The *Great Lockdown*: pandemic response policies and bank lending conditions

Carlo Altavilla
European Central Bank

Francesca Barbiero
European Central Bank

Miguel Boucinha
European Central Bank

Lorenzo Burlon
European Central Bank

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Helicopter view

Three main questions:

1. Did the **policy response** to the pandemic affect **banks' intermediation capacity**?
2. Did the **coordinated nature of the pandemic policy response** trigger an **amplification effect**?
3. Did policy measures influence the **real economy**?

Results:

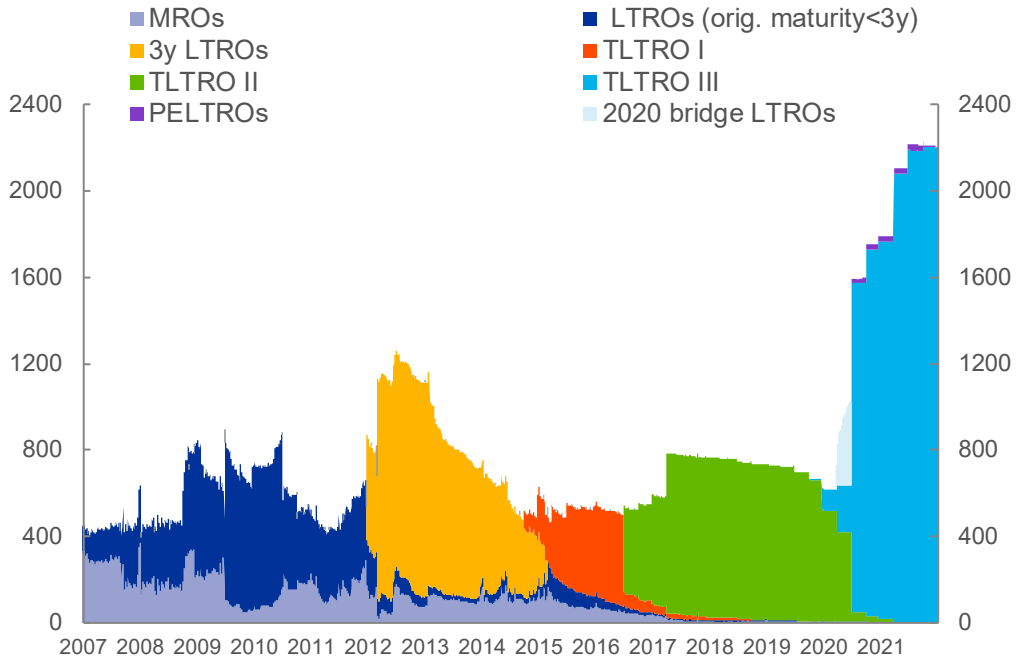
- ❑ In the absence of **liquidity provision measures**, lending would have been significantly lower
- ❑ **Capital relief measures** supported banks' intermediation capacity
- ❑ **Policy coordination** produced an **amplification** effect
- ❑ The policy responses avoided a more severe contraction in **firms' employment**

Outline

- **Monetary policy response to the pandemic**
  - The impact on bank lending conditions
  - Complementarity of policies
- **Real effects of pandemic measures**
  - Impact on firm viability
  - Effect on firm employment and productivity
- **Conclusions**

Monetary policy response

Borrowing from the Eurosystem
(EUR billion)



Monetary Policy announcements in 2020

March 12th	APP +120bn **TLTRO recalibration** **bridge LTROs**
March 15th	USD swap lines
March 18th	PEPP 750bn
April 7th	Collateral easing
April 30th	**TLTRO recalibration** PELTRO
June 4th	PEPP +600bn
December 10th	**TLTRO recalibration** PEPP +500bn

Data

- Proprietary ECB data on Individual Balance Sheet Items (iBSI)
  - Number of banks: 360 unconsolidated banks
  - Frequency: monthly between September 2014 and December 2020
  - Representativeness: 75-80% of the total outstanding loan amounts in the euro area
- Confidential ECB data on bank-level liquidity operations
  - Amount borrowed under each operation
  - Maximum borrowing amount (borrowing allowance)
- High-frequency market data
  - Individual banks' bond yields at daily frequency
  - Individual banks' stock prices at intra-day frequency
- Confidential supervisory data
  - Bank-level capital ratios (CET1)
  - Individual bank capital requirement from SREP (Supervisory Review and Evaluation Process)

