BANK LENDING, LIQUIDITY REGULATION AND UNCONVENTIONAL MONETARY POLICIES IN THE EUROZONE

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#### AGENDA

- BACKGROUND
- AIM OF THE PAPER
- LITERATURE REVIEW
- DATA AND METHODS
- RESULTS
- CONCLUSIONS



## BACKGROUND

• One of the main consequences of the 2008 Global Financial Crisis (GFC) on Eurozone banks was its long-lasting impact on the availability of credit to the real economy. Following a substantial decrease in 2008, the annual lending growth rate never returned to pre-crisis levels.



• The prolonged contraction in money supply has raised concerns among policymakers.



#### BACKGROUND

#### NSFR by country in 2008



#### Trend of NSFR during the sample period



In the post GFC period, Eurozone banks also had to contend with widespread regulatory reforms. The 2010 Basel Accord (Basel III) significantly increased capital requirements and introduced new regulatory liquidity standards, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR).

Changing the size of a bank's balance sheet



#### BACKGROUND

The introduction of the NSFR by the BCBS aimed to enhance financial stability.

Indeed, one of the primary objectives of the NSFR is to mitigate the risk of funding shocks, which could potentially lead to significant distress for individual banks and pose a systemic risk to the overall financial system.

However, banks can implement different strategies to meet the liquidity requirements, which are likely to have different welfare implications.





## BACKGROUND

To address the contraction of bank lending, the European Central Bank (ECB) implemented several unconventional monetary policies, including the Longer-Term Refinancing Operations (LTROs) and the more recent Targeted Longer-Term Refinancing Operations (TLTROs)





## AIM OF THE RESEARCH

- This paper aims to contribute to the understanding of the implications of the introduction of the Basel III bank liquidity requirements, as well as the ECB unconventional monetary policy interventions, and the interaction between the two policies, on Eurozone banks lending.
- Our study aims to provide further insights into the impact of the Basel III liquidity regulation on lending by Eurozone banks.
- We specifically focus on the NSFR as we are interested in understanding the effects of a longer-term liquidity ratio designed to reduce maturity transformation on bank lending.
- To this end, we focus not only on total lending but lending disaggregated by maturity.
- Banks can meet the NSFR by adjusting their liabilities, however, in this paper, we focus on the assets side because our aim is to investigate the impact on bank lending.



## LITERATURE REVIEW

- Previous studies on the impact of liquidity regulation on bank lending have primarily focused on short-term liquidity requirements (Bonner, 2016; Banerjee and Mio, 2018; Ananou et al., 2021)
  - Their findings demonstrate that more stringent liquidity regulations have a negative impact on lending, especially on less liquid loan categories
- Another strand of the literature involves simulations that suggest a significant negative impact of liquidity regulations on bank lending (Covas and Driscoll, 2014; De Nicolò et al., 2014; De Bandt and Chahad, 2015; Papadamou et al., 2021).
- H1: The introduction of the NSFR negatively impacts banks lending supply.
- **H1a**: The introduction of the NSFR negatively impacts banks lending supply of long-term loans.



## LITERATURE REVIEW

- The identification of the impact of the NSFR on bank lending is potentially affected by the fact that, almost concurrently, the ECB started its monetary easing.
- The empirical literature on the impact of the ECB unconventional monetary policy operations is mainly focused only on the LTROs of a specific European country and yields mixed results (Garcia-Posada and Marchetti 2016; Andrade et al. 2018)
- The effect is small in economic terms (Albertazzi et al. 2016; Crosignani et al. 2020; and Carpinelli and Crosignani 2021)
- In some cases, banks use the liquidity to increase their investments in soverign bonds (Von Ruden et al. 2023)
- Considering TLTRO, Esposito et al. (2020), Benetton and Fantino (2021) and Da Silva et al. (2021) find positive effects on the medium-long term lending to firms and a decrease of interest rates, although these results depend on the firms' risk category and firms' size



## LITERATURE REVIEW

We contribute to this strand of the literature by considering the effect of both the LTRO programme and all three TLTRO programmes on Eurozone banks' lending.

