



DARDEN SCHOOL
of BUSINESS

Safe Asset Scarcity and Monetary Policy Transmission

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Views are my own and do not represent the views of the Banque de France, the ECB or the Eurosystem

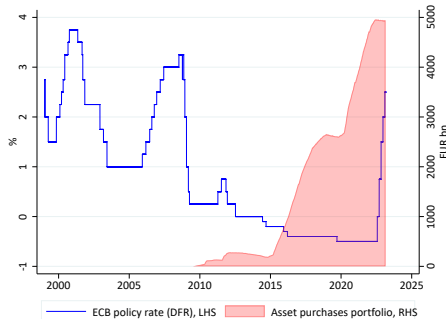
For presentation at the 19th Central Bank Conference on the Microstructure of Financial Markets

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RIISING RATES WHILE LARGE CB BALANCE SHEET

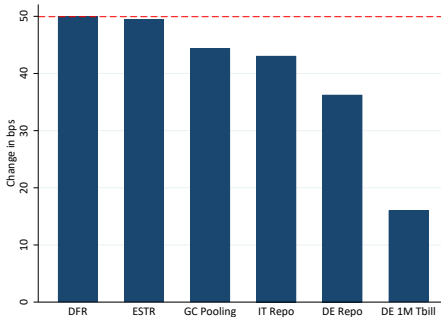


- ▶ Following years of loose monetary policy, when rates were cut and balance sheet increased, ECB increased rates in 2022.
- ▶ First time central banks **raise** interest rates with **large** balance sheets
 - ▶ Conventional monetary policy: tightening
 - ▶ Unconventional monetary policy: looser (scarcity)
- ▶ Consequences of timing? Sequence of the exit: raising interest rate before selling assets, i.e., *before* QT.
- ▶ QE purchases have reduced functioning of the repo markets. Does the safe asset scarcity following QE impede the pass-through of conventional monetary policy?





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- ▶ Focus on first 50bp increase of this cycle (27Jul2022): Imperfect pass-through





THE MARKETS' VIEW

"Lagging Repo Rates Risk Undermining ECB's Latest Tightening Push"
(Bloomberg, 16 September 2022)

"The Eurozone's repo and money markets are becoming more dysfunctional and threaten the European Central Bank's ability to push its monetary policies"
(Financial Times, 26 October 2022)

"A lack of high-quality collateral in the eurozone has resulted in money market rates lagging ECB policy rates [...] now that the governing council battles record-high inflation with higher interest rates, this imbalance is preventing an adequate policy transmission as policy rates rise."
(Central-Banking.com, 6 December 2022)

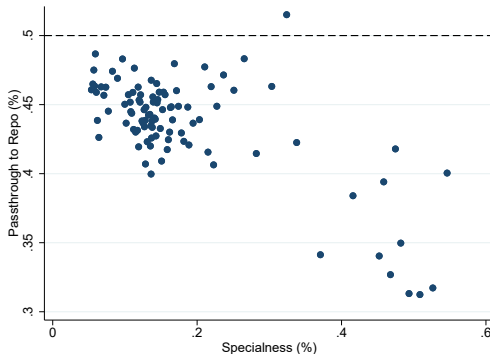


THE CENTRAL BANK'S VIEW

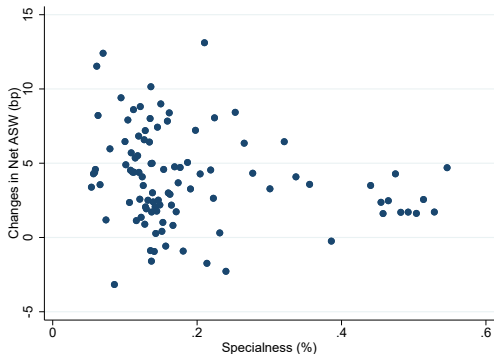
The Eurosystem's outright holdings of euro area sovereign bonds currently amount to **more than a third of the outstanding market** (...) As a result, the “scarcity premium” that market participants must pay to obtain these assets has often been considerable, **both in the repo and the bond market** (...)

At times, around half of the repo volume backed by German collateral was trading more than 40 basis points below the general collateral rate. **Such asset scarcity can delay, or even impair, the transmission of monetary policy** [and] implies that sovereign yields in the euro area's largest economy remain **more accommodative than intended by our policy stance**.

