Safe Asset Scarcity and Monetary Policy Transmission

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- ▶ 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?

ECB policy rate (DFR), LHS   Asset purchases portfolio, RHS

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- ▶ Focus on first 50bp increase of this cycle (27Jul2022): Imperfect pass-through
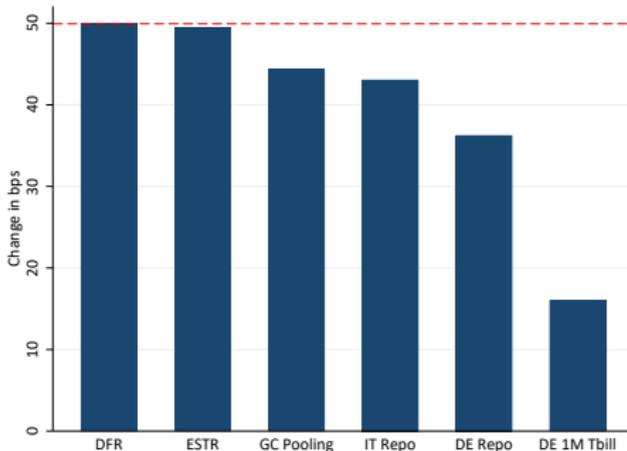
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"Lagging Repo Rates Risk Undermining ECB's Latest Tightening Push"
(Bloomberg, 16 September 2022)