• H2: The ECB's refinancing programmes (LTROs and TLTROs) impact positively banks lending

supply.

• **H2a**: The ECB's refinancing programmes (LTROs and TLTROs) mitigate the impact of the introduction of the NSFR on banks lending supply.



## DATA AND METHODS

- Data collection from several data sources:
  - S&P Capital for balance sheet data and to measure NSFR (quarterly data)
  - Bloomberg for ECB unconventional policy information
  - World economic outlook and IMF for Macroeconomic data
  - Credit demand and supply from ECB Bank lending survey
- After matching all the information, our final sample is composed of 152 banks from 12 Eurozone countries
- Our sample represents 87% of the total banking sector in terms of total assets, and 79% in term of LTRO and 70% TLTRO I uptakes (in million euro).
- The full sample over the period 2008Q1–2020Q1



#### DATA AND METHODS

LOANS GROWTH RATE<sub>*i*,*t*</sub> =  $\beta_1$ (BASEL III STRUCTURAL LIQUIDITY RATIO)<sub>*i*,*t*-1</sub> +  $\beta_2$ (ECB UNCONVENTIONAL LIQUIDITY INJECTIONS)<sub>*i*,*t*</sub> +  $\beta_3$ (SUPPLY ACCOUNTING DATA)<sub>*i*,*t*-1</sub> +  $\beta_4$ (DEMAND MACRO DATA)<sub>*c*,*t*</sub> +  $\beta_5$ (ECB BLS)<sub>*c*,*t*-1</sub> + D\_Crisis +  $\delta_i$  +  $\varepsilon_{i,t}$ 

LOANS GROWTH RATE<sub>*i*,*t*</sub> refers to both the aggregated loan supply level, and disaggregated by loan maturity (short, medium, and long-term lending).

LTRO and TLTRO are considered both as dummy (bank participates to a specific programme or not) and amount (of euro obtained from each bank from each programme)

BANK CONROLS: size, ETA, ROA, CIR, NPL

MACROECONOMIC DATA: GDP GROWTH, CHANGE IN THE EURIBOR

DEMAND and SUPPLY CREDIT: enterprise, household, consumer credit

DUMMY CIRSIS is 1 during period of crisis, 0 otherwise

BANK FIXED EFFECT, COUNTRY FIXED EFFECT

#### RESULTS

When looking at ECB's unconventional liquidity injections, when significant, they show a negative relationship with bank lending, particularly for the LTROs, the largest liquidity injection. The TLTROs are insignificant.

				Λ		
Variablez	23	Total loans (LOG GL total)				
Vallables	(1)	(I) (I)		I)		
NSFR (-1)	-0.012	-0.009	-0.012	-0.010	EURO-MEDI	
D LTROs	(0.010) -0.013** (0.007)	(0.009) -0.012* (0.007)	(0.010)	(0.009)	ECONOMISTS	
D TLTROI	-0.001	0.002				
D_TLTROII	(0.007) -0.006	(0.007) -0.002				
D_TLTROIII	0.021	0.022			1	
AM_LTROs	(0.017)	(0.017)	-0.002**	-0.002*		
AM TLTROI			(0.001)	(0.001)		
AM TLTROII			-0.001	-0.001		
AM TLTROIII			0.002	0.002)		
SIZE (-1)	-0.011**	-0.012*	(0.002) -0.011**	-0.012*		
ETA(-1)	(0.005) -0.317	(0.007) -0.377*	(0.005) -0.314	(0.006) -0.374	$\backslash$	
ROAA (-1)	(0.216) 1.368	(0.228) 1.398	(0.217) 1.358	(0.230) 1.389		
CIR (-1)	(1.036) 0.011	(1.041) 0.008	(1.028) 0.011	(1.034) 0.008		
NPL GL (-1)	(0.031) -0.035	(0.034) -0.082	(0.031) -0.032	(0.034) -0.080		
GDPC	(0.085) 0.382 (0.415)	(0.094) 0.393 (0.418)	(0.086) 0.386 (0.414)	(0.094) 0.397 (0.416)		
DIFF_EURIBOR	-0.010	-0.010	-0.010	-0.010		
BLS_SUPPLY_ENTERPRISES	0.034	0.035	0.033	0.034		
BLS_SUPPLY_HOUSE_PURCHASE	-0.085***	-0.084***	-0.085***	-0.084***		
BLS SUPPLY CONSUMER CREDIT	0.009	0.006	0.008	0.004		
BLS DEMAND ENTERPRISES	0.005	0.003	0.005	0.003		
BLS DEMAND HOUSE PURCHASE	-0.023	-0.022	-0.024	-0.022		
BLS_DEMAND_CONSUMER_CREDIT	0.042 (0.027)	0.038 (0.029)	0.042 (0.027)	0.037 (0.028)		
D Crisis	Yes	Yes	Yes	Yes		
Bank FE	Yes	Yes	Yes	Yes		
Country FE	No	Yes	No	Yes	1	
Cluster standard errors (Bank, Quarter)	Yes	Yes	Yes	Yes		
N. OI ODS. R-squared	0.073	0.076	0.073	0.077		

