Paying banks to lend? Evidence from the Eurosystem's TLTRO and the euro area-wide credit registry

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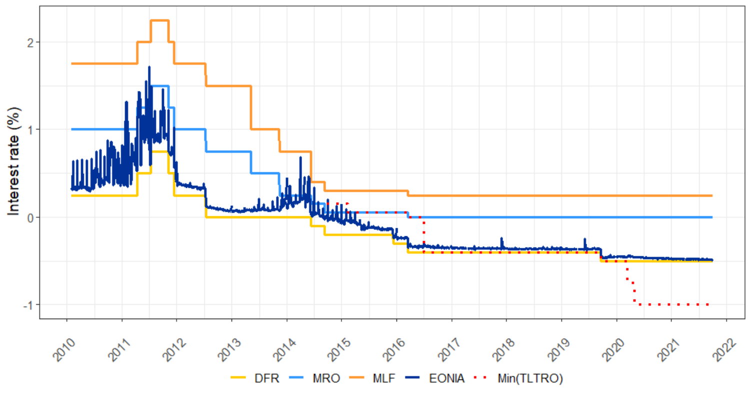
Since 2020, TLTRO III implies a (conditional) transfer



- Banks qualify for the "bonus rate" only if they meet a lending performance target set by the ECB : **TLTRO is a funding-for-lending scheme**
- Setting a bonus rate below the DFR means the ECB creates a risk-free profit opportunity for banks: **TLTRO is a direct subsidy** from the central bank. Sizeable: could reach $\approx$ 11 bn EUR/year.

Our paper in a nutshell

- We evaluate empirically the impact of TLTRO III on credit using the newly available Euro-area wide loan-by-loan credit register (AnaCredit) in a multi-country setup
- We address empirical challenges using:
  - A loan level approach *à la* Khwaja and Mian (2008) to control for credit demand
  - An instrumental variable approach to avoid reverse causality
- We disentangle between two channels through which TLTRO III may impact credit: the "targeted" (the "condition") and the "profitability" channels (the "subsidy")
- Main results: TLTRO have had a positive and significant effect on credit. The two channels were effective, mostly driven by the "subsidy" in 2021.

Literature

We contribute to the following strands of the literature:

- **Funding-for-lending schemes** (Kandrac (2021) and Churm et al. (2021) and in particular in the Euro-Area: Benetton and Fantino (2021) on TLTRO I and Esposito, Fantino, and Sung (2020) on TLTRO II => Our paper: TLTRO III, in a multi-country setup
- **Effectiveness of unconventional monetary policy measures in EA** eg. Rostagno et al. (2021) $\Rightarrow$ we look at a new policy instrument, including a pure transfer to banks
- **Other types of credit support during the pandemics** : Minoiu, Zarutskie, and Zlate (2021) on the Fed Main Street Lending Program (MSLP), Joaquim and Netto (2022) on PPP, Altavilla, Ellul, Pagano, Polo, and Vlassopoulos (2021) on government guarantee schemes ; Altavilla, Barbiero, Boucinha, and Burlon (2020) on relaxation of supervisory requirements => we offer a first comparison of different instruments

Key concepts of TLTROs

ECB stated objective for TLTRO: *"By offering banks long-term funding at attractive conditions [TLTRO] preserve favorable borrowing conditions for banks and stimulate bank lending to the real economy"*

Key concepts and parameters:

- Quantity: each bank receives a borrowing allowance, X% of its loan portfolio (only loans to NFC and HH ex-housing)
- Price: banks qualify for the bonus rate when they meet a lending target set by the Eurosystem. Lending performance is measured over a certain "reference period", on this loan portfolio

