

Macroprudential capital buffers and financing conditions: Evidence from European firms

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Agenda

- 1 Introduction
- 2 Contribution
- 3 Data
- 4 Empirical approach and results
- 5 Conclusion

Aims

- Prevent the materialization of systemic risk by protecting the financial system "as a whole".
- Addressing the interconnectedness and collective behavior of financial institutions
- Limiting the bank procyclicality by addressing the time dimension.
- Addressing the systemic risk brought upon by the size of some financial institutions.

The instruments of macroprudential approach

Instruments' classification (Lim et al. 2011)

- Credit related instruments:
 - loan-to-value limits (LTV)
 - debt-to-income limits (DTI)
- Liquidity related instruments:
 - limits on maturity mismatch
 - limits on currency mismatch
 - liquidity coverage ratio
- Capital related instruments:
 - countercyclical capital buffers
 - capital charges for systematically important financial institutions
 - dynamic provisioning

The dimensions of macroprudential approach

Time series dimension

Build up of capital buffers in upturns, which could be relaxed in downturns in order to facilitate economic recovery (eg. cyclical tools such as countercyclical buffer, 0-2.5 percent)

Cross-sectional dimension

Sectoral tools targeting specific exposures (eg. credit tools, LTV and DTI) or systematically important financial institutions (eg. capital surcharges for SIFI).

This paper: Macroprudential capital buffers

Capital buffers that we examine in our analysis:

- Countercyclical capital buffer (CCyB)
- Capital conservation buffer (CCB)
- Systemic risk buffer (SRB)
- Capital buffer for other systematically important financial institutions (O-SII)
- Capital buffer for global systematically important financial institutions (G-SII)

This paper: Firm-level analysis with focus on SMEs

- SMEs traditionally rely on bank funds ([Chava and Purnanandam, 2011](#)), while their lending process is characterized by information asymmetry ([Albertazzi et al., 2017](#)).
- In 2021, SMEs accounted for almost 99.8 percent of the non-financial sector in the EU, with 64 percent of the sector's employment and 52 percent of value added.
- Scarce evidence on the effects of macroprudential instruments using firm-level data, especially SME.

Related literature

Capital regulation and credit creation

Increasing bank capital adequacy reduces the probability of bank failure but it creates costs in terms of credit creation ([Diamond and Rajan, 2000](#)). The effects of capital regulation on bank lending were analyzed in subsequent works: [Hanson, Kashyap and Stein, 2010](#); [Admati et al., 2013](#); [Baker and Wurgler, 2015](#); [Behn, Haselmann, and Wachtel, 2016](#); [Gambacorta and Mistrulli, 2004](#); [Bonaccorsi di Patti, Moscatelli, and Pietrosanti, 2023](#)).

SME financing

Smaller firms are predominantly dependent on bank funding ([Albertazzi et al., 2017](#)) and their lending process is characterized by information asymmetry ([Gertler, 1988](#); [Myers and Majluf, 1984](#); [Fazzari et al., 1988](#); [Stiglitz and Weiss, 1981](#)) which increases the banks screening and monitoring costs ([Beck et al., 2006](#)). Obtaining bank financing for bank-dependent firms is even more exacerbated during the crisis ([Dell’Ariccia, Detragiache, and Rajan, 2008](#); [Chava and Purnanandam, 2011](#)).

Related literature II

Countercyclical capital tools effectiveness

Countercyclical dynamic provisioning refines credit cycles and supports firm financing in times of distress ([Jiménez et al. 2017](#)). Using sectoral countercyclical capital buffer leads to spillover of credit to non-targeted sectors and to a rise in corporate credit costs ([Auer, Matyunina, and Ongena 2022](#)). [Basten, 2019](#) identifies a raise in mortgage pricing and emphasizes the importance of ex ante bank capital adequacy and bank specialization in terms of CCyB effectiveness. [Dursun-de Neef, Schandlbauer, and Wittig, 2023](#) finds the release of the CCyB buffer has had a significant positive effect on bank lending, mainly driven by mortgage loans and loan commitments.

Macroprudential instruments - firm-level evidence

[Ayyagari, Beck, and Peria, 2018](#) report a decline in lending to smaller firms in particular when macroprudential instruments are activated. [Čehajić and Košak, 2022](#) identify negative association between macroprudential instruments and firm credit access. [Yang and Suh, 2023](#) find macroprudential policies reduce leverage procyclicality and increase firm value. During the pandemic, banks maintained a cautious approach and kept distance from regulatory limits by decreasing their corporate lending ([Couaillier et al., 2024](#)).

Research questions

- 1 How does the tightening of capital buffers affect bank loan availability?
- 2 What are the effects of capital buffers tightening on firm financing conditions?
- 3 Did the loosening of CCyB enhance bank loan availability during Covid 19 pandemic?
- 4 Did the loosening of CCyB eased loan conditions that firm faced during Covid 19 pandemic?
- 5 How effective is the release of the CCyB depending on banks' capital headroom?

Contribution

- The effects of capital buffers on firm loan availability and conditions during *both phases of the policy cycle*.
- Examining the success of *CCyB buffer release* in terms of loan availability and loan conditions during the Covid-19 crisis period.
- Matching and exploring *qualitative information* that directly questions firms on financing conditions with firm financial statements (survey data - financial statements data match).
- Matching and exploring *bank-firm relationship* and dependency of the CCyB release success on *bank's capital headroom*.
- A *granular view* into the working of capital-related macroprudential instruments and the repercussions of their use for European firms.

Data sources and sample

Data sources

- Survey on the access to finance of enterprises (**SAFE**) by **European Central Bank**.
- Firm financial statement data obtained through **Bureau van Dijk's ORBIS** database.
- Bank financial statement data obtained through **Fitch Connect** database
- Macroprudential capital buffers data: **European Systemic Risk Board** data.
- Macroeconomic data: **ECB Statistical Data Warehouse**

SAFE-ORBIS sample

- 12 eurozone countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Slovakia, and Spain)
- After matching survey to financial statement data, we are left with 37,407 firm - wave observations (18,071 firms from 12 euro area countries across 13 waves)
- Time coverage: Biannual data for the period between wave 13 - wave 25 (April 2015- September 2021)

SAFE-ORBIS-FITCH sample

- 8 eurozone countries (Austria, France, Germany, Greece, Ireland, Netherlands, Portugal and Spain)
- After matching survey, firm and bank financial statement data, we are left with 9,186 firm - wave observations (4,179 firms from 8 euro area countries across 13 waves)
- Time coverage: Biannual data for the period between wave 13 - wave 25 (April 2015- September 2021)

Macroprudential measures

SAFE-ORBIS sample

- 1 Quantitative and qualitative information in the ESRB database = the rates for each of the five instruments for each wave and each country.
- 2 We sum up each rate and calculate the total capital buffer requirement.
- 3 We construct an indicator *High buffer* = to 1 if the firm operates in a country with a total capital buffer rate above its median level in the respective period (4.5%).

