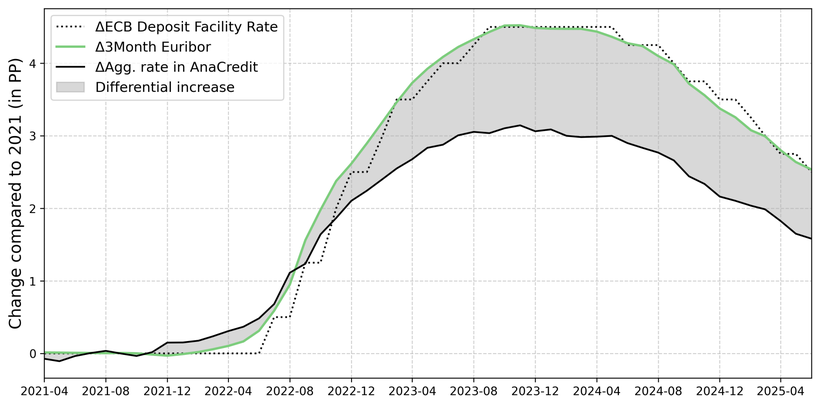
Peering beyond the veil: A dissection of aggregate bank lending rate movements into pricing and composition effects using credit-level data

Paul Reimers & Henrike Michaelis
Deutsche Bundesbank | Monetary Policy & Analysis

Motivation & research question

Starting point: Transmission of monetary policy to the aggregate bank lending rate to firms



- Compared to 2021, policy and market rates increased by up to 4.5 PP
- The aggregate bank lending rate to firms increased by up to 3 PP (AnaCredit)
- The differential increase peaked at 1.5 PP

What explains the increase in the aggregate bank lending rate, and why didn't it increase in lockstep with policy and market rates?

Our approach: We use AnaCredit to translate credit-level dynamics to the aggregate level

Data: Granular information for 41 Mio. financing arrangements between euro area banks and firms (April 2021 ff.)

		Distribution (2019/06-2025/06)				Means		
Attribute		Mean Std. Dev	p(5)	Median	p(95)	2021	2022 ff.	Δ
Sample	Annualized rate	3.6% 2.3%	0.0%	4.3%	8.0%	2.0%	4.1%	2.1 PP
	# of Obs.		60,448,529			6,347,088	34,330,430	

We consider two factors behind the differential increase in the aggregate rate:

1. Changes in the composition of lending
2. Changes in the credit pricing structure

In essence, we implement the Oaxaca-Blinder Decomposition over time

- Standard in labour econ - but not in loan supply literature (Data ϟ)
- Benchmark: Composition & pricing of lending in April - Dec. 2021

We quantify how changes in the pricing and composition of lending contributed to the increase in the aggregate bank lending rate

Separating pricing & composition effects

We estimate the credit-pricing structure on a monthly basis:

$$\mathbf{r}_t = \mathbf{X}_t^C \boldsymbol{\beta}_t + \mathbf{X}_t^F \boldsymbol{\delta}_t + \mathbf{B}_t \boldsymbol{\omega}_t + \boldsymbol{\epsilon}_t.$$

OLS with bank fixed effects to mirror a pricing policy where banks...

- ...set rates based on an individual fixed component
- and add premia/discounts to account for firm & credit characteristics.

Using estimates for coefficients and means of the regressors: Aggregate!

$$\Delta\bar{\mathbf{r}}_{t_2-t_1} - \Delta\text{Euri3M}_{t_2-t_1} \qquad \text{Differential increase}$$

$$= \underbrace{\Delta\bar{\mathbf{X}}^C_{t_2-t_1}\hat{\boldsymbol{\beta}}_{t_2} + \Delta\bar{\mathbf{X}}^F_{t_2-t_1}\hat{\boldsymbol{\delta}}_{t_2}}_{\text{Changes in ⌀ credit \& firm characteristics}} + \underbrace{\Delta\bar{\mathbf{B}}_{t_2-t_1}\hat{\boldsymbol{\omega}}_{t_2}}_{\text{Shifts in bank lending shares}} \qquad \text{Composition effect}$$