TLTRO round	Date	Allowance	Pricing	Target(s)	Ref period
I (8 op)	2014-16	7%	DFR+0.35%	0%	May 14-Apr 16
II (4 op)	2016-17	30%	DFR/DFR+0.5%	0% & 2.5%	Feb 16-Jan 18
III 2019 (2 op)	2019	30%	DFR/DFR+0.5%	0% & 1.15%	Apr 19-Mar 21
III 2020 (4 op)	2020	50%	DFR-0.5%/DFR	0%	Mar 20-Mar 21
III 2021 (4 op)	2021	55%	DFR-0.5%/DFR	0%	Oct 20-Dec 21

Data

- Bank-level allowance and take-up for each TLTRO III operations
- Loan-level data from AnaCredit: for all EA countries 2021Q1-2021Q4
  - Anacredit reports only loans to legal entities registered in RIAD (missing household's housing and consumer credit)
  - Around 25 millions individual loans reported monthly by all EA credit institutions
  - $\approx$ 7000 individual credit institutions (could be foreign, subsidiaries, etc...)
  - $\approx$ 5 millions individual debtors

  We focus on :

  - New loans to NFCs (other than overdrafts, credit card credit, revolving credit, reverse repurchase agreements, trade receivables and financial leases)
  - 5 largest countries: DE, FR, IT, ES, NL
- We compute a "real time" lending performance and derive bank-level controls from Individual Balance Sheet Items dataset.

Empirical challenges

Assessing empirically the effect of TLTRO is challenging:

- Many other economic events and policies affecting credit during this period
- Bidding to TLTRO is the banks' decision (non-random treatment)
- Almost all banks participated to TLTRO III (no control group)
- Reverse causality issue: banks already certain to meet the target likely participants to the TLTROs

Working with loan-level data helps:

- Allows to control for demand (Firm*Time FE à la Khwaja Mian (2008)): demand is assumed to be firm-time specific

Instrumental variable approach:

- We use the surprise increase of TLTRO "borrowing allowance" by 10%, in December 2020: unexpected, isolated announcement, exogenous to the banking system decisions.

Baseline specification

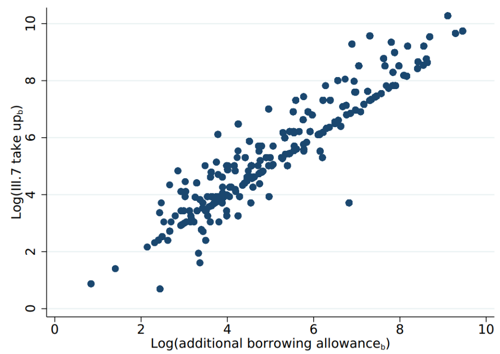
Estimated in panel-IV, quarterly frequency, new loans observed at the firm-bank-quarter level in 2021

$$Log(NewLoans_{b,f,t}) = \beta_1 * Log(\widehat{Takeup_b}) + \beta_2 * Controls_{b,t} + FE_{f,t} + \epsilon_{b,f,t}$$

- $NewLoans_{b,f,t}$: the aggregated nominal amount of a new loans in euros granted by bank b, to firm f during quarter t
- Where $\widehat{Takeup_b}$: nominal amount borrowed by bank b from TLTRO in 2021, that we instrument by the exogenous change in allowance
- $Controls_{b,t}$: time-varying bank controls: total amount of loans, total amount of mortgage loans, government bond holdings, equity. All variables are scaled by total assets.
- $FE_{f,t}$: firm-time fixed effects

Instrument strategy

Extra borrowing allowance and TLTRO III-7 take up, bank-level



- Banks saturated their new allowance as soon as they could, at the next TLTRO operation of March 2021.