SAFE-ORBIS-FITCH sample

- 1 We calculate the full CET1 requirement for each bank*:
$$= \min. CET1 + CCyB + CCB + SRB + OSII + GSII$$
- 2 Based on the distance between the bank's CET1 ratio and CET1 regulatory requirement:
 - Low distance* = 1 if the distance between the bank's CET1 and the required CET1 ratio lies in the first quartile of the variable distribution in 2019 (waves 21-22).
 - High distance* = 1 if the distance between the bank's CET1 and the required CET1 ratio lies in the fourth quartile of the variable distribution in 2019 (waves 21-22).

*SRB, OSII and GSII rates are adjusted by bank



Table 1: An example of indices construction based on ESRB data for France

Country	Wave	CCyB rate	CCB rate	SRB rate	O-SII rate	G-SII rate	SRB rate_max	O-SII rate_max	G-SII rate_max	Buffer_max	High buffer
France	13	0	0	0	0	0	0	0	0	0	0
France	14	0	0.625	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	3.625	0
France	15	0	0.625	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	3.625	0
France	16	0	1.25	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	4.25	0
France	17	0	1.25	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	4.25	0
France	18	0	1.875	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	4.875	1
France	19	0.25	1.875	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.125	1
France	20	0.25	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.75	1
France	21	0.5	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	6	1
France	22	0	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.5	1
France	23	0	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.5	1
France	24	0	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.5	1
France	25	0	2.5	0	0.25 to 1.5	1 to 1.5	0	1.5	1.5	5.5	1

Table 2: Summary statistics for the main regression variables I

Sample period:	wave 13 - wave 22					Full sample				
	N	Mean	Sd	Min	Max	N	Mean	Sd	Min	Max
<i>Dependent variables:</i>										
Loan availability	29893	0.268	0.443	0	1	37407	0.257	0.437	0	1
Interest	15593	0.160	0.367	0	1	19141	0.171	0.377	0	1
Other costs	15593	0.304	0.460	0	1	19141	0.302	0.459	0	1
Loan size	15593	0.234	0.423	0	1	19141	0.230	0.421	0	1
Maturity	15593	0.107	0.309	0	1	19141	0.119	0.324	0	1
Collateral	15593	0.144	0.351	0	1	19141	0.141	0.348	0	1
<i>Independent variables - survey based:</i>										
Micro	29893	0.213	0.409	0	1	37407	0.214	0.410	0	1
Small	29893	0.187	0.390	0	1	37407	0.182	0.386	0	1
Medium	29893	0.181	0.385	0	1	37407	0.178	0.382	0	1
Young	29893	0.018	0.132	0	1	37407	0.016	0.127	0	1
Credit history	29893	0.306	0.461	0	1	37407	0.290	0.454	0	1
Public funds access	29893	0.083	0.277	0	1	37407	0.118	0.323	0	1
<i>Independent variables - financial statements based:</i>										
Cash flow _{<i>t</i>-1}	29893	0.071	0.073	-0.086	0.267	37407	0.071	0.073	-0.086	0.267
Revenue growth _{<i>t</i>-1}	29893	0.042	0.164	-0.372	0.428	37407	0.033	0.168	-0.372	0.428
Net investments _{<i>t</i>-1}	29893	0.037	0.231	-0.445	0.697	37407	0.038	0.230	-0.445	0.697
Net tangible investments _{<i>t</i>-1}	29510	0.038	0.289	-0.473	0.933	36911	0.039	0.287	-0.473	0.933
Leverage _{<i>t</i>-1}	29893	0.638	0.234	0.135	1.159	37407	0.634	0.234	0.135	1.159
Altman Z-score _{<i>t</i>-1}	29763	2.319	1.231	-0.859	8.459	37251	2.325	1.230	-0.859	8.459

The table shows the summary statistics for the main regression variables.

Table 3: Summary statistics for the main regression variables - cont'd

Sample period:	wave 13 - wave 22					Full sample				
	N	Mean	Sd	Min	Max	N	Mean	Sd	Min	Max
<i>Independent variables - bank controls:</i>										
Main bank size _{<i>t</i>-1}	7282	25.632	1.541	18.171	27.212	9110	25.641	1.551	18.171	27.212
Main bank capitalization _{<i>t</i>-1}	7282	0.078	0.026	0.032	0.180	9110	0.078	0.025	0.032	0.180
Main bank liquidity _{<i>t</i>-1}	7282	0.196	0.133	0.021	0.599	9110	0.193	0.123	0.021	0.599
Main bank profitability _{<i>t</i>-1}	7169	0.003	0.003	-0.005	0.015	8997	0.003	0.004	-0.005	0.015
Main bank asset quality _{<i>t</i>-1}	6993	0.005	0.008	-0.013	0.019	8747	0.005	0.007	-0.013	0.019
Main bank funding _{<i>t</i>-1}	7282	0.594	0.125	0.082	0.996	9102	0.604	0.124	0.079	0.996
<i>Independent variables - macroeconomic controls:</i>										
Real GDP (%)	29893	1.615	1.551	-3.306	20.706	37407	0.928	4.544	-15.577	20.706
Credit standards (%)	29893	-2.399	10.643	-37.500	75.000	37407	-1.050	11.441	-37.500	75.000
Risk perception (%)	29893	-0.456	8.132	-29.167	50.000	37407	1.673	10.612	-29.167	66.667
<i>Variables of interest - country level:</i>										
High buffer	29893	0.429	0.495	0	1	37407	0.522	0.500	0	1
<i>Variables of interest - bank level:</i>										
Distance	5689	7.764	2.856	1.790	26.430	6732	7.839	2.801	1.790	26.430
Low Distance	7358	0.453	0.498	0	1	9186	0.451	0.498	0	1
High Distance	7358	0.143	0.350	0	1	9186	0.136	0.343	0	1

The table shows the summary statistics for the main regression variables.