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#### RESULTS

The coefficient of the NSFR remains insignificant for short and mid-term maturities, but it becomes significantly negative for long-term lending (> 5 years).

The coefficients of D\_LTROs and D\_TLTROs, when significant, they show a negative relationship with bank lending, especially for midterm (3-12 months) and long-term lending (> 5 years).

## Results are confirmed when we use the amount of Liquidity injections

Variables	LOG GL<3months		LOG GL3-12months		LOG GL1-5years		LOG GL>5years	
variables	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
NSFR (-1)	0.007	0.014	0.000	-0.002	-0.006	-0.006	-0.006*	-0.007**
	(0.009)	(0.009)	(0.010)	(0.011)	(0.008)	(0.009)	(0.003)	(0.003)
D_LTROs	-0.001	-0.001	-0.014**	-0.014**	-0.002	-0.002	-0.012***	-0.012***
	(0.017)	(0.016)	(0.006)	(0.006)	(0.006)	(0.007)	(0.005)	(0.005)
D_TLTROI	-0.014	-0.009	-0.006	-0.006	-0.006	-0.007	0.000	-0.000
	(0.016)	(0.015)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)
D TLTROII	0.008	0.025	-0.007	-0.001	-0.001	-0.001	-0.014**	-0.014*
	(0.027)	(0.029)	(0.014)	(0.013)	(0.004)	(0.007)	(0.006)	(0.007)
D TLTROIII	-0.016	-0.006	-0.015	-0.016	0.011	0.012	0.019	0.021
	(0.016)	(0.016)	(0.018)	(0.020)	(0.012)	(0.012)	(0.012)	(0.014)
SIZE (-1)	-0.000	0.002	0.002	0.001	-0.004	-0.002	-0.006**	-0.005
112745758	(0.005)	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)	(0.003)	(0.003)
ETA({1)	0.221	-0.018	0.014	0.023	0.010	-0.119	0.037	-0.030
	(0.203)	(0.218)	(0.149)	(0.199)	(0.142)	(0.184)	(0.113)	(0.129)
ROAA (-1)	1.019	1.109*	0.281	0.300	0.388	0.442	0.219	0.283
	(0.642)	(0.638)	(0.481)	(0.474)	(0.302)	(0.320)	(0.376)	(0.398)
CIR (-1)	0.008	0.012	-0.025	-0.023	-0.031	-0.028	-0.014	-0.013
	(0.025)	(0.026)	(0.024)	(0.022)	(0.024)	(0.021)	(0.017)	(0.017)
NPL GL (-1)	-0.154	-0.200	-0.020	-0.001	-0.026	-0.080	-0.091	-0.14/*
0776	(0.107)	(0.124)	(0.061)	(0.051)	(0.077)	(0.077)	(0.063)	(0.078)
GDPC	-0.020	0.083	-0.151	-0.142	0.179	0.215	0.310	0.334
DEE DEBIDOR	(0.255)	(0.257)	(0.310)	(0.303)	(0.269)	(0.200)	(0.292)	(0.291)
DIFF EURIBOR	0.028**	0.028**	-0.007	-0.008	-0.035***	-0.036***	-0.026***	-0.02/***
	(0.012)	(0.011)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
BLS SUPPLY ENTERPRISES	0.020	0.018	0.028	0.029	0.010	0.007	0.024	0.021
DIS SUDDIV LIQUEE DUDCUASE	(0.044)	(0.044)	(0.038)	(0.040)	(0.031)	(0.030)	(0.033)	(0.032)
BLS_SUPPLI_HOUSE_FURCHASE							-0.029	-0.028
DIS SUDDI V CONSULTED CREDIT	0.002	0.009	0.000**	0.005**	0.012	0.015	(0.024)	(0.023)
BLS_SUFFLI_CONSUMER_CREDIT	-0.003	-0.008	-0.092	-0.095**	-0.015	-0.015	-0.055	-0.057
DI 6 DEMAND ENTERDRIGES	(0.051)	(0.050)	(0.045)	(0.043)	(0.055)	(0.050)	(0.050)	(0.050)
DLO DEMIAND ENTERPRISES	(0.036)	(0.035	(0.005	(0.000	(0.002)	(0.002)	-0.002	-0.004
DIS DEMAND HOUSE DIDCHASE	(0.050)	(0.030)	(0.025)	(0.025)	(0.008)	(0.009)	0.014)	0.014)
BES DEMAND HOUSE FORCHASE							(0.012)	(0.012)
DIS DEMAND CONSUMED OPEDIT	0.062*	0.067*	0.020	0.024	0.047**	0.040**	0.020	0.020
BES DEMINING CONSUMER CREDIT	(0.036)	(0.036)	(0.023)	(0.023)	(0.024)	(0.025)	(0.027)	(0.027)
D Crisis	(0.050) Var	(0.050) Ver	(0.025) Vee	(0.025) Vas	(0.024) Ver	(0.025) Vee	(0.027) Ver	(0.027) Vez
Bank FF	Vec	Ver	Vas	Var	Vas	Var	Var	Var
Country FF	No	Yee	No	Yes	No	Yes	No	Yes
Cluster standard errors (Bank, Quarter)	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves
N of obs	3 431	3 431	3 431	3 431	3 431	3 431	3 431	3 431
R-souared	0.048	0.052	0.057	0.060	0.092	0.097	0.092	0.099