Baseline results

	(2)	(3)	(4)	(5)	(6)	(7)
$Log(\widehat{Takeup})$	0.0584***	0.0695***				
	(0.00152)	(0.00195)				
Q1 2021			0.0501***	0.0609***		
			(0.00302)	(0.00327)		
Q2 2021			0.0562***	0.0670***		
			(0.00290)	(0.00314)		
Q3 2021			0.0629***	0.0746***		
			(0.00328)	(0.00356)		
Q4 2021			0.0648***	0.0763***		
			(0.00296)	(0.00323)		
Core x Take-up					0.0823***	0.0681***
					(0.00743)	(0.00769)
Peripheral x Take-up					0.0572***	0.0695***
					(0.00155)	(0.00199)
Maturity x Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm x Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank controls	No	Yes	No	Yes	No	Yes
Observations	677310	647158	677310	647158	677310	647158

- Increasing TLTRO take-up by 1% implies a rise of credit of around 0.06%
- Persistent effects throughout 2021, once controlled for banks' characteristics, similar effect in core and periphery

Interpreting the economic significance

- In March 2021, banks increased their take-up by EUR 314 bn or 17.79% (from EUR 1 765 bn to EUR 2 079 bn)
- Our largest elasticity (0.0695%) suggests that the total take-up increase should have resulted in an rise of 1.24% of the amount of new loans
- Total amount of new loans granted in 2021 $\approx$ between EUR 3.2 trn to EUR 11.7 trn, according to SDW (pure new loans and new business definitions)
- Without Dec 2020 increase in borrowing allowance, new credit would have been EUR 40 bn to 145 bn lower
- In 2021, each euro lent resulted in 12 to 46 cents of credit to the economy, for a cost for the Eurosystem of 0.5 cents.
- "Subsidizing" these 2021 operations would result in a transfer from the Eurosystem of max Eur 1.6 bn

Through which channels did TLTRO work?

Two working assumptions to try to disentangle different mechanisms:

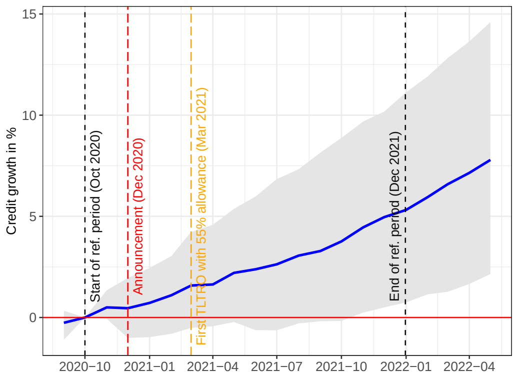
- "Targeted" channel: incentive for banks to lend more to the economy (and crucially to grant the type of credit eligible to be taken into account in the lending performance measured by the ECB) to qualify for the lowest interest rate
  - **Eligible loans should be affected by both profitability and targeted channels, while ineligible loans should be primarily affected by profitability only**

- "Profitability" channel: works through the transfer from the central bank of a "subsidy", ie.increasing banking sector's profits/lowering funding costs. Even if the condition is "too easy", a possibility the policy can affect loan supply.
  - **Banks already meeting the lending target ("achievers") should be affected only by profitability**

Specifications

Identification strategy: the "profitability channel"

- At the time of announcement (Dec 2020), a bit more than a half of the banks already "qualified"

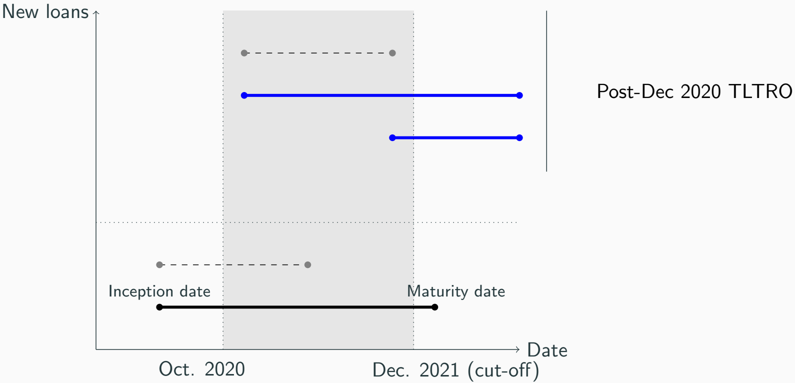


Source: IBSI. Blue line is the median and the grey area is the 25th and 75th percentiles.