Data

Sample:

-15,368 firms from 12 eurozone countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Slovakia, and Spain)

-Time coverage: Biannual data for the period between wave 13 - wave 22 (April 2015- March 2020)

Empirical model

$$Y_{ict} = \alpha + \beta High\ buffer_{ct} + \gamma FIRM_{ict}^{sur} + \delta FIRM_{ict-1}^{fin} + \zeta MACRO_{ct} + \lambda_t + \mu_s + \varepsilon_{ict} \quad (1)$$

$Y_{ict} = 1$) bank loan availability or 2) loan conditions variables (interest rate, other costs, loan size, maturity, collateral) and equals 1 if any of the variables is increased in the previous six months as reported by firm, and 0 otherwise.

$High\ buffer_{ct} = 1$ if the firm operates in a country with the total capital buffer requirement above the median for the respective time period, an 0 otherwise.

$FIRM_{ict}^{sur}$ includes survey variables: *Micro*, *Small*, *Medium*, *Young*, and *Credit history* and *Public funds access*.

$FIRM_{ict-1}^{fin}$ includes lagged firm financial statement variables: *Cash flow*_{*t-1*}, *Revenue growth*_{*t-1*}, *Net investments*_{*t-1*} and *Leverage*_{*t-1*}.

$MACRO_{ct}$ stands for macroeconomic controls: the real *GDP* growth rate, *Credit standards* index and *Risk perception* index.

λ_t are time fixed effects while μ_s stands for sector dummies and ε_{ict} is the error term.

Table 4: The impact of capital buffers on availability of bank loans

	OLS			Probit		
	(1)	(2)	(3)	(4)	(5)	(6)
High buffer	-0.0427** (0.0189)	-0.0411* (0.0188)	-0.0424** (0.0188)	-0.0419** (0.0182)	-0.0398** (0.0180)	-0.0410** (0.0181)
Micro	-0.0853*** (0.0196)	-0.0869*** (0.0197)	-0.0866*** (0.0183)	-0.0859*** (0.0200)	-0.0871*** (0.0200)	-0.0872*** (0.0187)
Small	-0.0394** (0.0137)	-0.0402** (0.0139)	-0.0396** (0.0128)	-0.0378*** (0.0132)	-0.0385*** (0.0133)	-0.0381*** (0.0122)
Medium	-0.0246** (0.00869)	-0.0252** (0.00841)	-0.0241** (0.00843)	-0.0222*** (0.00797)	-0.0227*** (0.00738)	-0.0217*** (0.00748)
Young	-0.0357 (0.0208)	-0.0382* (0.0212)	-0.0394* (0.0209)	-0.0367* (0.0216)	-0.0390* (0.0216)	-0.0406* (0.0214)
Credit history	0.278*** (0.0177)	0.278*** (0.0172)	0.277*** (0.0171)	0.238*** (0.0147)	0.238*** (0.0140)	0.238*** (0.0138)
Public funds access	0.230*** (0.0242)	0.230*** (0.0221)	0.231*** (0.0217)	0.192*** (0.0207)	0.192*** (0.0184)	0.193*** (0.0180)
Cash flow _{t-1}	0.127** (0.0517)	0.134** (0.0559)	0.146** (0.0545)	0.138*** (0.0509)	0.145*** (0.0556)	0.156*** (0.0544)
Revenue growth _{t-1}	0.0983*** (0.0175)	0.0975*** (0.0175)	0.0986*** (0.0180)	0.100*** (0.0192)	0.0997*** (0.0197)	0.101*** (0.0207)
Net investments _{t-1}	0.0244*** (0.00604)	0.0247*** (0.00569)	0.0249*** (0.00591)	0.0266*** (0.00651)	0.0274*** (0.00593)	0.0278*** (0.00608)
Leverage _{t-1}	-0.0325** (0.0134)	-0.0323** (0.0132)	-0.0305** (0.0133)	-0.0331** (0.0139)	-0.0330** (0.0138)	-0.0316** (0.0141)
Real GDP	0.0106 (0.00959)	0.0133 (0.0152)	0.0133 (0.0150)	0.0115 (0.00950)	0.0138 (0.0144)	0.0136 (0.0142)
Credit standards	-0.00114 (0.000759)	-0.000923 (0.000838)	-0.000959 (0.000822)	-0.00122 (0.000751)	-0.000999 (0.000851)	-0.00104 (0.000835)
Risk perception	-0.00107 (0.000832)	-0.00194* (0.000953)	-0.00188* (0.000956)	-0.00113 (0.000880)	-0.00212** (0.001000)	-0.00206** (0.00100)
Time FE	No	Yes	Yes	No	Yes	Yes
Sector FE	No	No	Yes	No	No	Yes
Observations	29893	29893	29893	29893	29893	29893
R ² /Pseudo R ²	0.1418	0.1434	0.1448	0.1195	0.1212	0.1225

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: The impact of capital buffers on conditions of bank loans

	<i>OLS</i>					<i>Probit</i>				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Interest rate	Other costs	Loan size	Maturity	Collateral	Interest rate	Other costs	Loan size	Maturity	Collateral
High buffer	0.0367* (0.0175)	-0.00652 (0.0213)	-0.0307 (0.0259)	-0.00727 (0.00844)	0.0104 (0.0142)	0.0379** (0.0177)	-0.00653 (0.0214)	-0.0279 (0.0252)	-0.00507 (0.00794)	0.0109 (0.0150)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15593	15593	15593	15593	15593	15593	15593	15593	15593	15593
R^2 /Pseudo R^2	0.0319	0.0286	0.0631	0.0375	0.0309	0.0374	0.0234	0.0572	0.0531	0.0358

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main findings and Robustness

- 1 Capital buffers and their tightening in general lead to lower availability of bank loans for firms.
- 2 We find a positive association between *High buffer* and interest costs.
- 3 The results indicate a trade-off associated with the tightening of capital buffers on one side and loan availability for firms on the other.

- The results are confirmed:

- 1 Using alternative firm financial variables:

- Net tangible investments
- Altman Z-score

- 2 Sample without large firms

Motivation

- The Covid-19 shock has led to loosening of the countercyclical capital buffer to facilitate credit provision to the real economy.
- Belgium, France, Germany, Ireland and Slovakia eased their CCyB buffers in March-April 2020 to support credit provision to firms and households.
- Releasing the CCyB in March-April 2020 enables a unique experimental setting to test the *macroprudential countercyclical design*.