"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."
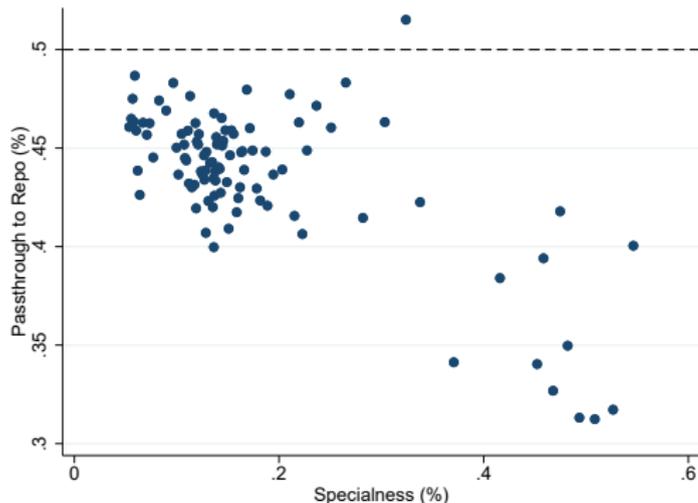(Central-Banking.com, 6 December 2022)
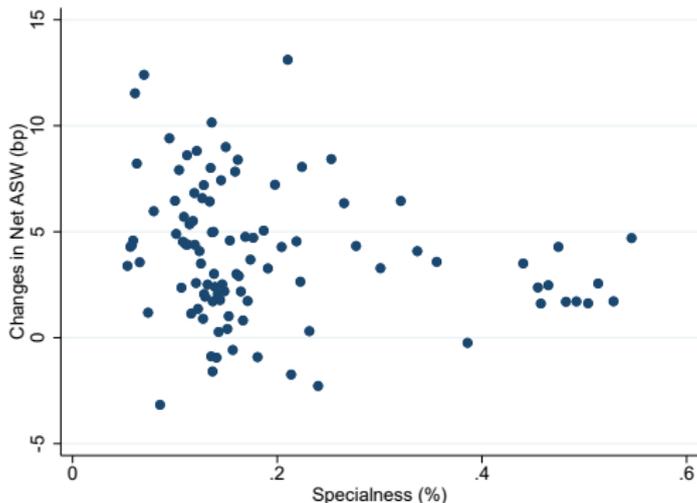
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The Eurosystem's outright holdings of euro area sovereign bonds currently amount to **more than a third of the outstanding market** (...) As a result, the "scarcity premium" that market participants must pay to obtain these assets has often been considerable, **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.**
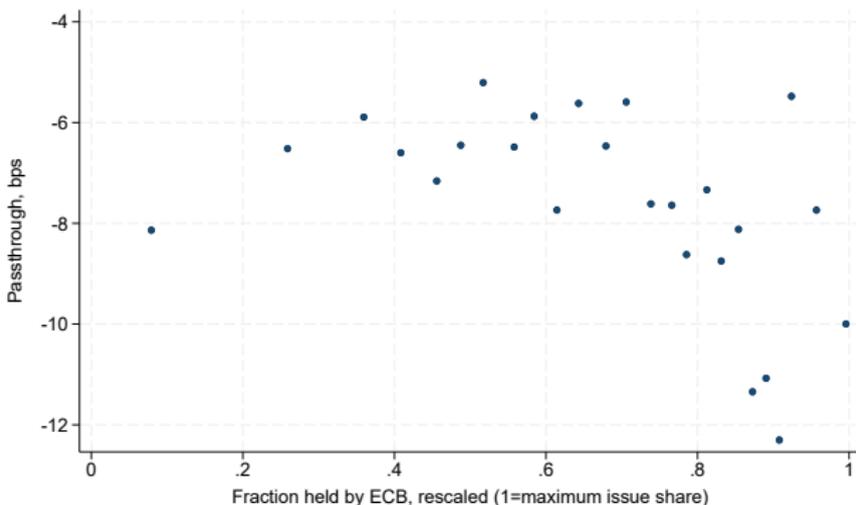
—Isabel Schnabel, Member of the Executive Board of the ECB, Money Market Contact Group meeting, Frankfurt am Main, 2 March 2023
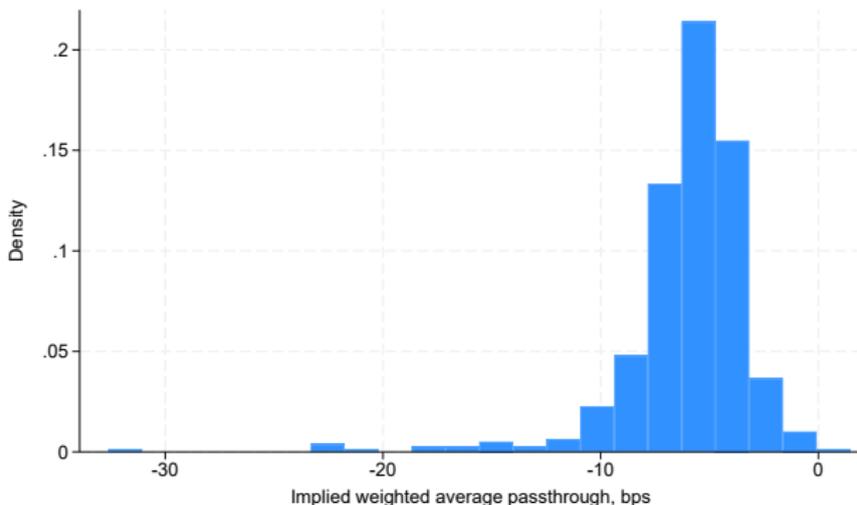
- ▶ Less pass-through for repo-transactions that are collateralized by more special bonds.
- ▶ Impeded pass-through is reflected in bond prices (asset swap spreads)
- ▶ Less pass-through for repo-transactions that are collateralized by bonds that had been bought more aggressively by ECB.
- ▶ Market participants 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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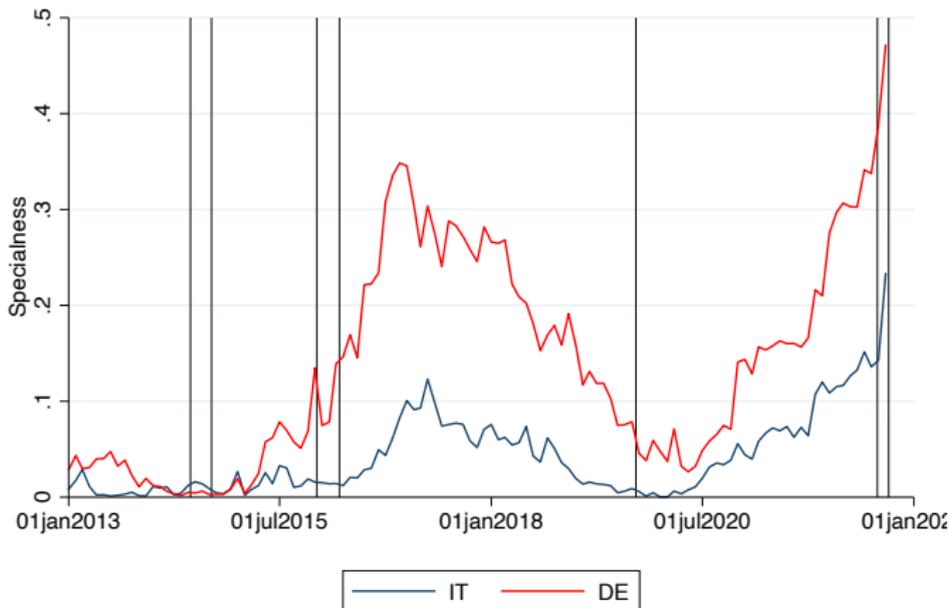
▶ Does safe asset scarcity reduce the pass-through of rate hikes to money market rates?
  ▶ Pass-through to money market rates is impeded, inversely proportional to scarcity