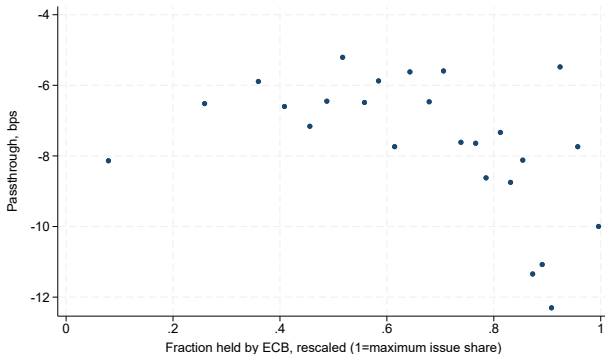
—Isabel Schnabel, Member of the Executive Board of the ECB, Money Market Contact Group meeting, Frankfurt am Main, 2 March 2023



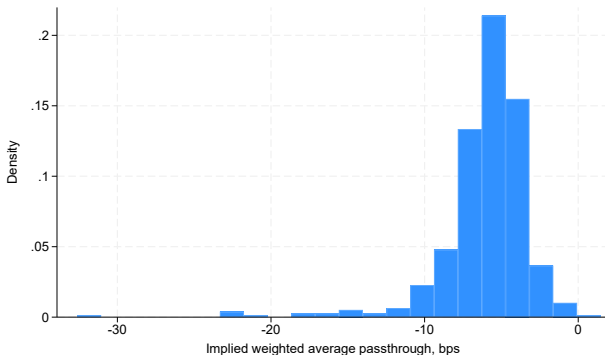
- ▶ Less pass-through for repo-transactions that are collateralized by more special bonds.
- ▶ Impeded pass-through is reflected in bond prices (asset swap spreads)
- ▶ Less pass-through for repo-transactions that are collateralized by bonds that had been bought more aggressively by ECB.
- ▶ Market participants that owned scarce bond and used it to borrow cash saw their borrowing cost increase by less than the change in the main monetary policy rate



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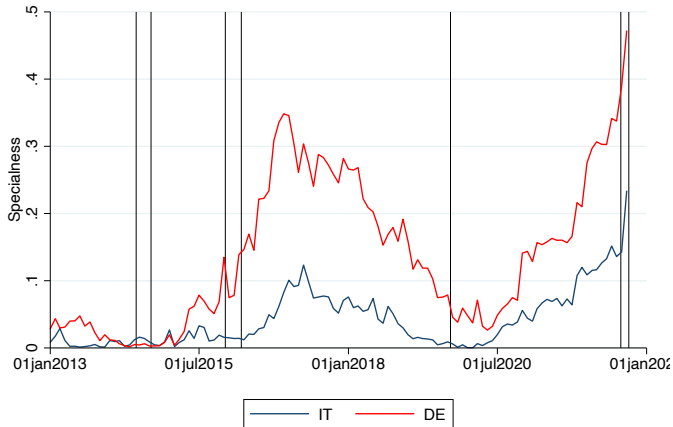
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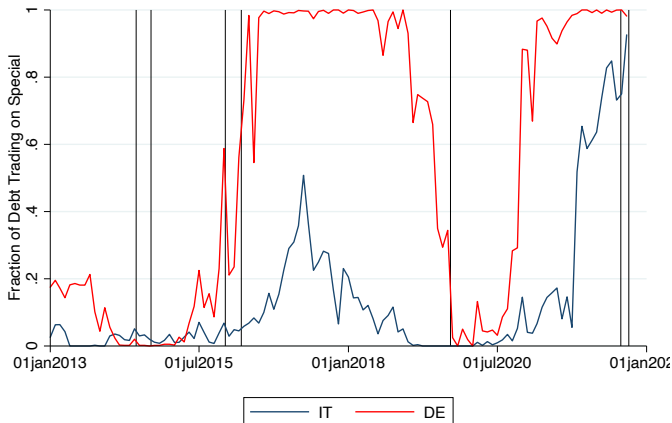
- ▶ Does safe asset scarcity reduce the pass-through of rate hikes to money market rates?
 - ▶ Pass-through to money market rates is impeded, inversely proportional to scarcity
 - ▶ Pass-through improved dramatically as soon as collateral availability increased ($\approx$ from 2023)
- ▶ Does a large CB balance sheet impair the transmission of conventional monetary policy?
 - ▶ Repo for bonds that were purchased more during QE show lessened pass-through
 - ▶ Holder matters, specifically whether they participate in the repo market
 - ▶ Competition or concentration alone does not explain this lack of pass-through
- ▶ Does the impaired transmission to money market rates:
 - ▶ Affect government bond prices? Yes, less pass-through, higher prices, lower yields
 - ▶ Impact investors heterogeneously? Resulting funding costs differ across investors/countries



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- ▶ Unlike the US, specialness is now a permanent feature of European treasuries.
- ▶ $Specialness_{it} = DRF_t - RepoRate_{it}$, is a byproduct of QE.