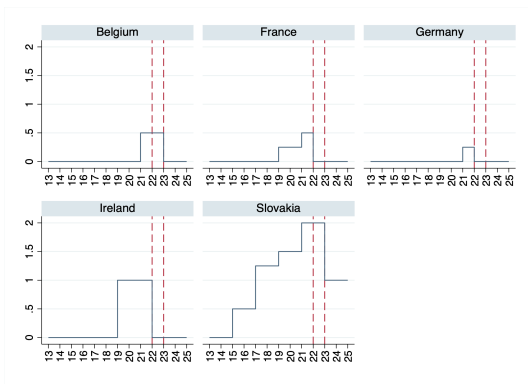


Figure 1: CCyB rate for five euro area countries over time

Data

Sample:

-17,914 firms from 12 eurozone countries

-Time coverage: Semiannual data for the period between wave 13 - wave 25 (April 2015 and September 2021)

Country groups: CCyB decrease=1 vs. CCyB decrease=0

-In March-April 2020, Belgium, France, Germany, Ireland and Slovakia eased their CCyB buffers intending to support lending and allow easier weathering of the crisis for firms and households.

-Austria, Finland, Greece, Italy, Netherlands, Portugal and Spain did not increase the CCyB buffer above 0% before the Covid-19 pandemic.

Empirical model

$$\begin{aligned}
 Y_{ict} = & \alpha + \beta_1 \text{High buffer}_{ct} + \beta_2 \text{CCyB decrease}_c * \text{Post}_t \\
 & + \beta_3 \text{High buffer}_{ct} * \text{Post}_t + \beta_4 \text{CCyB decrease}_c * \text{High buffer}_{ct} \\
 & + \beta_5 \text{CCyB decrease}_c * \text{High buffer}_{ct} * \text{Post}_t \\
 & + \gamma \text{FIRM}_{ict}^{sur} + \delta \text{FIRM}_{ict-1}^{fin} + \zeta \text{MACRO}_{ct} \\
 & + \lambda_t + \mu_s + \theta_c + \varepsilon_{ict}
 \end{aligned} \tag{2}$$

$Y_{ict} = 1$ bank loan availability or 2) loan conditions variables (interest rate, other costs, loan size, maturity, collateral).

$\text{Post} = 1$ if wave = 23, 24 and 25 (April 2020 - September 2021)

$\text{CCyB decrease} = 1$ if CCyB rate was decreased in the respective country after the outbreak of Covid - 19 pandemic, and 0 otherwise.

$\text{High buffer} =$ a measure of capital requirement intensity and capital space.

FIRM^{sur} , FIRM^{fin} , MACRO controls, and time, sector and country fixed effects are included.

Table 6: The loosening of countercyclical capital buffer (CCyB) and bank loan availability and conditions

	(1)	(2)	(3)	(4)	(5)	(6)
	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0994*** (0.0172)	0.143*** (0.0450)	0.212*** (0.0354)	-0.0513*** (0.0153)	-0.0850*** (0.0176)	0.120*** (0.0263)
High buffer	-0.0248 (0.0161)	0.0657*** (0.0150)	0.0324* (0.0171)	-0.0268 (0.0242)	0.00337 (0.00719)	0.0121 (0.0170)
Post × High buffer	-0.0462*** (0.00984)	0.0727* (0.0402)	0.110*** (0.0293)	-0.000402 (0.0248)	0.0291 (0.0233)	0.0717** (0.0249)
CCyB decrease × High buffer	0.0395 (0.0226)	-0.0495** (0.0180)	0.00833 (0.0400)	0.0491 (0.0279)	0.0337** (0.0138)	-0.0170 (0.0377)
Post × CCyB decrease × High buffer	0.0695*** (0.0214)	-0.147** (0.0649)	-0.249*** (0.0440)	-0.0372 (0.0400)	-0.0521* (0.0284)	-0.168*** (0.0320)
FIRM controls	Yes	Yes	Yes	Yes	Yes	Yes
MACRO controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37407	19141	19141	19141	19141	19141
R ²	0.151	0.030	0.032	0.059	0.053	0.047

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main findings and Robustness

- 1 Overall, banks were attempting to stabilize their capital buffers during a period of high uncertainty by *reducing lending*, (Couaillier et al., 2024).
 - 2 The release of the CCyB is significantly associated to a *higher bank loan availability* for firms operating in countries where the banking system had enough *capital space*.
 - 3 Releasing the CCyB is significantly associated to the *relaxation of the credit conditions* (interest rates, non-interest costs, and collateral requirements).
- The results are confirmed:
 - 1 Using alt. firm financial variables:
 - Net tangible investments
 - Altman Z-score
 - 2 Recoding *Post* to shorter period
 - Post =1 if wave = 23 and 24 (April 2020 - March 2021)
 - 3 Sample without large firms

Aims

Question of capacity of macroprudential policy to stabilise credit cycles and facilitate an efficient response to economic downturn.

- Exploring bank-firm relationship and dependency of the CCyB release success on bank's capital headroom:
 - banks operating at a closer distance to the required capital requirement- more capital constrained;
 - banks operating at a higher distance - more capital headroom to utilize the release of the buffer.
- CET1 capital requirement=
*min. CET1 + CCyB + CCB + SRB + OSII + GSII + Pillar 2 requirement**

*Subject to supervisory discretion for our sample period.

Data

Sample:

- 4,179 firms from 8 euro area countries
- Time coverage: Biannual data for the period between wave 13 - wave 25 (April 2015 and September 2021)

Firm-bank matching:

- SAFE-ORBIS matched database contains the variable called "BANKER" - main banker name. Orbis "BANKER" and Fitch Connect bank name match: 4179 firms - 174 banks
- Firm-bank relationship generally sticky, (see [Ferrando et al., 2022](#); [Kalemli-Ozcan et al., 2018](#); [Giannetti and Ongena, 2012](#); [Corbisiero and Faccia, 2018](#)).

Remaining countries:

- CCyB decrease=1: France, Germany, Ireland
- CCyB decrease=0: Austria, Greece, Netherlands, Portugal, Spain

Empirical model

$$\begin{aligned}
 Y_{ict} = & \alpha + \beta_1 \text{Distance}_{bct} + \beta_2 \text{CCyB decrease}_c * \text{Post}_t \\
 & + \beta_3 \text{Distance}_{bct} * \text{Post}_t + \beta_4 \text{CCyB decrease}_c * \text{Distance}_{bct} \\
 & + \beta_5 \text{CCyB decrease}_c * \text{Distance}_{bct} * \text{Post}_t \\
 & + \gamma \text{FIRM}_{ict}^{\text{sur}} + \delta \text{FIRM}_{ict-1}^{\text{fin}} + \eta \text{BANK}_{bt-1} + \zeta \text{MACRO}_{ct} \\
 & + \lambda_t + \mu_s + \theta_c + \varepsilon_{ict}.
 \end{aligned} \tag{3}$$

$Y_{ict} = 1$) bank loan availability or 2) the loan conditions variables (interest rate, other costs, loan size, maturity, collateral).