Achievers/non-achievers stats

The “targeted channel”: “Eligible” vs “Ineligible” loans

- Which loans improve the lending performance ? only the blue !



Note: This diagram represent the loan supply of a representative banks. Each line represents a loan from its inception to its maturity. Dotted lines represent loans that mature before 31 December 2021 (loans not eligible to count in the lending performance of the bank). Thick lines represent loans that mature after 31 December 2021.

Results: targeted vs profitability channel

	(1)	(2)	(3)	(4)
Eligible x Take-up	0.0556***	0.0507***		
	(0.00310)	(0.00403)		
Ineligible x Take-up	0.0542***	0.0458***		
	(0.00303)	(0.00397)		
Non achiever x Take-up			0.0861***	0.0837***
			(0.00347)	(0.00571)
Achiever x Take-up			0.0743***	0.0792***
			(0.00393)	(0.00546)
Maturity x Country FE	Yes	Yes	Yes	Yes
Firm x Time FE	Yes	Yes	Yes	Yes
Bank controls	No	Yes	No	Yes
Observations	175773	149806	328555	305307

- Eligible loans more affected by TLTRO: intuitive as ineligible would only benefit from profitability channel
- Non-achievers granted more credit than achievers: impact of targeted channel above the profitability channels

Profitability channels: varying the achiever's threshold

- A 0% threshold might be too conservative (part of the loan portfolio is likely to mature, for instance), we conduct a sensitivity analysis around this threshold.

	1%	2%	3%
Non achiever x Take-up	0.0857***	0.0764***	0.0708***
	(0.00560)	(0.00549)	(0.00539)
Achiever x Take-up	0.0760***	0.0688***	0.0485***
	(0.00548)	(0.00413)	(0.00566)
Bank controls	Yes	Yes	Yes
Maturity x Country FE	Yes	Yes	Yes
Firm x Time FE	Yes	Yes	Yes
Observations	305307	305307	305307

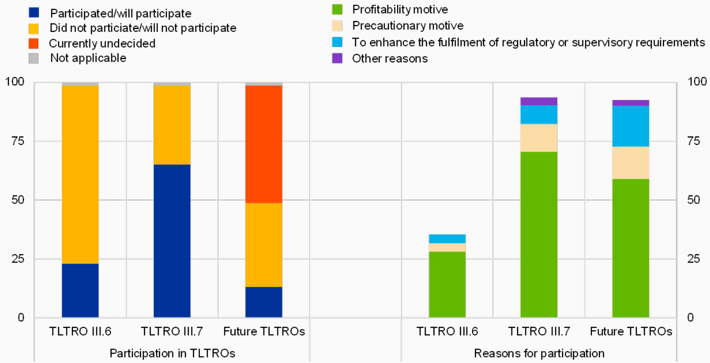
- Higher thresholds confirm non-achievers' loan supply is more responsive to take-up

Wrapping up: what do we learn?

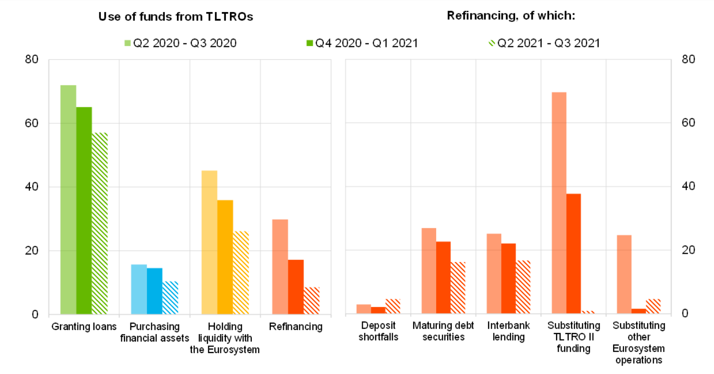
- Post-2020 TLTRO III are a unique program that not only incentivizes banks to lend with a below-market rate but effectively "paying" them.
- Both the targeted and the profitability channel have been effective, profitability seems to have been a major driver in 2021
- TLTRO have an impact also on loan supply of banks that already fulfill the lending performance target: a capital/profitability channel
- Why does the targeted channel seem weak in comparison ? Is it the calibration of the conditionality or a more general result? The particular period we look at?
- In 2021, each euro lent resulted in 12 to 46 cents of credit to the economy, for a cost for the Eurosystem of 0.5 cents