Monetary policy: *model*

$$\Delta L^{\tau}_{i,t+h} = \alpha^{\tau}_{c,t,h} + \alpha^{\tau}_{i,h} + \beta^{\tau}_{h}\boldsymbol{TLTRO^{\tau}_{i,t}} + \Gamma^{\tau}_{h} X^{\tau}_{i,t-1} + \varepsilon^{\tau}_{i,t+h} \qquad h = 1, \dots, H$$

$\tau = \{\text{Pre-pandemic}\}$ until February 2020
$\tau = \{\text{Post-pandemic}\}$ from March 2020

$\Delta L^{\tau}_{i,t+h}$ change in volume of loans to NFCs of bank *i* between *t-1* and *t+h-1*

$\boldsymbol{TLTRO^{\tau}_{i,t}}$
- ✓ bank bond reaction around policy announcements: $\boldsymbol{TLTROshock^{\tau}_{i,t}}$
- X change in ratio of uptake over borrowing allowance: $TLTROuptake^{\tau}_{i,t}$

$\alpha^{\tau}_{c,t,h}$ country-time fixed effects specific to the horizon *h*

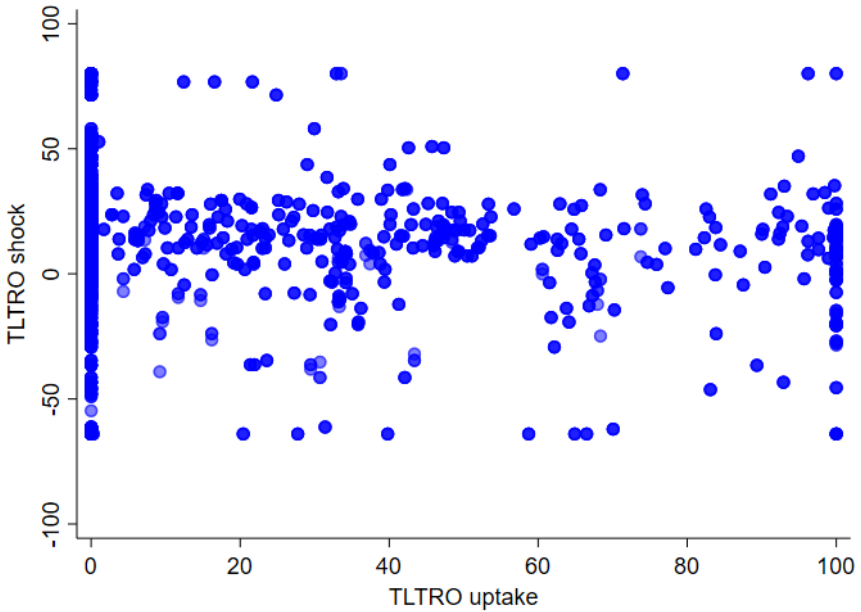
$\alpha^{\tau}_{i,h}$ bank fixed effects specific to the horizon *h*

$X^{\tau}_{i,t-1}$ additional explanatory variables (including other policies and bank specific demand)

Cluster at bank level, robust at country-time level;

Monetary policy shock: bank bond reaction to the policy announcement

TLTRO shock vs TLTRO uptake (utilization ratio)



Each dot represents a change in TLTRO shock and TLTRO uptake for a given bank in each month, over the period September 2014 December 2020 (around 7000 observations).