$\text{Post} = 1$ if wave = 23, 24 and 25 (April 2020 - September 2021)

$\text{CCyB decrease} = 1$ if CCyB rate was decreased in the country after the outbreak of Covid - 19 pandemic, and 0 otherwise

$\text{Distance} =$

1) Low distance = 1 if the main bank's distance to CET1 required buffer falls below the first quartile of the variable distribution in 2019, and 0 otherwise or

2) High distance = 1 if the main bank's distance to CET1 required buffer falls into the fourth quartile of the variable distribution in 2019, and 0 otherwise.

FIRM^{sur} , FIRM^{fin} , MACRO , BANK controls, and time, sector and country fixed effects are included.

Table 7: The loosening of CyCB and bank loans availability - Low distance vs. High distance banks

	<i>Low distance</i>				<i>High distance</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post × CCyB decrease	-0.0649* (0.0309)	-0.0839 (0.0532)			-0.00445 (0.0174)	-0.0199 (0.0178)		
Low distance	0.0188 (0.0163)	0.0277 (0.0220)	0.0466 (0.0265)					
Post × Low distance	0.0284 (0.0173)	0.0321* (0.0147)	0.0183** (0.00538)	0.0239* (0.0103)				
CCyB decrease × Low distance	-0.127*** (0.0175)	-0.0484 (0.0318)	-0.0649* (0.0281)	-0.533 (0.436)				
Post × CCyB decrease × Low distance	0.0373 (0.0280)	0.0457 (0.0405)	0.0762*** (0.0115)	0.106*** (0.0124)				
High Distance					0.00911 (0.0362)	-0.00516 (0.0251)	-0.000562 (0.0366)	
Post × High Distance					0.0253 (0.0435)	0.0321 (0.0403)	0.000201 (0.0574)	-0.0300 (0.0432)
CCyB decrease × High Distance					0.0971** (0.0372)	0.0349 (0.0294)	0.0194 (0.0382)	0.466 (0.310)
Post × CCyB decrease × High Distance					-0.242*** (0.0479)	-0.239*** (0.0432)	-0.173** (0.0523)	-0.179*** (0.0438)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	No	Yes	Yes	No	No	Yes	Yes	No
Macro controls	Yes	Yes	No	No	Yes	Yes	No	No
Time FE	Yes	Yes	No	No	Yes	Yes	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	No	No	Yes	Yes	No	No
Time x Country FE	No	No	Yes	Yes	No	No	Yes	Yes
Bank FE	No	No	No	Yes	No	No	No	Yes
Observations	9186	8739	8738	9129	9186	8739	8738	9129
R ²	0.180	0.185	0.201	0.230	0.179	0.185	0.201	0.230

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: The loosening of CyCB and bank loan conditions - Low distance vs. High distance banks

	<i>Low distance</i>					<i>High distance</i>				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Interest rate	Other costs	Loan size	Maturity	Collateral	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0834 (0.0722)	-0.2277*** (0.0469)	0.0554 (0.166)	-0.123*** (0.0311)	-0.0209 (0.0975)	-0.00653 (0.0486)	0.0145 (0.0660)	-0.0521 (0.0858)	-0.187*** (0.0386)	-0.00377 (0.0370)
Low distance	0.0347 (0.0325)	0.0887 (0.0527)	0.0293** (0.0115)	0.0131 (0.0422)	0.0144 (0.0234)					
Post × Low distance	-0.0249 (0.0256)	-0.0714 (0.0458)	0.0345 (0.0294)	0.0427 (0.0584)	0.00495 (0.0326)					
CCyB decrease × Low distance	-0.129** (0.0429)	-0.0644 (0.0363)	-0.00569 (0.0329)	0.0311 (0.0364)	-0.0261 (0.0354)					
Post × CCyB decrease × Low distance	0.212** (0.0669)	0.387*** (0.0467)	-0.182 (0.176)	-0.108 (0.0649)	0.0652 (0.109)					
High distance						0.0108 (0.0190)	-0.0112 (0.0578)	-0.00223 (0.0172)	-0.0187 (0.0198)	0.0263 (0.0369)
Post × High distance						-0.143** (0.0511)	-0.0454 (0.0815)	-0.111 (0.0585)	-0.0872 (0.0635)	0.0178 (0.0754)
CCyB decrease × High distance						0.0275 (0.0320)	0.0219 (0.0637)	0.0507 (0.0332)	0.0172 (0.0229)	-0.0642 (0.0527)
Post × CCyB decrease × High distance						0.363*** (0.0753)	-0.145 (0.118)	0.0123 (0.104)	0.0720 (0.0604)	0.242** (0.0924)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4624	4624	4624	4624	4624	4624	4624	4624	4624	4624
R ²	0.062	0.061	0.124	0.081	0.062	0.062	0.053	0.123	0.081	0.065

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Main findings and Robustness

- 1 The results suggest banks are *hesitant to utilize their existing capital buffers* suggesting procyclical behavior.
 - 2 The beneficial impact of CCyB release on lending activities is more pronounced for banks that initially operate at a *closer distance to the required capital rate* (in line with [Dursun-de Neef, Schandlbauer, and Wittig, 2023](#); [Couaillier et al. 2022](#))
 - 3 We find evidence of *tightening of credit conditions* in particular the interest rate, other costs and collateral.
 - 4 *Limitations* - loss of sample in terms of country coverage as well as firm-bank matched sample.
- The results are mostly confirmed:
 - 1 Using alternative firm financial variables:
 - Net tangible investments
 - Altman Z-score
 - 2 Recoding *Post* to shorter period
 - Post =1 if wave = 23 and 24 (April 2020 - March 2021)
 - 3 Sample without large firms
 - 4 Testing *Distance* - continuous variable
 - 5 Recoding bank quartile split:
 - Low CET1 vs. High CET1 banks

Concluding remarks

Firm-level analysis reveals:

- Capital buffers and their tightening in general leads to lower availability of bank loans for firms and the tightening of loan conditions, specifically in terms of the interest rate.
- The release of the CCyB is significantly associated to a higher bank loan availability for firms operating in countries where the banking system had enough capital space.
- Releasing the CCyB is significantly associated to the relaxation of the credit conditions in the form of interest rates and non-interest credit costs, as well as collateral requirements.
- The results indicate the importance of building up *capital space with both structural and cyclical tools* to support the success of macroprudential countercyclical design during the loosening policy cycle.