▶ 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

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  ▶ A ect government bond prices? Yes, less pass-through, higher prices, lower yields
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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.
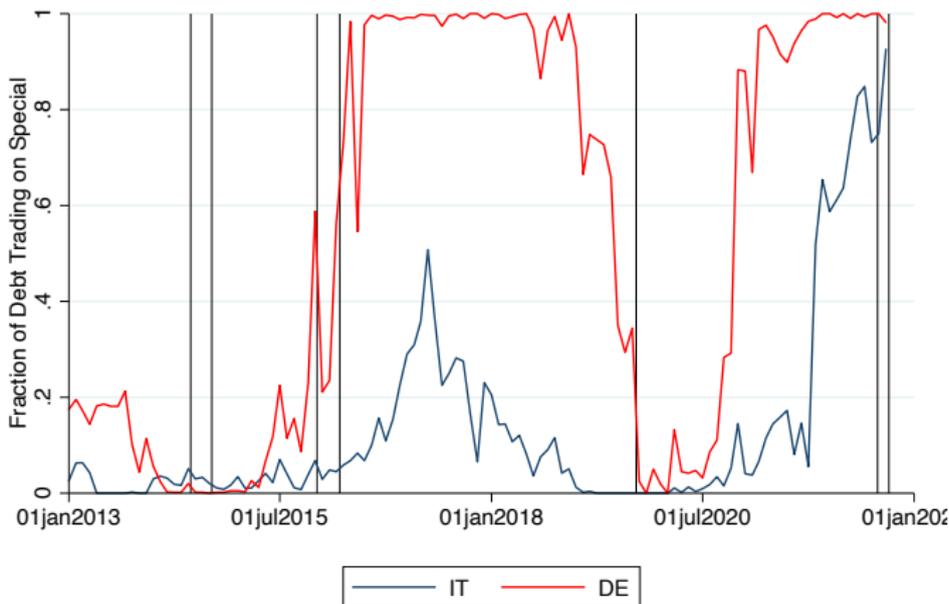
- Fraction of government debt trading on special ($Specianless_{it} > 10bp$).
- Was negligible (80%–90% smaller) in prior rate changes. Our focus is on first hike.