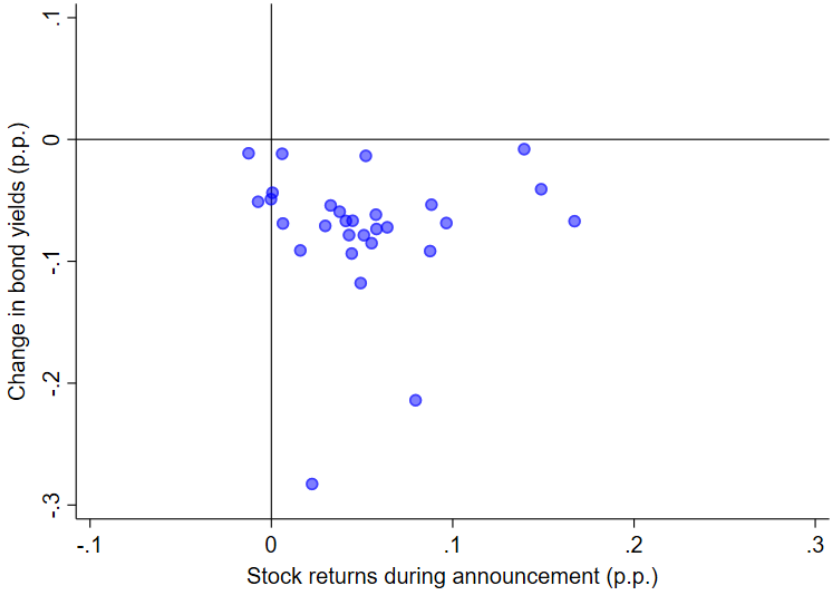
TLTRO events

Date	Event type	Event
08-May-14	Governing Council meeting	Draghi ready to act at next meeting
05-Jun-14	Governing Council meeting	TLTRO-I announcement
03-Jul-14	Governing Council meeting	TLTRO-I technical details
29-Jul-14	Press Release	TLTRO-I legal acts publication
22-Jan-15	Governing Council meeting	TLTRO-I modified interest rate
10-Mar-16	Governing Council meeting	TLTRO-II announcement
03-May-16	Press Release	TLTRO-II legal acts publication
07-Mar-19	Governing Council meeting	TLTRO-III announcement
06-Jun-19	Governing Council meeting	TLTRO-III technical details
29-Jul-19	Press Release	TLTRO-III legal acts publication
12-Sep-19	Governing Council meeting	TLTRO-III modified interest rate
12-Mar-20	Governing Council meeting	TLTRO-III easing conditions
30-Apr-20	Governing Council meeting	TLTRO-III pandemic rate reduction
10-Dec-20	Governing Council meeting	TLTRO-III prolonged easing conditions

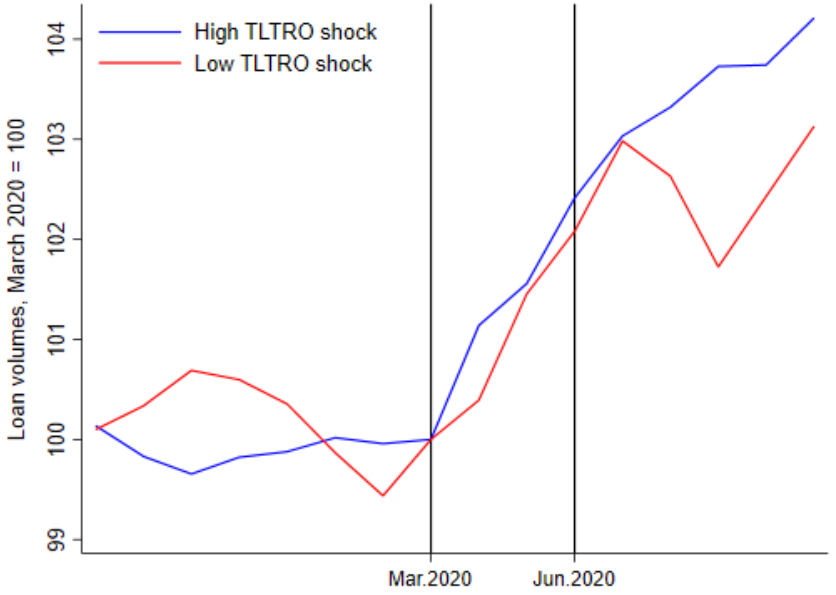
The table reports the list of events used to identify the impact of TLTRO announcements on bank bond yields.