Concluding remarks II

Firm-bank-level analysis reveals:

- The release of the CCyB is associated with higher loan availability for firms associated to banks operating at a buffer closer to the required capital buffer rate (*Low distance*) - *more likely to react to a positive shock?*
- The opposite is found for *High distance* banks indicating hesitation to utilize the buffer release - *procyclicality?*
- Large differences in terms of the success of the macroprudential countercyclical design with respect to the bank's capital headroom
- Different factors: market stigma, release period, supervisory scrutiny expectations, recommendations on the buffer use.
- Future steps: Disentangling the difference between firm only analysis and firm-bank analysis.

Thank you for your attention!

Table 9: The impact of capital buffers on conditions of bank loans - full table

	OLS					Probit				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Interest rate	Other costs	Loan size	Maturity	Collateral	Interest rate	Other costs	Loan size	Maturity	Collateral
High buffer	0.0367* (0.0175)	-0.00652 (0.0213)	-0.0307 (0.0259)	-0.00727 (0.00844)	0.0104 (0.0142)	0.0379** (0.0177)	-0.00653 (0.0214)	-0.0279 (0.0252)	-0.00507 (0.00794)	0.0109 (0.0150)
Micro	0.0513*** (0.00671)	0.129*** (0.0327)	-0.0949*** (0.0194)	-0.0641*** (0.0175)	0.0878** (0.0341)	0.0512*** (0.00592)	0.128*** (0.0323)	-0.0952*** (0.0179)	-0.0636*** (0.0169)	0.0848*** (0.0316)
Small	0.0169** (0.00653)	0.0958*** (0.0209)	-0.0524*** (0.0147)	-0.0422** (0.0146)	0.0681** (0.0275)	0.0182** (0.00723)	0.0961*** (0.0207)	-0.0524*** (0.0140)	-0.0401*** (0.0136)	0.0670*** (0.0255)
Medium	-0.0213** (0.00946)	0.0284 (0.0176)	-0.0418** (0.0186)	-0.0345** (0.0144)	0.0321* (0.0174)	-0.0197** (0.00920)	0.0294* (0.0174)	-0.0403** (0.0183)	-0.0324** (0.0134)	0.0321* (0.0166)
Young	0.0695* (0.0362)	0.0703** (0.0303)	0.0312 (0.0243)	0.00272 (0.0215)	0.0828* (0.0387)	0.0605** (0.0292)	0.0660** (0.0272)	0.0342 (0.0225)	0.00656 (0.00946)	0.0659** (0.0288)
Credit history	-0.0338** (0.0126)	-0.0267 (0.0216)	0.163*** (0.0107)	0.0922*** (0.0116)	-0.0112 (0.0160)	-0.0355*** (0.0130)	-0.0269 (0.0219)	0.149** (0.00945)	0.0822*** (0.00946)	-0.0115 (0.0169)
Public funds access	-0.0296** (0.0125)	-0.0701** (0.0231)	0.0745*** (0.0147)	0.0556*** (0.0115)	-0.0150 (0.0299)	-0.0362** (0.0155)	-0.0764*** (0.0254)	0.0659** (0.0124)	0.0452*** (0.00865)	-0.0160 (0.0328)
Cash flow _{t-1}	-0.346*** (0.0736)	-0.111** (0.0424)	0.0924* (0.0484)	0.000870 (0.0429)	-0.110* (0.0610)	-0.351*** (0.0728)	-0.108** (0.0429)	0.0977** (0.0493)	-0.00300 (0.0449)	-0.108* (0.0628)
Revenue growth _{t-1}	-0.0781*** (0.0171)	-0.0960** (0.0319)	0.129*** (0.0277)	0.0211 (0.0240)	-0.0548* (0.0294)	-0.0729*** (0.0200)	-0.0941*** (0.0332)	0.129*** (0.0254)	0.0212 (0.0221)	-0.0542** (0.0274)
Net investments _{t-1}	0.0350* (0.0161)	-0.0362*** (0.0112)	0.0177 (0.0140)	-0.0190 (0.0178)	-0.0130 (0.0153)	0.0335** (0.0154)	-0.0353*** (0.0111)	0.0180 (0.0134)	-0.0170 (0.0178)	-0.0110 (0.0154)
Leverage _{t-1}	0.000357 (0.0378)	0.0837*** (0.0252)	0.0514 (0.0412)	0.0103 (0.0152)	0.0485** (0.0209)	0.00294 (0.0345)	0.0834*** (0.0251)	0.0525 (0.0416)	0.0150 (0.0139)	0.0481** (0.0212)
Real GDP	-0.0164** (0.00680)	-0.0108 (0.00855)	0.0190** (0.00858)	0.00702 (0.00782)	-0.0106 (0.0131)	-0.0192*** (0.00680)	-0.0110 (0.00860)	0.0178** (0.00836)	0.00712 (0.00680)	-0.00984 (0.0140)
Credit standards	0.0000572 (0.000658)	0.00110 (0.00111)	-0.000202 (0.000631)	-0.000157 (0.000229)	0.00128*** (0.000317)	-0.00000427 (0.000626)	0.00112 (0.00110)	-0.000273 (0.000652)	-0.000129 (0.000237)	0.00107*** (0.000305)
Risk perception	0.000707 (0.00118)	-0.00122 (0.00204)	-0.000275 (0.00112)	-0.000950 (0.000686)	0.00286** (0.00112)	0.000659 (0.00118)	-0.00132 (0.00203)	-0.000257 (0.00117)	-0.000971 (0.000695)	0.00243** (0.00105)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15993	15993	15993	15993	15993	15993	15993	15993	15993	15993
R ² /Pseudo R ²	0.0319	0.0286	0.0631	0.0375	0.0309	0.0374	0.0234	0.0572	0.0531	0.0358

Standard errors in parentheses

* p < 0.10, ** p < 0.05, *** p < 0.01



Table 10: The loosening of countercyclical capital buffer (CCyB) and bank loan availability and conditions - full table