#### RESULTS

2-	Total	loans			Loans by maturity					
Variables	LOG_0	GL total	LOG_GL	.<3months	LOG_GL3	-12months	LOG_G	L1-5years	LOG_G	L>5years
-	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
NSFR (-1)	-0.015	-0.013	0.007	0.013	0.001	-0.002	-0.006	-0.005	-0.009**	-0.010**
	(0.011)	(0.010)	(0.012)	(0.012)	(0.008)	(0.008)	(0.008)	(0.009)	(0.004)	(0.004)
D_LTROs	-0.025**	-0.023**	-0.004	-0.003	-0.012	-0.015	-0.001	-0.002	-0.022***	-0.023***
	(0.011)	(0.011)	(0.021)	(0.020)	(0.015)	(0.015)	(0.015)	(0.016)	(0.004)	(0.005)
D_TLTROI	-0.010	-0.008	0.008	0.005	-0.001	0.000	-0.001	-0.002	-0.005	-0.005
	(0.017)	(0.018)	(0.007)	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.010)	(0.010)
D_TLTROII	-0.006	-0.001	0.002	0.005	-0.001	-0.001	-0.002	-0.006	-0.022***	-0.022**
	(0.025)	(0.021)	(0.036)	(0.033)	(0.016)	(0.011)	(0.014)	(0.014)	(0.007)	(0.009)
D_TLTROIII	0.006	0.008	-0.018	-0.011	-0.014	-0.015	0.003	0.004	0.010	0.011
	(0.010)	(0.011)	(0.016)	(0.015)	(0.011)	(0.013)	(0.007)	(0.008)	(0.008)	(0.009)
NSFR (-1)#D LTROs	0.013*	0.013*	0.001	0.001	-0.002	0.000	-0.002	-0.001	0.011***	0.013***
_	(0.008)	(0.007)	(0.017)	(0.016)	(0.012)	(0.012)	(0.011)	(0.013)	(0.003)	(0.003)
NSFR (-1)#D_TLTROI	0.010	0.011	-0.024*	-0.015	-0.006	-0.008	-0.005	-0.006	0.006	0.005
	(0.017)	(0.018)	(0.013)	(0.012)	(0.006)	(0.007)	(0.007)	(0.007)	(0.009)	(0.011)
NSFR (-1)#D TLTROII	-0.000	-0.000	0.010	0.021*	-0.005	0.000	0.001	0.005	0.008**	0.009
	(0.009)	(0.010)	(0.017)	(0.012)	(0.011)	(0.010)	(0.009)	(0.009)	(0.004)	(0.007)
NSFR (-1)#D_TLTROIII	0.034**	0.035**	0.002	0.010	-0.004	-0.004	0.017*	0.019*	0.021	0.024*
	(0.016)	(0.017)	(0.008)	(0.016)	(0.005)	(0.005)	(0.010)	(0.011)	(0.013)	(0.014)
Control variables (-1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D Crisis	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Cluster standard errors (Bank, Quarter)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N. of obs.	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431
R-squared	0.074	0.077	0.049	0.053	0.057	0.060	0.092	0.097	0.093	0.100