Monetary policy shock: bank bond reaction to the policy announcement

Intra-daily stock returns and daily changes in bond yields on announcement day (April 2020)

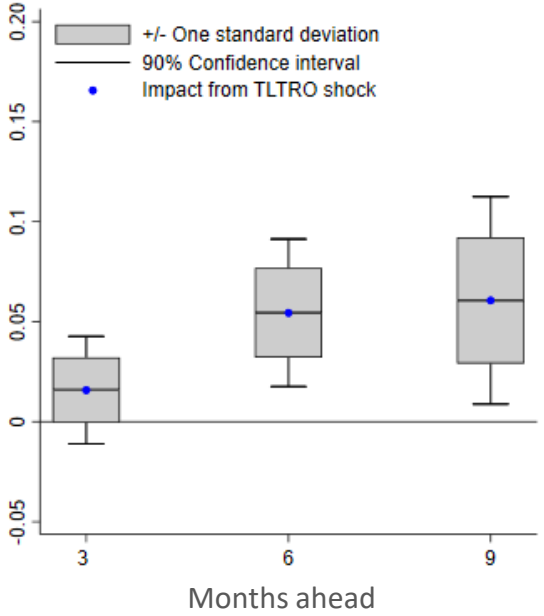


Lending before and after announcement by policy exposure

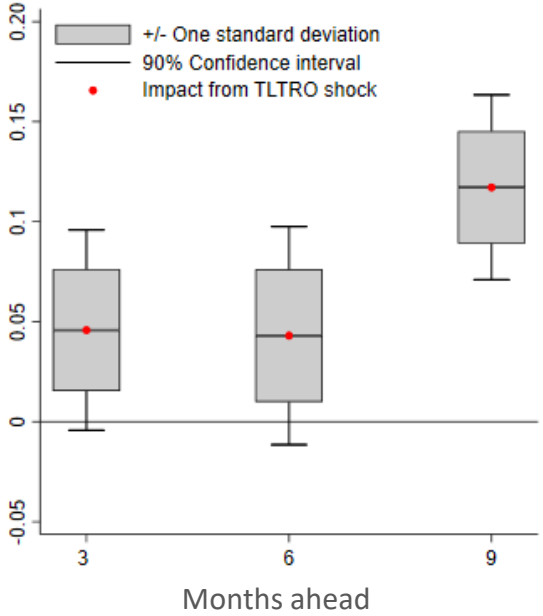


The effects of monetary policy on loan growth

Pre-pandemic



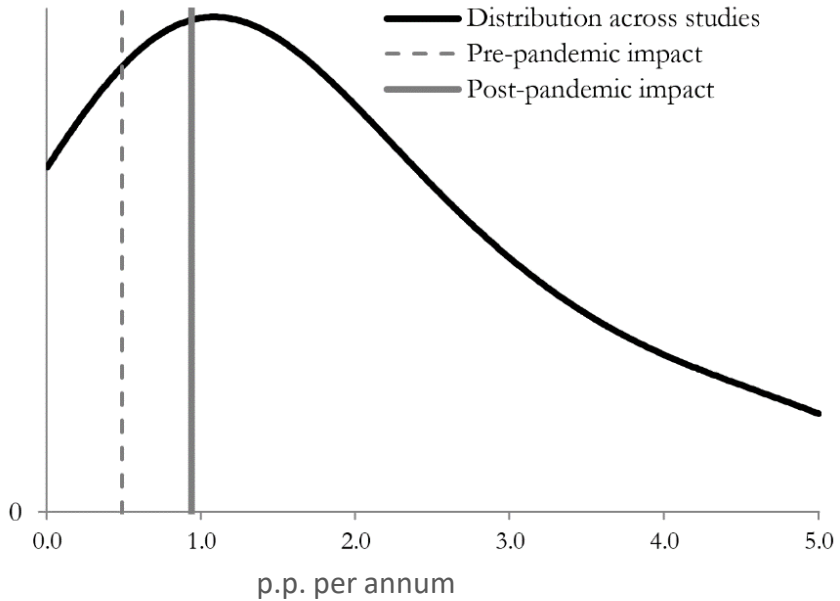
Post-pandemic



- Use high-frequency reaction of bank bond yields around TLTRO-related announcements as regressor: $\boldsymbol{TLTROshock}_{i,t}^{\tau}$
- Gradual transmission, reflecting delayed response of loan origination
- Larger impact in the post-pandemic period