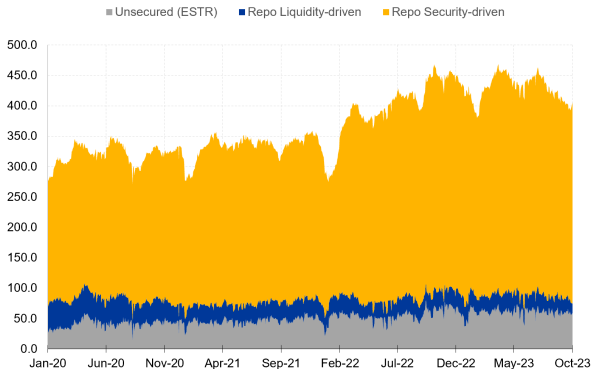


- ▶ Fraction of government debt trading on special ($Specianless_{it} > 10bp$).
- ▶ Was negligible (80%–90% smaller) in prior rate changes. Our focus is on first hike.

WHY PAYING ATTENTION TO REPO RATES?



- ▶ **The largest segment of the money market:** Eur 400 bn daily vs <50 bn for unsecured
- ▶ We focus on special repo transactions, which now **trade much more than GC trades**
- ▶ **Safe investment** for cash hldrs, bond sourcing for short-sellers, **funding** for collateral hldrs
- ▶ Repo rates may affect **long-term bond pricing** due to a “repo dividend”





- ▶ DATA AND EMPIRICAL SET-UP
- ▶ SPECIALNESS AND PASS-THROUGH
- ▶ BOND PRICES
- ▶ CHANNELS AND COMPETING EXPLANATIONS
- ▶ FUNDING COSTS
- ▶ EXTENSION AND CONCLUSIONS



- ▶ **Money Market Statistical Reporting (MMSR)**: fully identified, repo transactions data
 - ▶ **Brokertec/MTS**, additional repo data and bond yields
 - ▶ **ECB asset purchases**: transactions conducted in its quantitative easing programs
 - ▶ **Securities Holdings Statistics**: security holdings by country/sector investor type and for a subset of individual banks
-
- ▶ 1-day maturity, agreed two days in advance (S/N), by far the most traded tenor
 - ▶ Sovereign collateral issued by Germany, France, Italy and Spain
 - ▶ We define $Specialness_{it} = DFR_t - RepoRate_{it}$
 - ▶ Pass-through: average interest rate 5 business days after the hike vs 5 days before the hike. Results are robust to excluding transactions that took place between announcement and implementation.



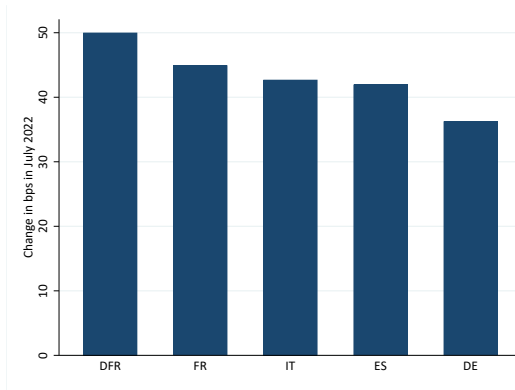
- Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,

	$Specialness_i^{Bef}$	$Specialness_i^{Aft}$	$Rate_i^{Bef}$	$Rate_i^{Aft}$	$PassThru_i$
Mean	0.181	0.248	-0.681	-0.248	0.433

PRELIM. RESULTS: PASSTHROUGH IN REPO MARKET



- ▶ Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,
 - ▶ **especially depending on the issuer country of the collateral**
- ▶ For the July 2022 rate hike: 50bp, missing 8 for Italy, 13 for Germany

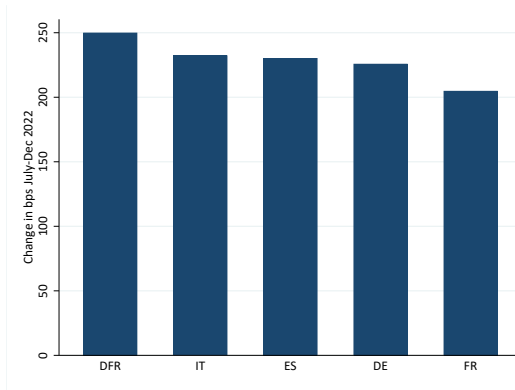


Source: MMSR, GC and SC repo transactions secured by DE, FR, IT, ES government bonds, S/N tenor.