The coefficients of the interaction between NSFR and LTRO, as well as between NSFR and TLTROs. The NSFR, LTRO and TLTROs coefficients, when significant, remain negative. However, when we consider the interaction terms, we observe a positive and significant relationship with lending.



## **ROBUSTNESS CHECKS**

To check the robustness of our results we run several analyses

- Standardised NSFR
- *Early repayments*
- Borrowed amounts
- Subsample excluding Italian and Spanish banks
- Endogeneity issue
  - Difference-in-difference-in-difference analysis (DDD)
  - Propensity Score Matching



## EARLY REPAYMENT

We assume that banks reimbourse the liquidity borrowed from ECB when the early repayment period starts

There is a negative relationship between LTRO and total lending, lending from 3 months to 1 year and lending with a maturity more than 5 years as well as between TLTRO II and long-term lending.

	Total	loans				Loans by					
Variables	LOG (	GL total	LOG GL	<3months	LOG GL3	LOG GL3-12months		LOG GL1-5years		LOG GL>5years	
	(1) -	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1) -	(2)	
NSFR (-1)	-0.011	-0.009	0.007	0.013	0.000	-0.002	-0.006	-0.005	-0.006*	-0.006**	
	(0.010)	(0.009)	(0.009)	(0.009)	(0.010)	(0.011)	(0.008)	(0.008)	(0.003)	(0.003)	
D LTROs earlyrep	-0.020**	-0.020**	-0.011	-0.011	-0.015***	-0.015***	-0.009	-0.010*	-0.016**	-0.016**	
	(0.009)	(0.008)	(0.029)	(0.029)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	
D TLTROI earlyrep	-0.000	0.002	-0.020	-0.020	-0.004	-0.005	-0.007	-0.008	0.004	0.004	
	(0.005)	(0.005)	(0.022)	(0.021)	(0.006)	(0.007)	(0.007)	(0.007)	(0.004)	(0.004)	
D_TLTROII_earlyrep	-0.009	-0.005	-0.015	-0.007	-0.006	-0.004	-0.006	-0.005	-0.013**	-0.011**	
	(0.013)	(0.011)	(0.019)	(0.018)	(0.007)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	
Control variables (-1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
D Crisis	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
Cluster standard errors (Bank, Ouarter)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
N. of obs.	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	
R-squared	0.073	0.077	0.049	0.052	0.057	0.060	0.092	0.097	0.093	0.099	