- ► **The largest segment of the money market**: Eur 800 bn daily vs <200 bn for unsecured
- ► We focus on special repo transactions, which now **trade twice as much as GC trades**
- ► **Safe investment** for cash hldrs, bond sourcing for short-sellers, **funding** for collateral hldrs
- ► Repo rates may a ect **long-term bond pricing** due to a "repo dividend"
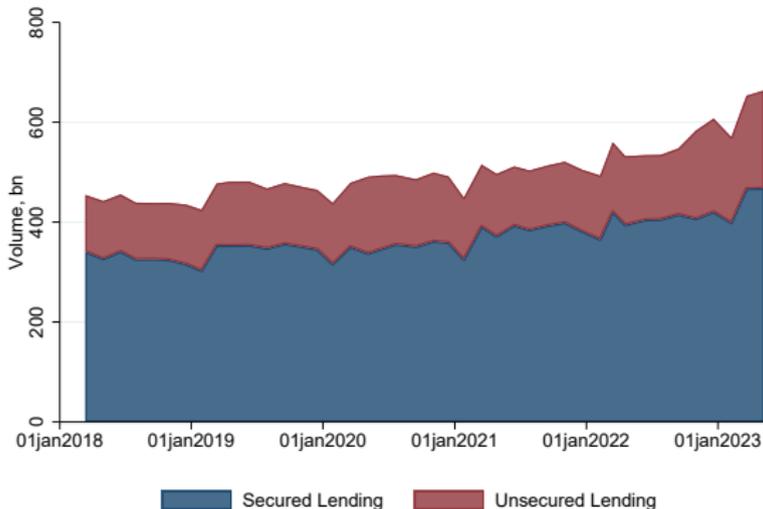
- D   E   S -

- R
  - Preliminary Results
  - Specialness and Pass-through
  - Bond Prices

- C   C   E

- F   C   & B   P   -

- C
  - Extending the results

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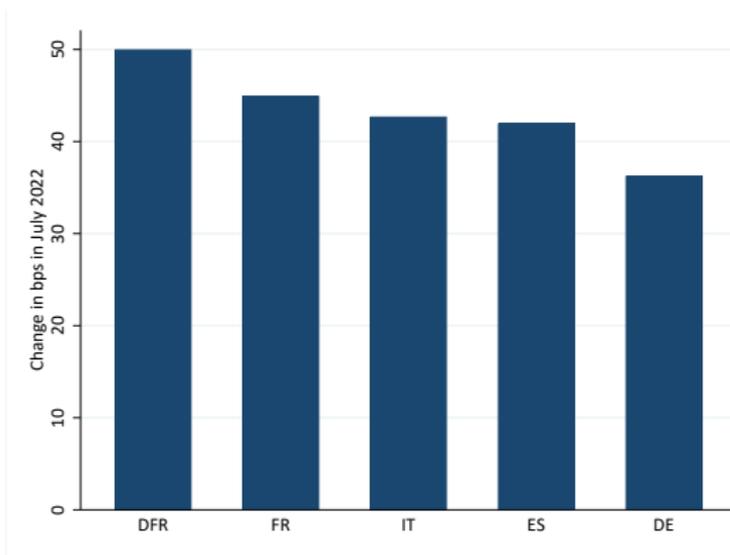
▶ Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,

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

- ▶ 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.
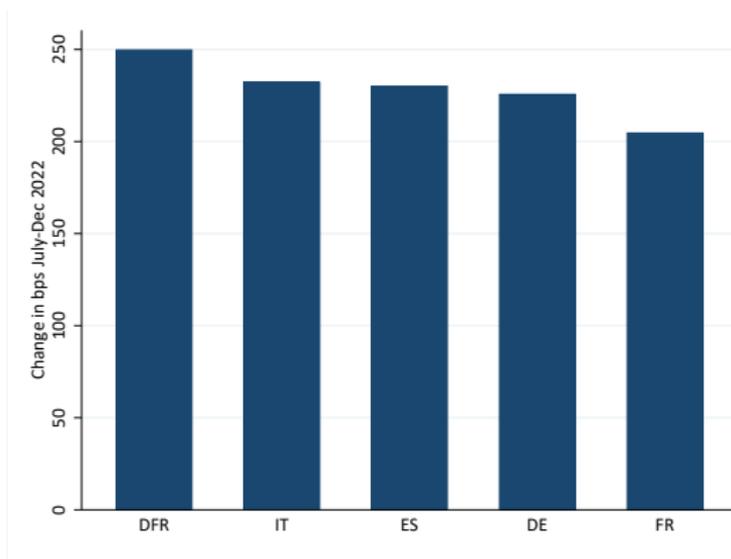
- ▶ Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,
    - ▶ **especially depending on the issuer country of the collateral**
- ▶ For the July–December 2022 rate hike series: 250bp, missing 22 for Italy, 50 for France