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 - ▶ **especially depending on the issuer country of the collateral**
- ▶ For the July–December 2022 rate hike series: 250bp, missing 22 for Italy, 50 for France



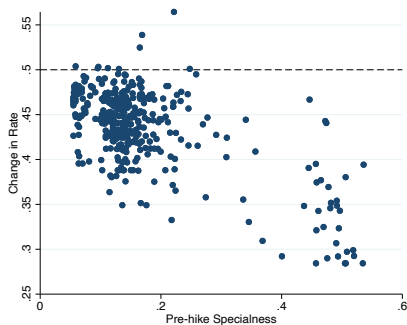
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- Scarcity, measured by the specialness premium, reduces monetary policy passthrough

$$Passthrough_i = \alpha + \beta_1 * Specialness_i + \beta_2 * X_i + \epsilon_i$$

- **Finding:** Worse passthrough to repo collateralized by more special bonds
- 50 bps of pre-hike specialness → a passthrough of 0.75 (38bp) instead of 1 (50bp)



	PT_i	PT_i	PT_i
<i>Specialness_i</i>	-0.541*** (-9.23)	-0.553*** (-8.49)	-0.499*** (-6.06)
Coupon rate		0.000677 (0.14)	0.00340 (0.70)
Init. maturity		-0.000735 (-0.50)	-0.00116 (-0.82)
Resid. maturity		0.00152 (0.99)	0.00339* (1.89)
ECB haircut		-0.00142 (-0.80)	-0.00717* (-1.70)
Country FE	No	No	Yes
Adj. R2	0.31	0.31	0.34
Obs	357	357	357

ARE ALL RATE HIKE LOOK-ALIKE ?



- ▶ Panel data to explore the different rate hikes.
- ▶ **Finding:** Worse passthrough to repo collateralized by more special bonds (all hikes). Specialness increases for most of the rate hikes, irrespective of the size of the hike.

	(1) $\Delta Spec_i$	(2) $\Delta Spec_i$	(3) $\Delta Spec_i$
July x $Specialness_i^{Bef}$	0.147*** (3.85)	0.323*** (2.75)	0.428*** (3.71)
Sept x $Specialness_i^{Bef}$	0.130** (2.27)	0.191*** (3.04)	0.193*** (2.96)
Oct x $Specialness_i^{Bef}$	-0.00444 (-0.07)	0.166*** (2.72)	0.133 (1.30)
Dec x $Specialness_i^{Bef}$	0.0832* (1.95)	0.355*** (3.44)	0.280*** (2.90)
ISIN FE		Yes	Yes
Time FE	Yes		Yes
Adj. R2	0.10	0.13	0.14
Obs	1295	1295	1295



- ▶ Pass-through negatively correlated with specialness.
- ▶ Specialness positively correlated with lagged ECB portfolio
→ Pass-through negatively correlated with lagged ECB portfolio
- ▶ Tension between unconventional monpol (QE) and conventional monpol (rate hikes)
- ▶ Reduced Form:

$$Passthrough_i = \alpha + \beta_1 * Share\ held\ ECB_i + \beta_2 * X_i + \epsilon_i$$

- ▶ Or holdings can instrument specialness:

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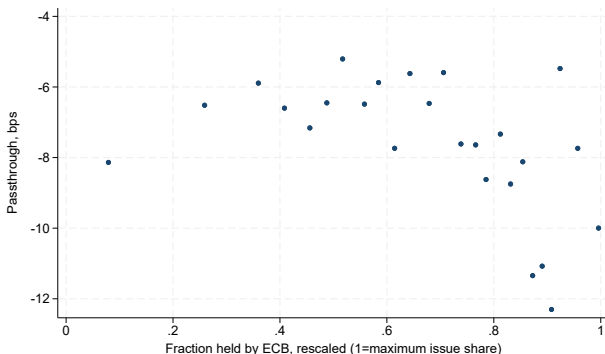


- 50bp rate hike increases repo rates by only 32bp for bonds with a 50bp specialness

	OLS		1st	2nd stage	
	(1)	(2)	(3)	(4)	(5)
Share held ECB	-0.0909** (-2.32)	-0.0909** (-2.38)	0.137*** (3.71)		
$Specialness_i^{Bef}$				-0.665*** (-2.63)	-0.636*** (-2.60)
F-stat	5.4	4.7	13.8	6.9	7.0
Adj. R2	0.02	0.04	0.04	0.29	0.30
Obs	357	357	357	357	357