## BORROWED AMOUNT

For each bank, we compute the the liquidity uptakes as the ratio between the borrowing amount by each banks through each programme (LTROs, TLTRO I, TLTRO II, and TLTRO III) scaled by the average total assets of the bank in the year in which each different programe begins.

These variables are equal 0 before and after the period of participation of the bank at a specific programme. The results confirm our basiline results.

	Total	loans		Loans by maturity							
Variabile	LOG (	LOG GL total		LOG GL<3months		LOG GL3-12months		LOG GL1-5years		LOG GL>5years	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	
NSFR (-1)	-0.013	-0.011	0.007	0.013	-0.001	-0.003	-0.006	-0.006	-0.007**	-0.008**	
	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.011)	(0.008)	(0.009)	(0.003)	(0.003)	
AM LTROs TA2011	0.001	0.018	0.057	0.083	0.009	0.026	-0.062	-0.060	-0.085***	-0.076***	
	(0.069)	(0.068)	(0.041)	(0.061)	(0.037)	(0.043)	(0.056)	(0.061)	(0.023)	(0.019)	
AM TLTROI TA2014	-1.918	-1.675	-0.620	-0.968	-1.901	-2.026	-0.812	-1.273	-0.507	-0.795	
	(2.846)	(2.218)	(2.450)	(2.121)	(1.757)	(1.442)	(1.170)	(1.185)	(1.231)	(1.080)	
AM TLTROII TA2016	-4.977	-4.384	-2.053	-2.004	-2.170	-2.012	-1.567	-1.976	-2.213	-2.197	
	(5.087)	(4.284)	(3.709)	(3.184)	(1.976)	(1.807)	(1.105)	(1.394)	(1.724)	(1.678)	
AM_TLTROIII_TA2019	2.181	2.127	-0.354	-0.193	-1.567	-1.660	1.069	1.010	1.852	1.680	
	(2.007)	(1.977)	(1.135)	(1.166)	(1.801)	(1.837)	(1.330)	(1.287)	(1.798)	(1.729)	
Control variables (-1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
D Crisis	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	
Cluster standard errors (Bank,	Var	Var	Var	Var	Var	Vas	Var	Vez	Ver	Ver	
Quarter)	res	res	res	res	res	res	res	res	res	res	
N. of obs.	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	3,431	
R-squared	0.073	0.077	0.048	0.052	0.056	0.059	0.092	0.097	0.091	0.097	



#### DDD

D\_TREATED takes the value of 1 for banks with NSFR less than the median of NSFR in the quarter of the shock, and 0 otherwise

D\_CAPITAL takes the value of 1 for banks with ETA equals to or above the median of ETA in the quarter of the shock, and 0 otherwise

As exogenous shock (D\_SHOCK), we use the consultative document of the Basel III Accord published in December 2009 In absence of shock, changes in bank lending are similar for the two groups of banks. After the shock, control group banks increase their lending more than treated banks.