Monetary policy: placing our result within the range of estimates of previous studies

Distribution of the impact of TLTROs on loan growth



Result robust to:

- ✓ Concomitant policy measures
  - guarantee schemes
  - purchase programmes
  - negative rate policy
- ✓ Bank specific characteristics
  - funding structure
  - business model

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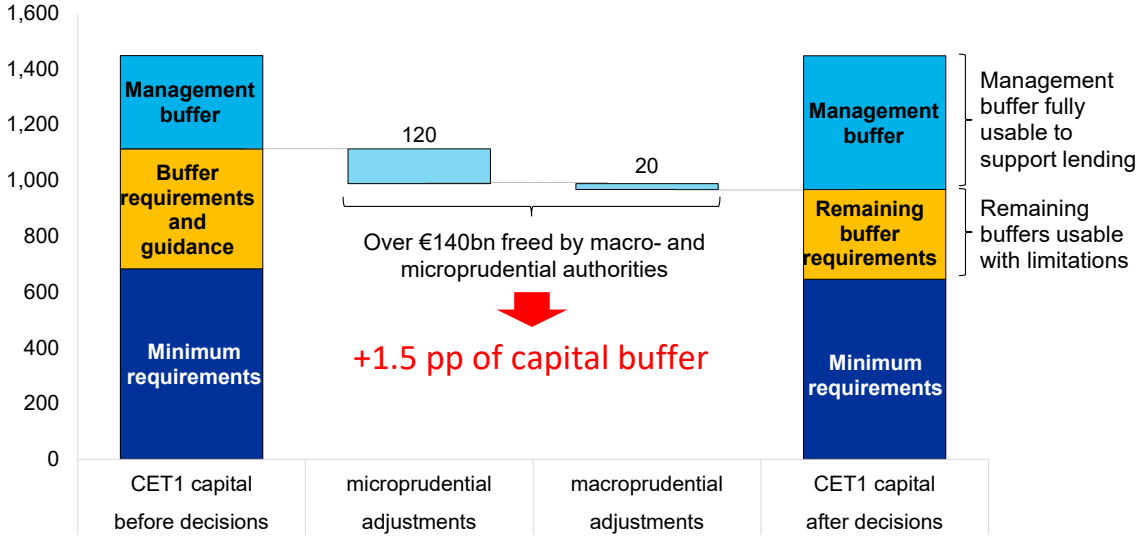
Policy response: *macroprudential and supervisory measures*

CET1 capital and capital relief measures
(2019Q4 EUR bn)



Macro- & Micro- prudential adjustments in 2020

since March 11th	Macro-prudential measures by national authorities (CCyB, SyRB, O-SII)
March 12th	Micro-prudential capital and operational relief (P2R, P2G)
March 20th	Additional micro-prudential flexibility (NPL, IFRS9)
March 27th	ECB recommendation on dividends' distribution restriction (October 2020)
May 27th	ESRB recommendation on dividends' distribution restriction (January 2021)

Policy complementarities: *interaction of TLTROs with capital availability*

$$\Delta L_{i,t} = \alpha_{c,t} + \alpha_i + \boldsymbol{\beta TLTRO_{i,t}} + \delta CapitalBuffer_{i,t} + \boldsymbol{\gamma TLTRO_{i,t}} \times \boldsymbol{CapitalBuffer_{i,t}} + \Gamma X_{i,t-1} + \boldsymbol{\varepsilon_{i,t}}$$

	(1)	(2)
	Post-pandemic	
Dependent variable	Loan growth	
TLTRO shock x Capital buffer	0.020***	0.025***
	(0.007)	(0.007)
TLTRO shock	0.087***	0.096***
	(0.029)	(0.033)
Controls for bank size and capital buffer	YES	YES
Controls for concomitant measures/funding structure	NO	YES
Bank FE	YES	YES
Country-time FE	YES	YES
Observations	1828	1693
R-squared	0.343	0.325