	(1)	(2)	(3)	(4)	(5)	(6)
	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0994*** (0.0172)	0.143*** (0.0450)	0.213*** (0.0354)	-0.0513*** (0.0153)	-0.0850*** (0.0176)	0.129*** (0.0263)
High buffer	-0.0248 (0.0161)	0.0657*** (0.0150)	0.0324* (0.0171)	-0.0268 (0.0242)	0.00337 (0.00719)	0.0121 (0.0170)
Post × High buffer	-0.0462*** (0.00984)	0.0727** (0.0402)	0.110*** (0.0293)	-0.000402 (0.0248)	0.0291 (0.0233)	0.0717** (0.0249)
CCyB decrease × High buffer	0.0395 (0.0226)	-0.0495** (0.0180)	0.00833 (0.0400)	0.0491 (0.0279)	0.0337** (0.0138)	-0.0170 (0.0377)
Post × CCyB decrease × High buffer	0.0695*** (0.0214)	-0.147** (0.0649)	-0.249*** (0.0440)	-0.0372 (0.0400)	-0.0521* (0.0284)	-0.168*** (0.0320)
Micro	-0.109*** (0.0170)	0.0366*** (0.0117)	0.113*** (0.0290)	-0.101*** (0.0190)	-0.0699*** (0.0143)	0.0887*** (0.0252)
Small	-0.0622*** (0.0126)	0.0133 (0.0123)	0.0843*** (0.0213)	-0.0593*** (0.0147)	-0.0464*** (0.0147)	0.0670*** (0.0193)
Medium	-0.0323*** (0.0103)	-0.00981 (0.0152)	0.0339* (0.0158)	-0.0494*** (0.0110)	-0.028*** (0.0104)	0.0310* (0.0149)
Young	-0.0179 (0.0129)	0.0231 (0.0253)	0.0110 (0.0307)	0.0316 (0.0227)	-0.0136 (0.0159)	0.0401** (0.0218)
Credit history	0.249*** (0.0122)	-0.0215*** (0.00648)	-0.0129 (0.0124)	0.137*** (0.0142)	0.0650*** (0.00819)	-0.00202 (0.00885)
Public funds access	0.231*** (0.0166)	-0.0239*** (0.00753)	-0.0455*** (0.00871)	0.101*** (0.0177)	0.0778*** (0.0151)	-0.0191 (0.0107)
Cash flow ₋₁	0.260*** (0.0209)	-0.210*** (0.0671)	-0.143*** (0.0409)	0.0929 (0.0648)	-0.0452* (0.0227)	-0.298*** (0.0346)
Revenue growth ₋₁	0.0610*** (0.0180)	-0.0721*** (0.0127)	-0.0623*** (0.0120)	0.0858*** (0.0221)	0.0374*** (0.0146)	-0.0376 (0.0231)
Net investments ₋₁	0.0143** (0.00503)	0.00509 (0.00865)	-0.0302** (0.0134)	0.0278* (0.0131)	0.00148 (0.00745)	-0.0191 (0.0113)
Leverage ₋₁	-0.0115 (0.00710)	0.0427** (0.0148)	0.0966*** (0.0199)	0.0305* (0.0139)	0.0192 (0.0111)	0.0788*** (0.0145)
Real GDP	-0.000156 (0.00397)	-0.00277 (0.00535)	-0.00601* (0.00325)	-0.00025 (0.00201)	-0.00527* (0.00260)	-0.000819 (0.00431)
Credit standards	-0.000527 (0.000489)	-0.000246 (0.000419)	-0.000130 (0.000811)	-0.00169*** (0.000433)	-0.000135 (0.000545)	-0.000536 (0.000783)
Risk perception	-0.00120*** (0.000378)	0.00199** (0.000696)	0.00020** (0.000768)	0.000681 (0.000545)	-0.000174 (0.000308)	0.000972** (0.000438)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37407	19141	19141	19141	19141	19141
R ²	0.151	0.030	0.032	0.059	0.053	0.047

Standard errors in parentheses
* p < 0.10, ** p < 0.05, *** p < 0.01



Table 11: The loosening of CyCB and bank loan availability and loan conditions - SME subsample

	(1)	(2)	(3)	(4)	(5)	(6)
	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0881*** (0.0114)	0.118* (0.0613)	0.236*** (0.0367)	-0.0217 (0.0195)	-0.0830*** (0.0199)	0.0972*** (0.0298)
High buffer	-0.0264 (0.0171)	0.0613*** (0.0139)	0.0300 (0.0174)	-0.0296 (0.0231)	0.00215 (0.00898)	0.0111 (0.0180)
Post × High buffer	-0.0457*** (0.0118)	0.0724* (0.0392)	0.118*** (0.0276)	0.00378 (0.0256)	0.0337 (0.0273)	0.0633** (0.0246)
CCyB decrease × High buffer	0.0421 (0.0247)	-0.0331* (0.0156)	0.0152 (0.0451)	0.0624* (0.0285)	0.0371** (0.0156)	-0.0235 (0.0404)
Post × CCyB decrease × High buffer	0.0652*** (0.0159)	-0.153* (0.0738)	-0.299*** (0.0377)	-0.0788* (0.0431)	-0.0661* (0.0314)	-0.159*** (0.0316)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32790	16382	16382	16382	16382	16382
R ²	0.145	0.031	0.031	0.053	0.053	0.050

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Table 12: The loosening of CyCB and bank loans availability - Low distance vs. High distance banks - full table