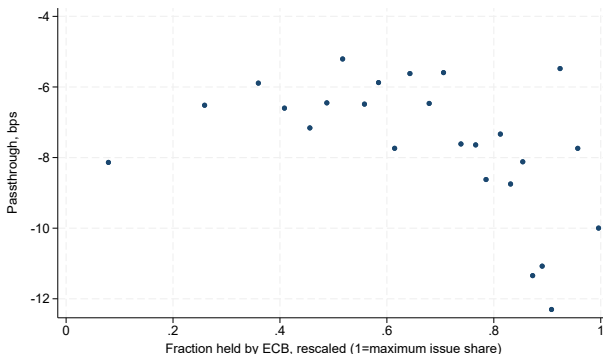


- ▶ Binscatter plotted from 357 gov bonds issued by DE, FR, IT, ES.
- ▶ **Finding:** Worse passthrough to repo collateralized by bonds bought more during QE.
- ▶ **Question:** Does it translate into sluggish passthrough to treasury yields?
- ▶ **Consideration:** What could the CB do to improve passthrough?



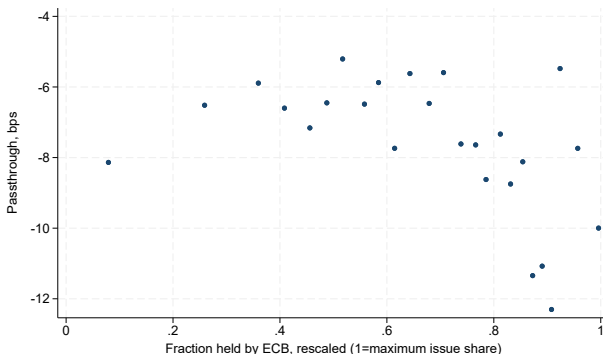


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- The highest specialness was, the less yields responded to the monetary policy shock: each 1bp of specialness translated in a 0.2 bps in lower yields

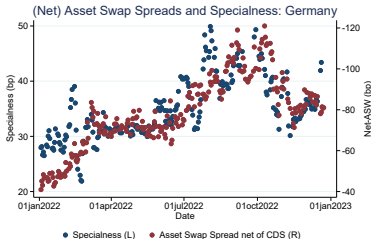
	(1) ΔY_i	(2) ΔY_i	(3) ΔY_i	(4) ΔY_i	(5) ΔY_i
<i>Specialness_i^{Bef}</i>	-0.213*** (-4.537)	-0.208*** (-5.273)	-0.194*** (-3.366)	-0.199*** (-4.649)	-0.208*** (-3.140)
<i>Duration_i</i>		-0.023*** (-6.927)	-0.022*** (-7.114)		
<i>Convexity_i</i>		0.000*** (4.839)	0.000*** (5.070)		
Adj. R ²	0.038	0.269	0.491	0.230	0.489
Obs	312	312	312	311	303
Country FE	No	No	Yes	No	No
Maturity FE	No	No	No	Yes	No
Maturity × Country FE	No	No	No	No	Yes

- 2SLS yields same results
- **Finding:** Imperfect pass-through leads to lower increase in yields
 - Larger specialness → smaller pass-through → more spec. dividend
 - more spec. dividend → higher price → Lower yields

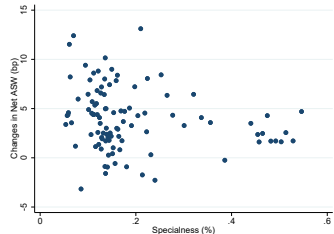


- **Finding:** Imperfect pass-through leads to lower increase in yields NetASW
 - Larger specialness → smaller pass-through → more spec. dividend
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- Alternative to control for credit risk and IR exposure: (net) Asset Swap spread

$$P = \frac{C}{(1+S_1+ASW)^1} + \frac{C}{(1+S_2+ASW)^2} + \dots + \frac{C+V}{(1+S_\tau+ASW)^\tau} \quad NetASW = ASW - CDS(\tau)$$



July Hike: Specialness vs NetASW PT





Competition / Repo squeeze

- ▶ Dealers' market power allows them not to pass entirely the rate hike to spec repo rates (extreme case: 'squeeze')