$\boldsymbol{TLTRO_{i,t}}$ is the bank bond reaction around announcements

$\boldsymbol{CapitalBuffer_{i,t}}$ is the difference between the CET1 ratio of bank *i* in month *t-1* and the bank-specific capital requirement in month *t*

- Complementarity between funding relief from TLTROs and risk-bearing capacity **amplifies** loan expansion
- Result robust to the inclusion of controls for concomitant policy measures and bank funding structure

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The real effects of pandemic measures: *data and questions*

- ❑ Firm-level data from Bureau Van Dijk's Orbis
  - Balance sheet information for listed and unlisted companies in the euro area
  - Data transmission for the year 2020: becoming available during April 2022
- ❑ Information on the identity of the banks connected to each firm
- ❑ Final matched sample:
  - 411K firms between 2019-2020 (capturing post-pandemic developments)
  - 82 banks
  - 716 individual 4-digit NACE industry classification
- ✓ **Empirical questions:**
  - Did TLTRO support non-viable firms?
  - Did TLTRO contain the decline in firm employment and productivity?
  - Is there evidence of amplification effects from the coordinated policy intervention?

The real effects of pandemic measures: *model*

- Firm-level data matched with bank-level data (from Bureau Van Dijk's Orbis)

$$y_f = \delta \boldsymbol{TLTROshock_f} + \gamma Capital\ relief_f + \Gamma X_f + \alpha_{i,l,s} + \boldsymbol{\varepsilon}_f$$

y_f
- Zombie lending: dummy = 1 if f is **zombie** in 2020
- Percentage change in firm f's **employment** between year 2019 and 2020
- Percentage change in firm f's **productivity** between year 2019 and 2020

$\mathrm{TLTRO}shock_f$ Average bank bond shock experienced by bank connected to firm f

$Capital\ relief_f$ Average capital relief experienced by bank connected to firm f

X_f Controls for concomitant policy measures (fiscal and monetary)

$\alpha_{i,l,s}$ Industry-location-size fixed effects

Cluster at main bank level

Did TLTRO III support zombie firms?

$$Zombie_f = \delta \boldsymbol{TLTROshock_f} + \gamma Capital\ relief_f + \Gamma X_f + \alpha_{i,l,s} + \boldsymbol{\varepsilon}_f$$

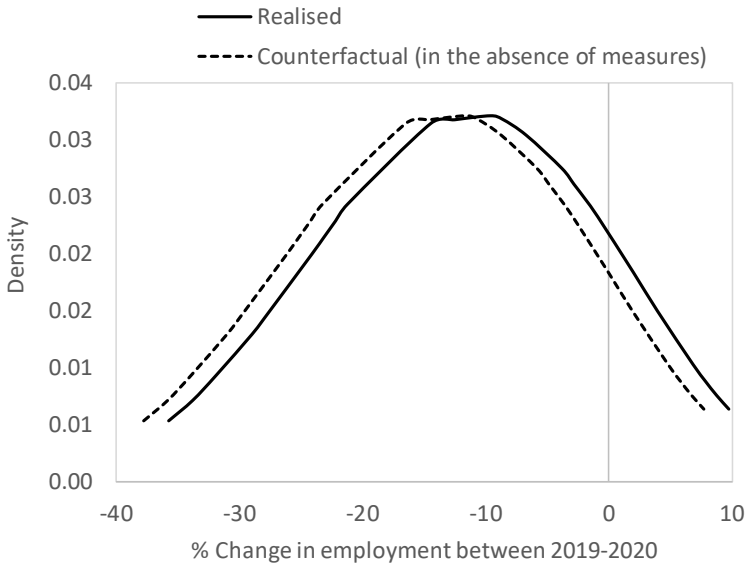
	(1)	(2)
	Firm is zombie as of:	
Dependent variable	end-2020	end-2019
TLTRO shock	-0.118*	-0.081
	(0.066)	(0.066)
Capital relief	0.005	-0.016
	(0.118)	(0.128)
Control for government guarantees	YES	YES
Control for sovereign holdings	YES	YES
Industry-location-size FE	YES	YES
Observations	394,014	411,012
R-squared	0.062	0.060

- Firms associated with banks more affected by the TLTRO less likely to be classified as zombie in 2020
- Pre-trend test: no significant relationship between the April 2020 TLTRO shock and zombie classification in 2019

Did TLTRO contain the decline in firm employment and productivity?