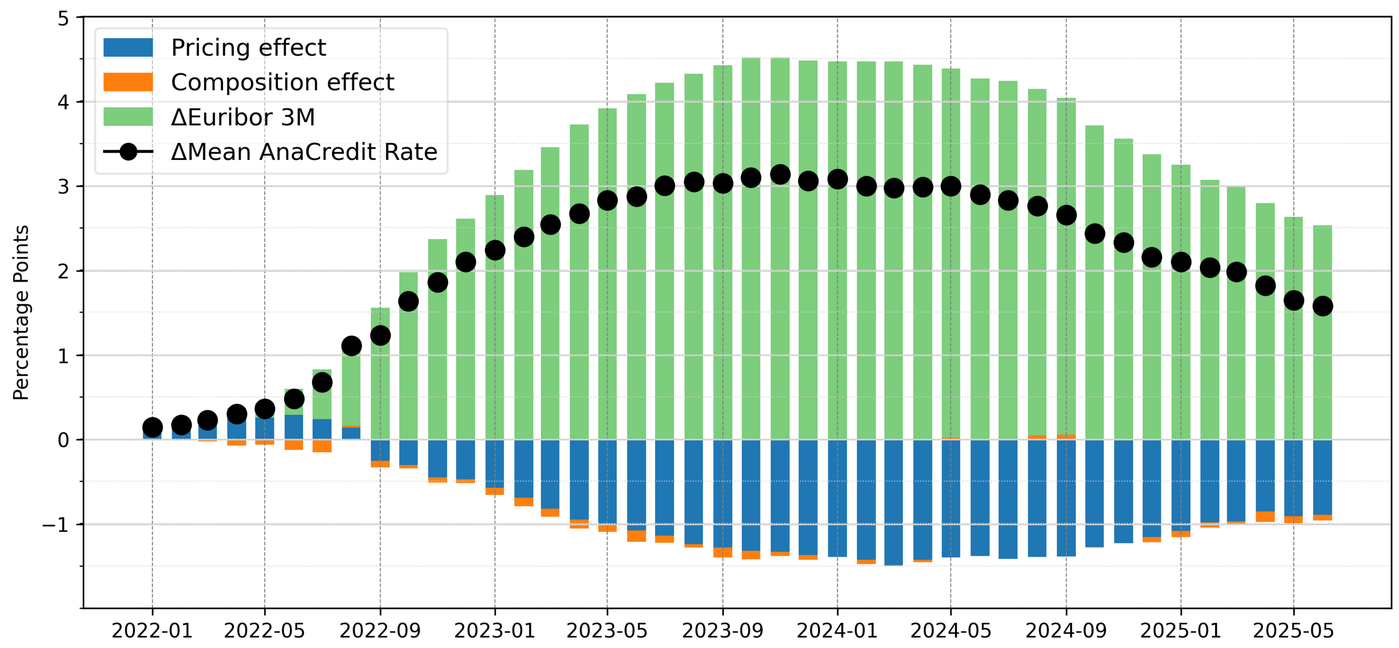
$$+ \underbrace{\bar{\mathbf{X}}^C_{t_1}\Delta\hat{\boldsymbol{\beta}}_{t_2-t_1} + \bar{\mathbf{X}}^F_{t_1}\Delta\hat{\boldsymbol{\delta}}_{t_2-t_1}}_{\text{Changes in discounts \& premia}} + \underbrace{\bar{\mathbf{B}}_{t_1}(\Delta\hat{\boldsymbol{\omega}}_{t_2-t_1} - \Delta\text{Euri3M}_{t_2-t_1})}_{\text{Pass-through Benchmark = 1:1}} \qquad \text{Pricing effect}$$

Counterfactuals: How much would the aggregate rate have increased if...

1. only the composition of lending changed, but not the credit pricing structure?
2. only the credit pricing structure changed, but not the lending composition?

Results

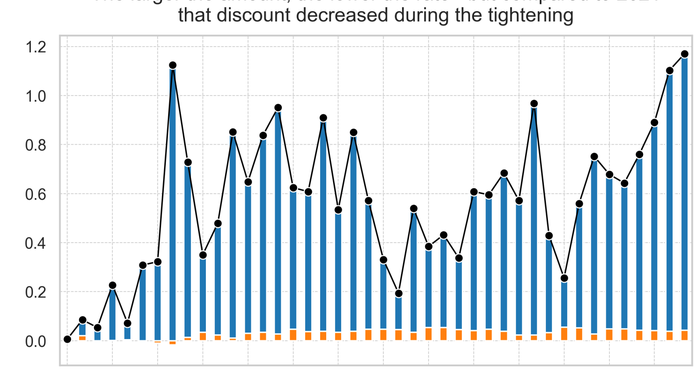
The differential increase between the aggregate rate in AnaCredit and the 3-Month Euribor is mostly due to changes in the credit pricing structure



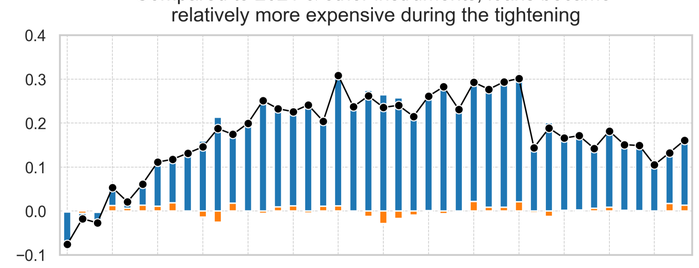
- Changes in the credit pricing structure dampened the increase in the aggregate rate by up to 2 PP(!)
- Changes in the lending composition dampened the increase in the aggregate rate by up to 15 BP