Concomitant change in demand for specials

- ▶ Hike → short positioning → demand for spec bonds increases

Heterogeneity in the participation to the repo market

- ▶ Spec repo rate determined by inelastic supply/demand
- ▶ Rate hike creates a profit opportunity for investors holding a special bond: Lend it in the repo market, park the cash at a higher rate. More of this “arbitrage” → better pass-through
 - ▶ Banks can park the cash proceed at the DFR.
 - ▶ Other investors cannot go to the DFR, but can place the proceed at GC.
 - ▶ Similar to access to DFR in Ballensiefen, Ranaldo and Winterberg (2023).
- ▶ More sophisticated investors are more likely to engage in this arbitrage
- ▶ Bonds that are on special tend to be held by investors less likely to take advantage of increased specialness



- The lack of pass-through comes from dealers using their market power over their less sophisticated customers (Eisenschmidt, Ma and Zhang, 2022)

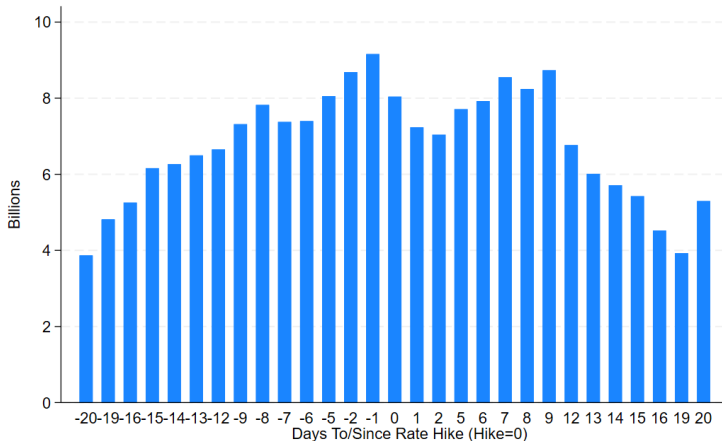
$$Passthrough_{icd} = \alpha + \beta_1 * Spec. premium_{icd} + \beta_2 * X_i + FE_d + FE_c + \epsilon_{icd}$$

	(1)	(2)	(3)	(4)	(5)
<i>Specialness_i</i>	-0.442*** (-8.60)	-0.445*** (-8.39)	-0.430*** (-8.05)	-0.437*** (-8.28)	
Coupon rate	0.00258 (0.54)	0.00224 (0.48)	0.00196 (0.43)	0.00208 (0.45)	0.0174*** (3.10)
Init. maturity	-0.000149 (-0.10)	-0.000317 (-0.23)	-0.000262 (-0.19)	-0.000318 (-0.23)	-0.00364** (-2.27)
Resid. maturity	0.000570 (0.38)	0.000641 (0.43)	0.000552 (0.37)	0.000669 (0.44)	0.00279* (1.67)
ECB haircut	0.000213 (0.14)	0.000518 (0.33)	0.000272 (0.18)	-0.0000345 (-0.02)	0.00385** (2.30)
Customer FE	No	No	Yes	Yes	Yes
Dealer FE	No	Yes	Yes	Yes	Yes
Deal.-Cust. FE	No	No	No	Yes	Yes
Adj. R2	0.21	0.22	0.25	0.27	0.13
Obs	4,090	4,090	4,086	4,071	4,071

- Comparing (4) and (5): drivers related to the customer-dealer relationship, customer and dealer fixed effects and bond controls explains 13% of the variance in pass-through, but adding specialness explains 14 % more.