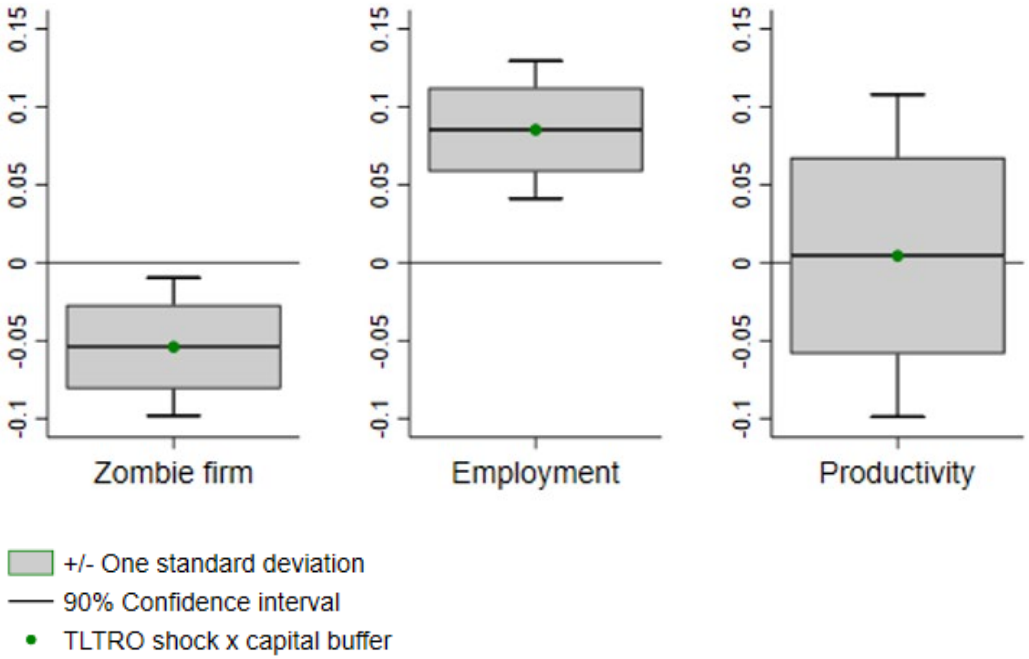
$$y_f = \delta \boldsymbol{TLTROshock_f} + \gamma Capital\ relief_f + \Gamma X_f + \alpha_{i,l,s} + \boldsymbol{\varepsilon_f}$$

	(1)	(2)
Dependent variable	Employment	Productivity
TLTRO shock	0.012***	0.011*
	(0.003)	(0.007)
Capital relief	0.308**	0.437
	(0.134)	(0.266)
Control for government guarantees	YES	YES
Control for sovereign holdings	YES	YES
Industry-location-size FE	YES	YES
Observations	411,012	410,737
R-squared	0.084	0.157



- Firms associated with banks more affected by the TLTRO shock: less likely to have reduced employment and productivity (as on aggregate both employment and productivity drop)
- In the absence of pandemic measures, employment reduction would have been stronger

Amplification effects from coordinated policy intervention?



- Interaction of TLTRO shock and capital buffer amplify impact on:
  - ✓ reduction in probability of being zombie in 2020
  - ✓ dampening employment reduction between 2019-2020
- No significant impact on productivity from the interaction of measures

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Conclusions

- The unprecedented policy response to the COVID-19 crisis, in the form of **new and more targeted measures**, has been crucial for counteracting the adverse economic consequences associated with the outbreak and intensification of the crisis

- Using **confidential data** since the start of the pandemic, we estimate the impact of the **funding cost relief** from TLTROs.

- Our **results** show that:

    1. The **pandemic response policies** have prevented the materialization of an adverse equilibrium which would have resulted in a substantial contraction in lending

    2. The close coordination between monetary policy and prudential measures has generated an **amplification effect** on lending

    3. In the absence of support measures, **firms' employment** would have declined more.