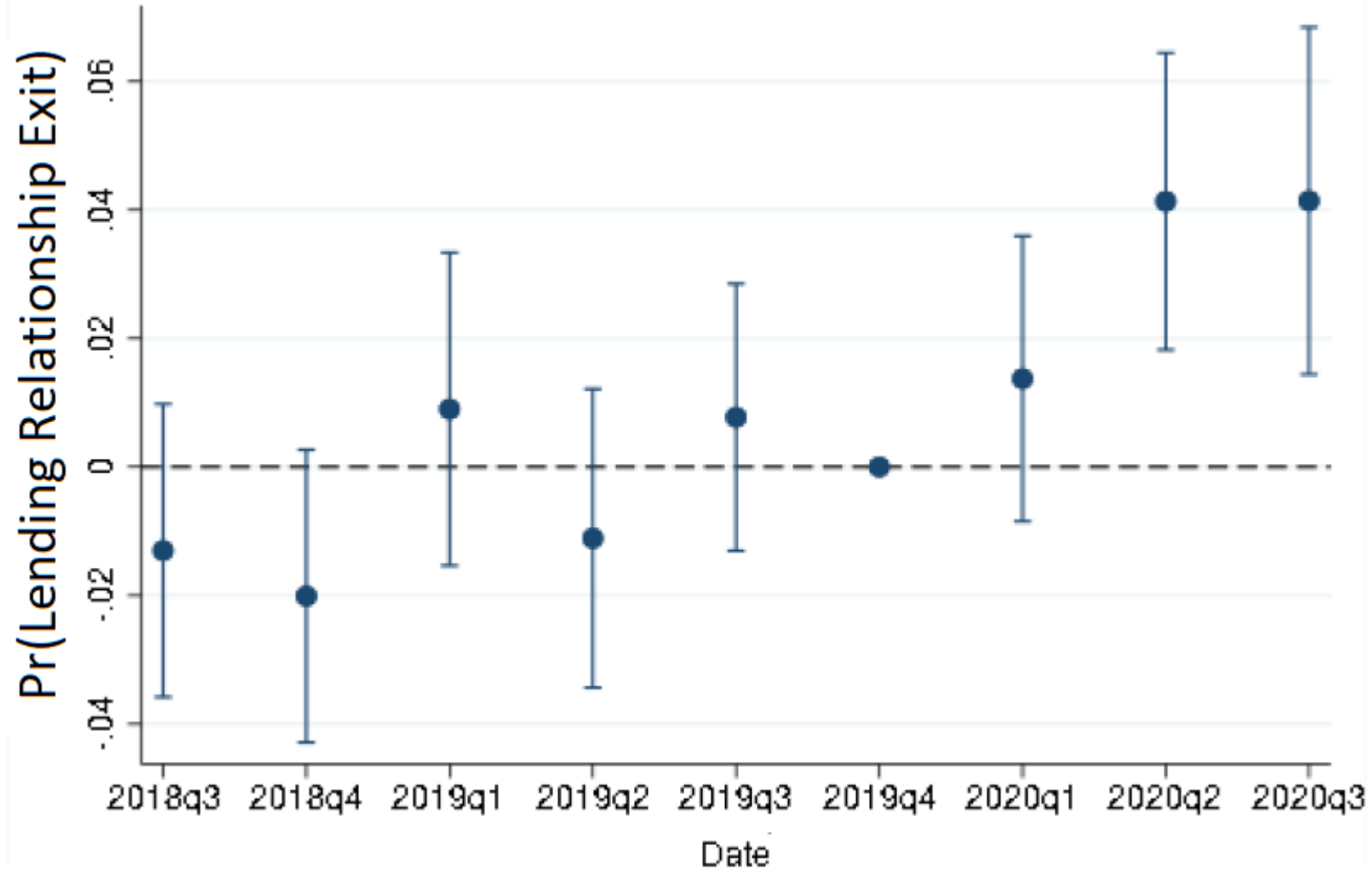
Results: Cost of using capital buffers

	Ratings Downgrade Events	(-1,1) CAR percent
All	122	-1.29 percent***
Normal Times	73	-0.43 percent
GFC Crisis	48	-2.65 percent***