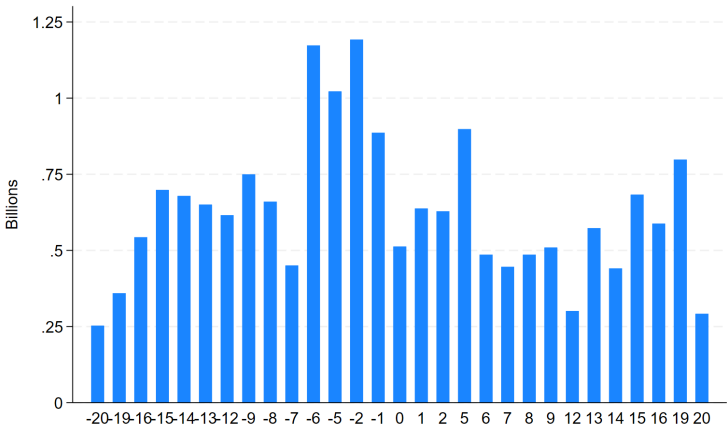


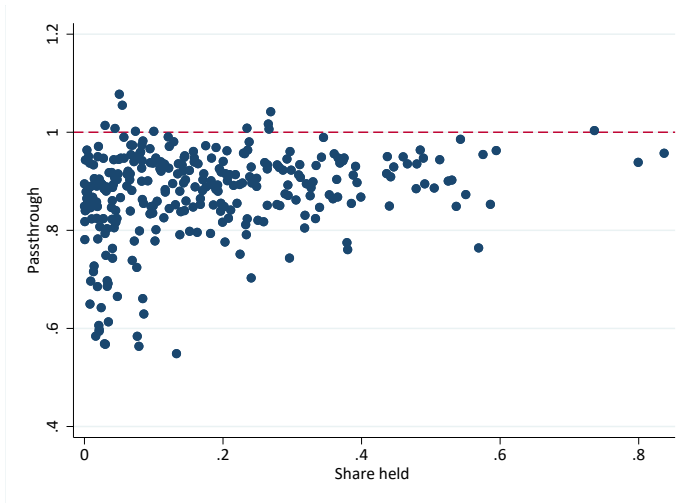
- ▶ Hedge funds & dealers are the natural securities borrowers
- ▶ They borrowed more securities around rate hikes: shorting in the cash bond market



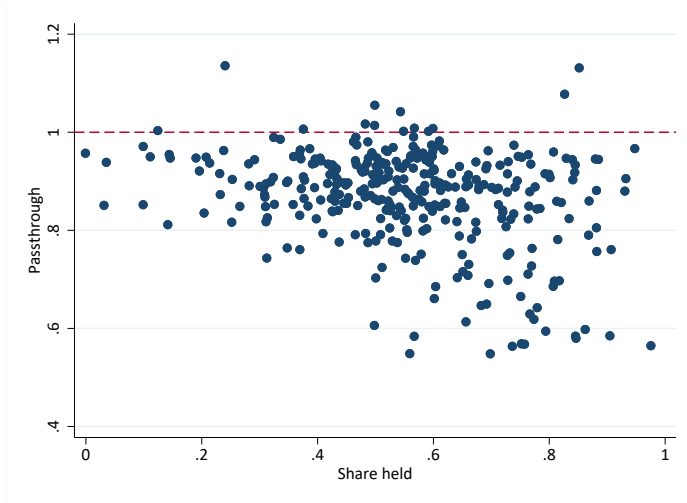


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- ▶ The more a bond is held by banks, the better the passthrough
- ▶ The more a bond is held by foreigners/ECB, the worse the passthrough



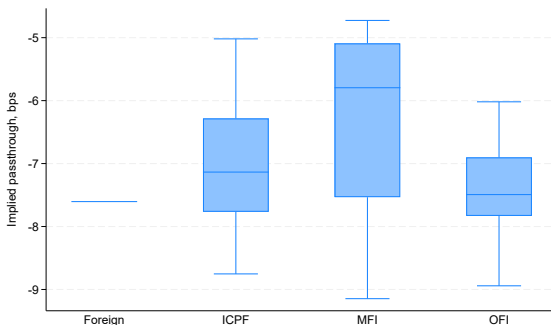
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- ▶ **FUNDING COSTS**
- ▶ EXTENSION AND CONCLUSIONS



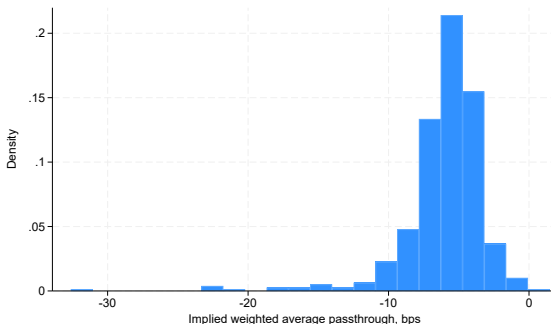
- ▶ Assuming institutional investor lend out their whole bond portfolio on the repo market
- ▶ **Finding:** Heterogeneous passthrough across investors types:
 - ▶ OFI and foreign investors experienced lower increase in their funding costs
 - ▶ Banks (MFIs): larger and large dispersion in the pass-through of their funding costs. A country experienced a 46bp pass-through, another 41.
 - ▶ Implication for across-Europe monetary policy effectiveness



Note: ICPF are insurance companies and pension funds, MFI are monetary financial institutions, and OFI, are other financial institutions. Holdings data come from SHS, as of 2021Q4.