	Low distance				High distance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post × CCyB decrease	-0.0649* (0.0309)	-0.0839 (0.0532)			-0.00445 (0.0174)	-0.0199 (0.0178)		
Low distance	0.0188 (0.0163)	0.0277 (0.0220)	0.0466 (0.0265)					
Post × Low distance	0.0284 (0.0173)	0.0321** (0.0147)	0.0183** (0.00538)	0.0299* (0.0103)				
CCyB decrease × Low distance	-0.127*** (0.0175)	-0.0484 (0.0318)	-0.0649* (0.0281)	-0.433 (0.436)				
Post × CCyB decrease × Low distance	0.0373 (0.0280)	0.0457 (0.0405)	0.0762*** (0.0115)	0.106*** (0.0124)				
High Distance					0.00911 (0.0362)	-0.00516 (0.0251)	-0.000562 (0.0366)	
Post × High Distance					0.0253 (0.0435)	0.0321 (0.0403)	0.000201 (0.0574)	-0.0300 (0.0432)
CCyB decrease × High Distance					0.0971** (0.0372)	0.0349 (0.0294)	-0.0194 (0.0382)	0.466 (0.310)
Post × CCyB decrease × High Distance					-0.242*** (0.0479)	-0.239*** (0.0432)	-0.173** (0.0523)	-0.179*** (0.0438)
Main bank size		-0.0126 (0.0121)	-0.0198 (0.0116)			-0.0142 (0.00962)	-0.0225** (0.00915)	
Main bank capitalization		1.082*** (0.232)	0.604 (0.531)			0.762*** (0.209)	0.0319 (0.465)	
Main bank liquidity		-0.153*** (0.0376)	-0.195*** (0.0326)			-0.187** (0.0544)	-0.221*** (0.0528)	
Main bank profitability		1.426 (2.529)	0.793 (2.287)			1.943 (2.178)	1.728 (2.349)	
Main bank asset quality		-1.709 (1.276)	2.378 (1.606)			-1.907 (1.406)	1.745 (1.940)	
Main bank funding		-0.177 (0.151)	-0.261 (0.139)			-0.162 (0.136)	-0.225* (0.118)	
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	No	No	Yes	Yes	No	No
Time FE	Yes	Yes	No	No	Yes	Yes	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	No	No	Yes	Yes	No	No
Time x Country FE	No	No	Yes	Yes	No	No	Yes	Yes
Bank FE	No	No	No	Yes	No	No	No	Yes
Observations	9186	8739	8738	9129	9186	8739	8738	9129
R ²	0.180	0.185	0.201	0.230	0.179	0.185	0.201	0.230

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$



Table 13: The loosening of CyCB and bank loan availability and conditions - Low distance vs. High distance - SME subsample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0770*** (0.0194)	-0.201* (0.103)	-0.146 (0.0900)	-0.0727 (0.0827)	-0.101*** (0.0238)	0.0455 (0.173)	-0.00546 (0.0348)	-0.137** (0.0525)	-0.251*** (0.0630)	-0.330*** (0.0318)	-0.167*** (0.0428)	-0.0874 (0.0825)
Low distance	-0.0150 (0.0219)	-0.0177 (0.0197)	-0.0196 (0.0159)	0.0354 (0.0268)	0.0197 (0.0198)	-0.0132 (0.0227)						
Post × Low distance	-0.00456 (0.0145)	0.0404 (0.0289)	0.101*** (0.0246)	0.0374 (0.0524)	0.0142 (0.0590)	0.0665* (0.0281)						
CCyB decrease × Low distance	0.0293 (0.0409)	0.0138 (0.0274)	0.209*** (0.0312)	0.168** (0.0477)	0.0564 (0.0351)	0.0738 (0.0611)						
Post × CCyB decrease × Low distance	0.0913*** (0.0217)	0.138 (0.0860)	-0.136 (0.0776)	-0.332** (0.115)	-0.135* (0.0681)	-0.113 (0.167)						
High distance							0.00292 (0.0176)	0.0144 (0.0132)	0.0409 (0.0584)	0.0171 (0.0179)	0.00291 (0.0122)	0.0351 (0.0201)
Post × High distance							-0.0291 (0.0171)	-0.177** (0.0711)	-0.105 (0.114)	-0.0766*** (0.0182)	-0.0458 (0.0359)	-0.0197 (0.0252)
CCyB decrease × High distance							0.104** (0.0307)	-0.0605* (0.0218)	-0.332*** (0.0800)	-0.326*** (0.0431)	-0.00132 (0.0227)	-0.133 (0.0690)
Post × CCyB decrease × High distance							-0.0816 (0.0690)	-0.00559 (0.0787)	0.162 (0.124)	0.314*** (0.0182)	-0.0294 (0.0423)	0.434*** (0.0438)
Firm controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		7317	3814	3814	3814	3814	7317	3814	3814	3814	3814	3814
R ²		0.175	0.049	0.055	0.101	0.073	0.062	0.175	0.052	0.057	0.102	0.072

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: The loosening of CyCB and bank loan availability and conditions - Low CET1 vs. High CET1 based on CET1 ratio in 2019

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
	Loan availability		Interest rate	Other costs	Loan size	Maturity	Collateral	Loan availability	Interest rate	Other costs	Loan size	Maturity	Collateral
Post × CCyB decrease	-0.0859 (0.0520)	-0.0815 (0.0727)	-0.217*** (0.0498)	0.0841 (0.166)	-0.123*** (0.0305)	-0.0139 (0.0979)		-0.00238 (0.0174)	0.00849 (0.0574)	0.0211 (0.0608)	-0.0438 (0.0866)	-0.199*** (0.0405)	-0.0152 (0.0504)
Low CET1	0.0161 (0.0346)	0.0459 (0.0301)	0.0819 (0.0494)	0.0556* (0.0275)	0.0134 (0.0452)	-0.00288 (0.0260)							
Post × Low CET1	0.0195 (0.0184)	-0.0187 (0.0323)	-0.0443 (0.0278)	0.0373 (0.0297)	0.0463 (0.0605)	0.0292 (0.0425)							
CCyB decrease × Low CET1	-0.0669* (0.0216)	-0.142** (0.0429)	-0.0629* (0.0281)	-0.0334 (0.0320)	0.0295 (0.0420)	-0.0104 (0.0259)							
Post × CCyB decrease × Low CET1	0.0547 (0.0404)	0.206** (0.0728)	0.361*** (0.0243)	-0.186 (0.176)	-0.112 (0.0676)	0.0412 (0.119)							
High CET1								0.0265 (0.0180)	-0.00629 (0.0164)	0.00630 (0.0416)	-0.0531 (0.0117)	-0.0222* (0.0117)	0.0562** (0.0217)
Post × High CET1								0.0572 (0.0319)	-0.155*** (0.0413)	-0.113 (0.0493)	-0.109* (0.0605)	-0.0934 (0.0569)	-0.0482 (0.0569)
CCyB decrease × High CET1								-0.0199 (0.0165)	0.0979*** (0.0207)	-0.00820 (0.0456)	0.114** (0.0453)	-0.0154 (0.0118)	-0.0933** (0.0370)
Post × CCyB decrease × High CET1								-0.257*** (0.0441)	0.145* (0.0691)	-0.154 (0.101)	-0.0302 (0.0956)	0.114 (0.0708)	0.192* (0.0910)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8739	4624	4624	4624	4624	4624	8739	4624	4624	4624	4624	4624	4624
R ²	0.184	0.062	0.060	0.124	0.081	0.062	0.186	0.062	0.056	0.124	0.082	0.064	0.064

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$