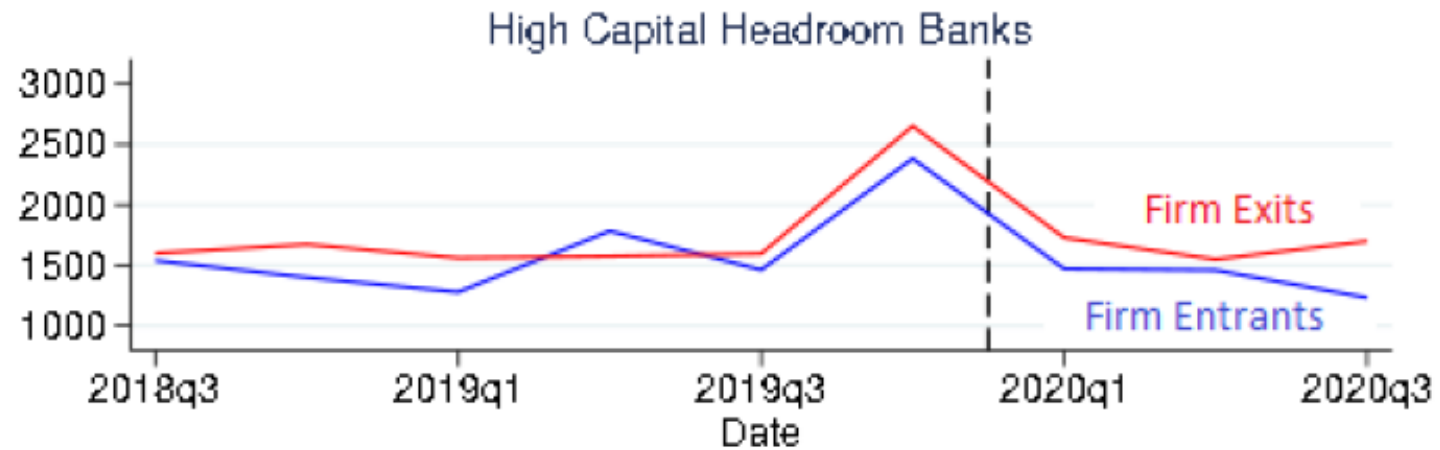
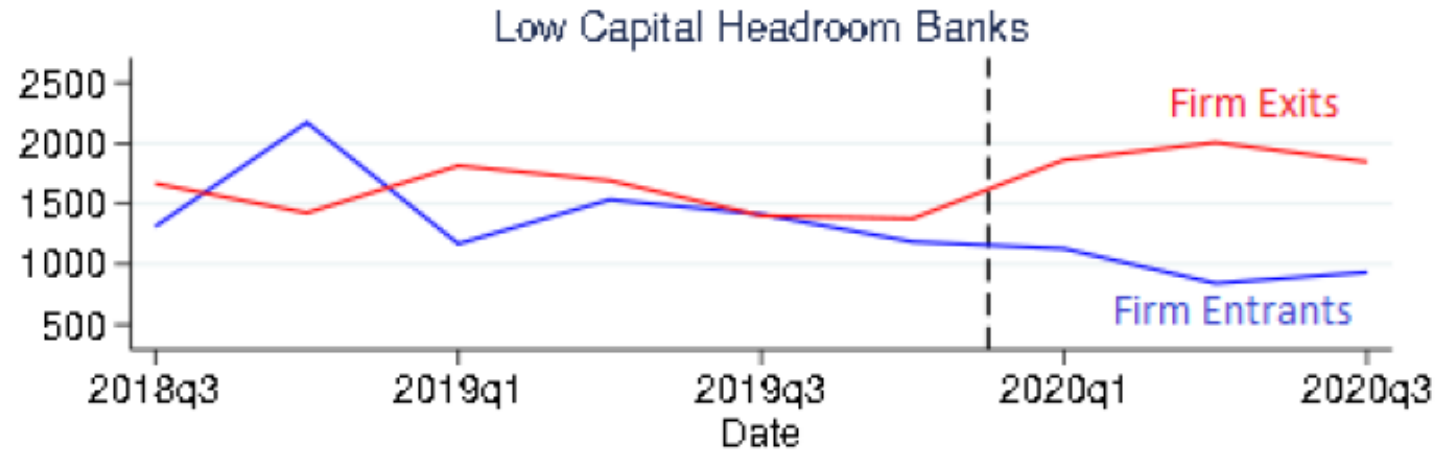
	Dividend Cuts	(-1,1) CAR percent
ALL	42	-2.34 percent**
Normal Times	12	-1.07 percent
GFC Crisis	28	-2.88 percent**

- We look at two types of events between 1990 and 2020:
 - Rating Downgrades
 - Dividend cuts
- In both cases, costs are relatively similar and close to 300 basis points during the 3-day event window during the GFC.
- Adds to the cost estimates provided by the IMF's GFSR associated with the need to rebuild the buffers if they were to be used in the first place.

Low Capital Headroom Banks and SME Exits



Extensive Margin: Relationship entry and exit



Ratings Pressure

Risk of a Ratings Downgrade

MOODY'S
INVESTORS SERVICE

**Research Announcement: Moody's - Global Investment Banks:
Coronavirus shock to profits should not take toll on capital**

New York, April 15, 2020 --

- » Moody's severe coronavirus shock scenario assesses the potential impact on global investment banks' (GIBs) revenue and profitability over a one-year horizon.
- » Even with reduced revenue and meaningfully increased loan loss provisions, the GIBs would record modest profitability for 2020.
- » GIBs are therefore expected to maintain solid capital buffers at or above the levels reported at the end of 2019

Summary Stats

Table 1: Summary Statistics

This table provides summary statistics for key variables in the FR Y-14Q data. The table reports the 10th percentile, mean, 90th percentile, and standard deviation for both BHC variables and firm variables. There are 526,449 bank-firm-time observations, which are spread across 16 lenders and 11 quarters. Source: FR Y-9C, FR Y-14Q H1 Schedule, aggregated calculations using bank-specific stress capital buffer and GSIB surcharges to calculate the capital headroom.

Variable	p10	Mean	p90	Std Dev
Annualized Growth in Commitments (%)	-25.87	4.27	23.44	64.77
CET1 Headroom (%)	1.01	2.06	2.73	0.60
Bank Log Assets	18.74	20.40	21.69	1.19
Bank Deposit Ratio (Dep / Assets) (%)	55.89	65.69	75.82	10.09
Bank Liquid Asset Ratio (Liq Assets / Assets) (%)	21.88	31.31	39.11	7.29
Bank Provisions to RWA (%)	-0.01	0.06	0.28	0.12
Bank ROA (%)	0.12	0.27	0.38	0.11
Firm Leverage (Debt / Assets) (%)	0	33	72	27
Firm ROA (%)	-0.02	0.09	0.24	0.16
Firm Sales Ratio (Net Sales / Assets) (%)	0.32	2.29	4.44	1.97
Firm Log Assets	15.30	18.31	22.42	2.70