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

- ▶ 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 $\rightarrow$ a passtrough of 0.75 (38bp) instead of 1 (50bp)
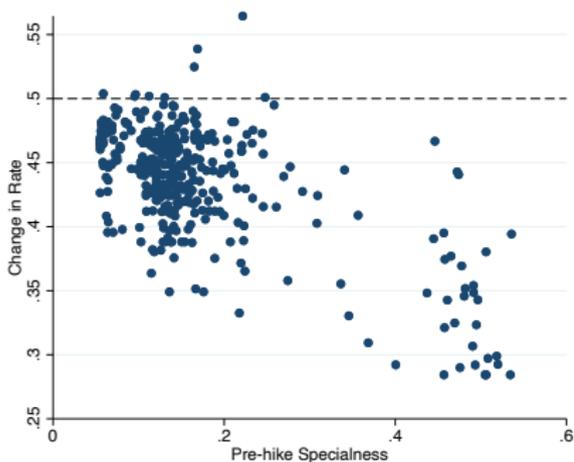
	PT_i	PT_i	PT_i
$Specialness_i$	-0.541***	-0.553***	-0.499***
	(-9.23)	(-8.49)	(-6.06)
Coupon rate		0.000677	0.00340
		(0.14)	(0.70)
Init. maturity		-0.000735	-0.00116
		(-0.50)	(-0.82)
Resid. maturity		0.00152	0.00339*
		(0.99)	(1.89)
ECB haircut		-0.00142	-0.00717*
		(-0.80)	(-1.70)
Country FE	No	No	Yes
Adj. R2	0.31	0.31	0.34
Obs	357	357	357

- Panel data to explore the di erent 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***	0.323***	0.428***
	(3.85)	(2.75)	(3.71)
Sept x $Specialness_i^{Bef}$	0.130**	0.191***	0.193***
	(2.27)	(3.04)	(2.96)
Oct x $Specialness_i^{Bef}$	-0.00444	0.166***	0.133
	(-0.07)	(2.72)	(1.30)
Dec x $Specialness_i^{Bef}$	0.0832*	0.355***	0.280***
	(1.95)	(3.44)	(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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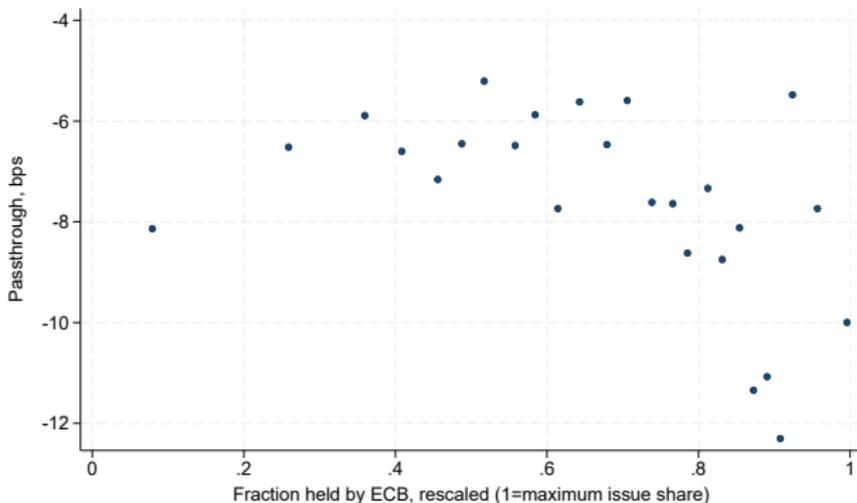
► 50bp rate hike increases repo rates by only 32bp for bonds with a 50bp specialness