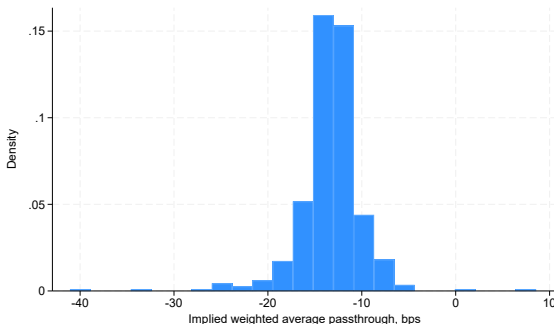


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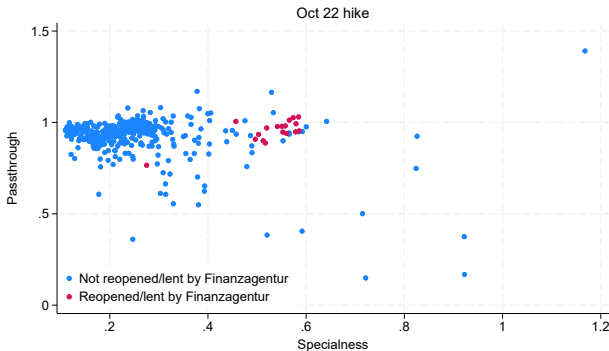
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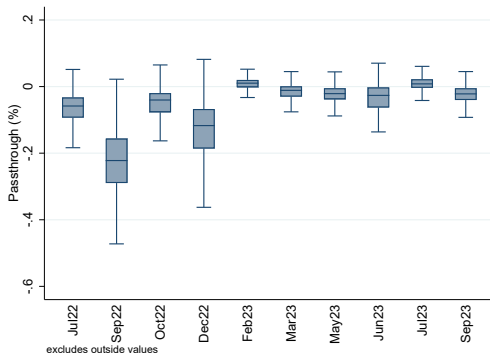
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DRIVING FORCE IS AVAILABILITY TO THE BROAD MARKET



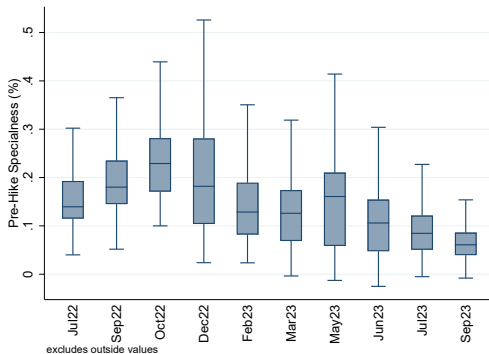
- Improvement after DFA re-issuance.
- Better pass-through in 2023, consistent with lower specialness.
- Also consistent with the increasing availability of bonds
- Clear discontinuity around SLF pricing.

DRIVING FORCE IS AVAILABILITY TO THE BROAD MARKET



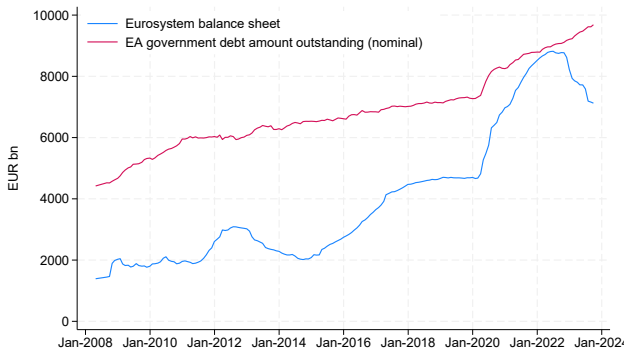
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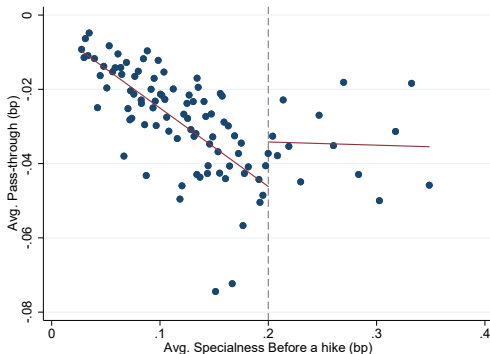
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- ▶ QE was aimed at lowering long term bonds yields. Scarcity and conventional monetary policy went in the same direction.
- ▶ Interest rate reversal that took place before QT had an imperfect pass-through: scarcity and conventional monetary policy go in the *opposite* direction.
- ▶ Lack of repo pass-through also affect yields, funding costs depending of the heterogeneity in holdings of scarce bonds
- ▶ Pass-through depends on the central bank footprint : reduction in the balance sheet and/or increase in safe asset supply ease collateral scarcity and improve pass-through

Thank you