Digging deeper: Credit & firm-level determinants of the differential increase

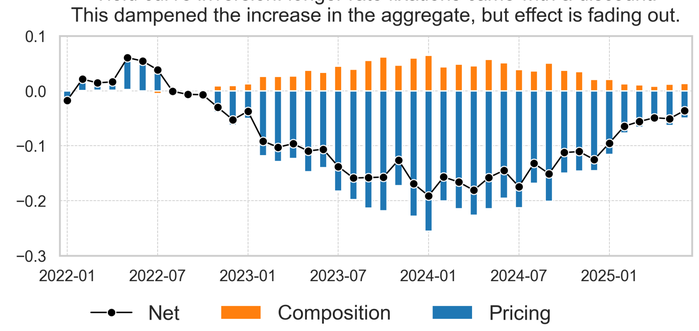
The larger the amount, the lower the rate - but compared to 2021 that discount decreased during the tightening



Compared to 2021 & other instruments, loans became relatively more expensive during the tightening

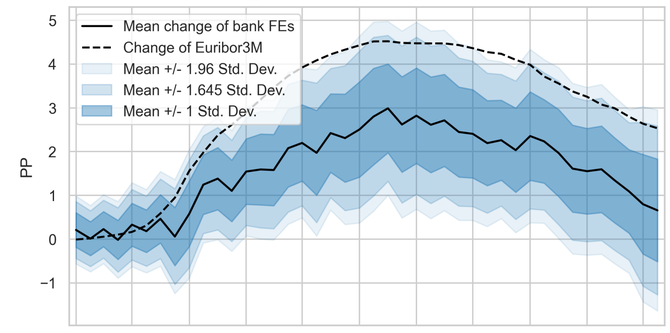


Yield curve inversion: longer rate fixations came with a discount. This dampened the increase in the aggregate, but effect is fading out.

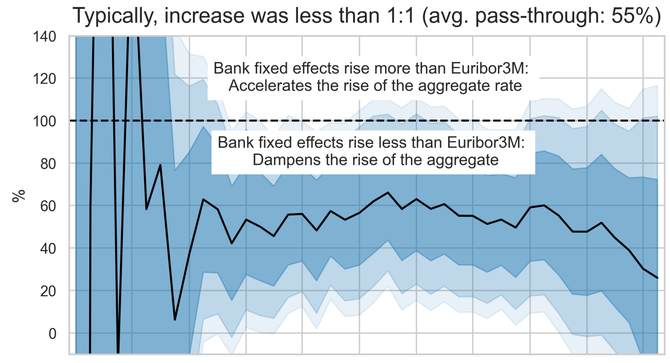


How pass-through translates to the pricing effect

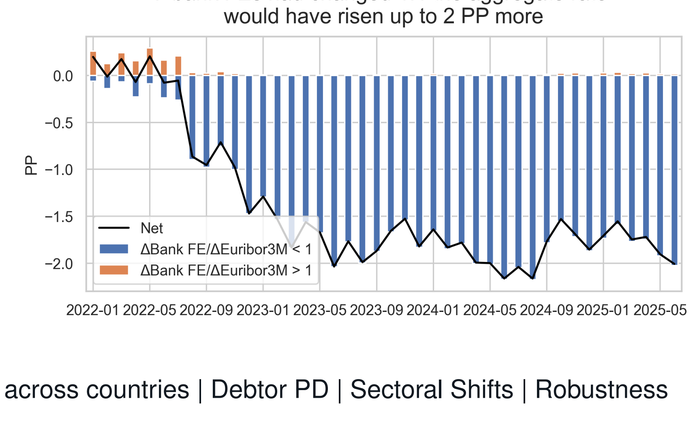
We benchmark change in bank FEs against change of 3M Euribor



Typically, increase was less than 1:1 (avg. pass-through: 55%)



If bank FEs had changed 1:1 the aggregate rate would have risen up to 2 PP more



Paper: The role of shifts in bank lending shares within vs. across countries | Debtor PD | Sectoral Shifts | Robustness

Lessons learned

1. Changes in credit pricing policies are the primary drivers of the aggregate rate's differential increase during the tightening.
   - Banks' fixed components of credit pricing did not fully reflect the rise of market rates
   - But banks compensated this by reducing discounts on larger credit amounts...
   - ...and increasing the cost of widely used financing instruments (loans)
2. Our credit-level approach unveils many dimensions that shape our understanding so far of the pass-through via banks.
   - We unveil the 'micro' dynamics that shape 'macro-based' pass-through patterns
3. The decomposition provides a comprehensive approach to evaluate
   - the strength of monetary policy
   - and along which credit & firm-level dimensions monetary impulses transmit to bank lending