4	Total loans	Loans by maturity					
Variables	LOG_GL total	LOG_GL <3months	LOG_GL 3-12months	LOG_GL 1-5years	LOG_GL >5years		
D SHOCK	0.003	0.001	0.019	-0.005	-0.019		
-	(0.028)	(0.012)	(0.021)	(0.021)	(0.028)		
D TREATED	-0.826*	0.370	-0.572	-0.799*	-1.095**		
3 <del></del>	(0.470)	(0.524)	(0.483)	(0.463)	(0.434)		
D CAPITAL	0.110*	-0.005	0.050	0.085**	0.081**		
	(0.060)	(0.022)	(0.039)	(0.036)	(0.040)		
D TREATED#D SHOCK	-0.005	0.031	-0.016	-0.021	0.022		
	(0.020)	(0.034)	(0.038)	(0.016)	(0.020)		
D CAPITAL#D SHOCK	-0.019	-0.016	0.005	0.003	0.035**		
	(0.041)	(0.026)	(0.039)	(0.017)	(0.017)		
D TREATED#D CAPITAL	0.228	-0.200	0.182	0.207**	0.375**		
	(0.146)	(0.222)	(0.212)	(0.104)	(0.150)		
D TREATED#D CAPITAL#D SHOCK	0.024	-0.003	0.039	0.025	-0.025*		
	(0.029)	(0.030)	(0.067)	(0.025)	(0.013)		
Control variables (-1)	Yes	Yes	Yes	Yes	Yes		
Bank FE	Yes	Yes	Yes	Yes	Yes		
Country FE	Yes	Yes	Yes	Yes	Yes		
Cluster standard errors (Bank, Quarter)	Yes	Yes	Yes	Yes	Yes		
N. of. obs.	1,383	1,383	1,383	1,383	1,383		
R-squared	0.167	0.088	0.096	0.150	0.158		

#### PSM

Banks that ask liquidity to the ECB through LTRO decrease their lending activity on longer maturities more than banks that do not ask liquidity, as well as those banks that participate to the TLTRO2 programmes reduce their lending activity on the longer maturities

- <b>1</b> 0 - 10	Coeff.	St.err.	Z	P> z	[95% conf.	Interval]
D LTROs						
LOG GL total	-0.017	0.008	-2.08	0.037*	-0.034	-0.001
LOG GL < 3months	-0.003	0.011	-0.30	0.767	-0.027	0.019
LOG GL 3-12months	0.005	0.008	0.62	0.534	-0.010	0.021
LOG GL 1-5years	0.007	0.006	1.16	0.247	-0.004	0.019
LOG GL >5years	-0.010	0.004	-2.17	0.030*	-0.019	-0.001
D TLTROI						
LOG GL total	0.017	0.011	1.48	0.138	-0.005	0.040
LOG_GL < 3months	-0.004	0.011	-0.42	0.671	-0.026	0.017
LOG_GL 3-12months	0.013	0.010	1.26	0.209	-0.007	0.034
LOG_GL 1-5years	0.004	0.007	0.65	0.514	-0.010	0.019
LOG_GL >5years	0.002	0.005	0.52	0.602	-0.007	0.012
D_TLTROII	20					λ.
LOG_GL total	-0.021	0.008	-2.53	0.011*	-0.037	-0.004
LOG_GL < 3months	0.004	0.012	0.32	0.750	-0.020	0.028
LOG_GL 3-12months	-0.008	0.010	-0.85	0.398	-0.028	0.011
LOG_GL 1-5years	-0.005	0.007	-0.76	0.449	-0.019	0.008
LOG GL >5years	-0.023	0.006	-3.49	0.000***	-0.035	-0.010
D TLTROIII						
LOG_GL total	-0.003	0.016	-0.24	0.814	-0.036	0.028
LOG_GL < 3months	0.058	0.047	1.24	0.216	-0.034	0.151
LOG_GL 3-12months	-0.002	0.10	-0.20	0.845	-0.023	0.019
LOG_GL 1-5years	-0.017	0.011	-1.59	0.112	-0.038	0.004
LOG_GL >5years	0.003	0.004	0.76	0.444	-0.004	0.011

#### EURO-MEDITERRANEAN ECONOMISTS ASSOCIATION

# CONCLUSIONS

• H1: The introduction of the NSFR negatively impacts banks lending supply.



- H1a: The introduction of the NSFR negatively impacts banks lending supply of long-term loans.
- H2: The ECB's refinancing programmes (LTROs and TLTROs) impact positively banks lending supply.
- H2a: The ECB's refinancing programmes (LTROs and TLTROs) mitigate the impact of the introduction of the NSFR on banks lending supply.



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