Appendix

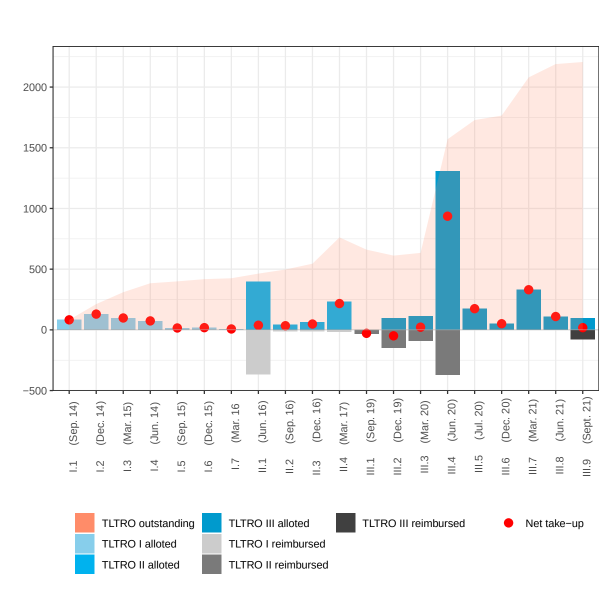
Apr 21 Bank Lending Survey



Apr 21 Bank Lending Survey



Takeup at TLTRO operations



Achievers/Non-achievers seem otherwise similar

This table gives the main bank controls as of December 2020 and lending performance computed from IBSI database. All ratio shown in percent.

Variable	Obs	Mean	Std. Dev.	P10	P25	P50	P75	P90
			5 Countries: DE,FR,NL,IT,ES					
Achievers (at 0% threshold)								
Assets (million EUR)	630	24505.47	124736.3	461	1041	2029.5	4830	18386
Capital/Assets	630	10.16	2.78	6.95	8.94	10.09	11.43	12.82
Loans/Assets	630	69.21	12.34	52.98	63.02	70.63	77.99	83.49
Mortgage Loans/Assets	630	27.49	13.45	6.09	19.77	28.93	36.81	43.18
Public securities/Assets	630	5.71	8.89	.52	1.38	2.59	4.91	15.58
Private securities/Assets	630	2.51	3.22	0	.43	1.63	3.26	5.75
Lending perf Oct20-Dec 20 (%)	630	11.71	24.9	.96	2.91	6.37	11.38	20.09
Non achievers (at 0% threshold)								
Assets (million EUR)	197	34040.77	130906.1	497	1245	2568	6178	66852
Capital/Assets	197	10.05	3.31	6.19	8.46	10.06	11.4	13.58
Loans/Assets	197	68.06	13.28	52.08	59.52	69.71	77.85	83.68
Mortgage Loans/Assets	197	23.59	16.51	0	9.73	25.28	35.68	42.5
Public securities/Assets	197	7.36	9.71	.51	1.37	2.73	8.77	23.98
Private securities/Assets	197	3.42	5.16	0	.36	1.51	3.66	10.51
Lending perf Oct20-Dec 20 (%)	197	-7.21	11.73	-19.29	-7.54	-3.8	-1.42	-.56

Back