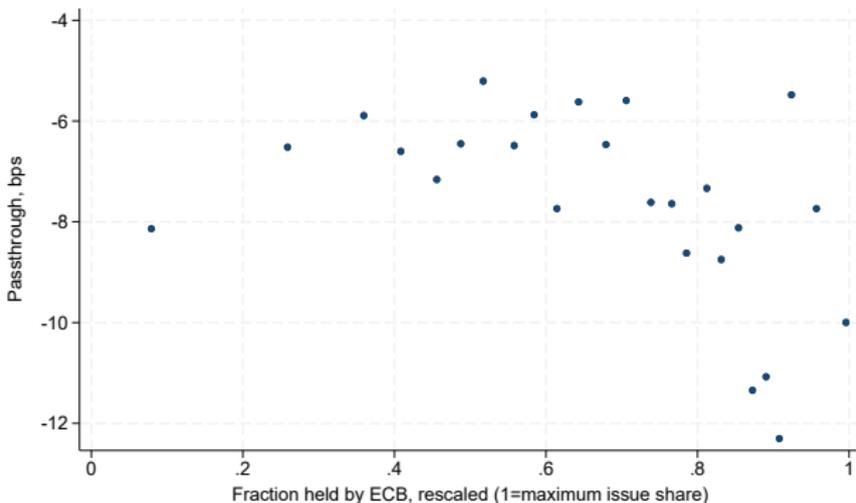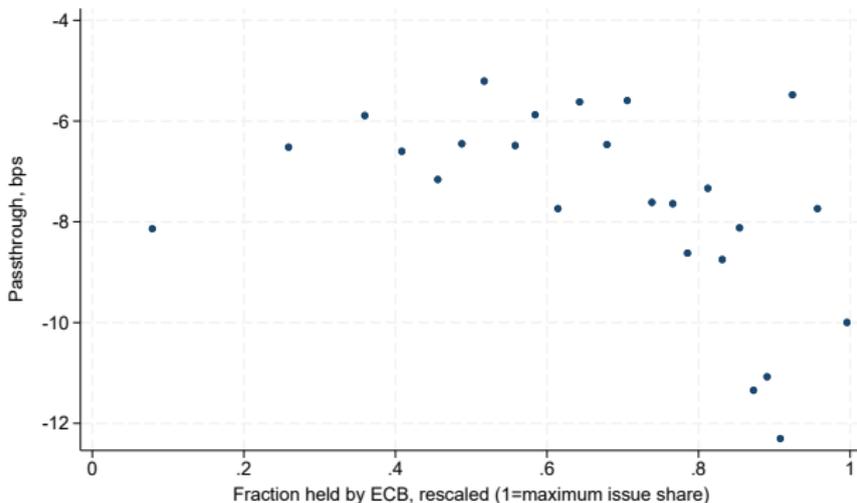|	OLS		1st	2nd stage	
	(1)	(2)	(3)	(4)	(5)
Share held ECB	-0.0909**	-0.0909**	0.137***		
	(-2.32)	(-2.38)	(3.71)		
$Specialness_i^{Bef}$				-0.665***	-0.636***
				(-2.63)	(-2.60)
Coupon rate		0.0144***			-0.00175
		(2.61)			(-0.23)
Init. maturity		-0.00290*			-0.000186
		(-1.89)			(-0.10)
Resid. maturity		0.00218			0.00123
		(1.35)			(0.77)
ECB haircut		0.00382**			-0.00221
		(2.16)			(-0.75)
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?

- ▶ Binscatter plotted from 357 gov bonds issued by DE, FR, IT, ES.
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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
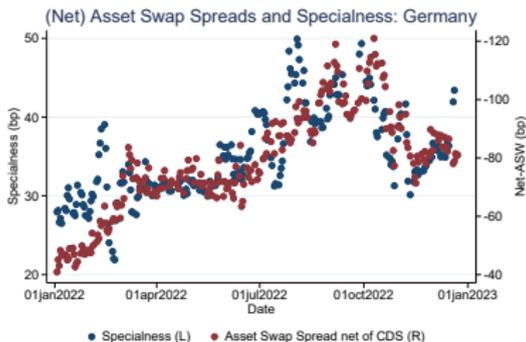
	(1) ΔY_i	(2) ΔY_i	(3) ΔY_i	(4) ΔY_i	(5) ΔY_i
$Specialness_i^{Bef}$	-0.213^{***}	-0.208^{***}	-0.194^{***}	-0.199^{***}	-0.208^{***}
	(-4.537)	(-5.273)	(-3.366)	(-4.649)	(-3.140)
$Duration_i$		-0.023^{***}	-0.022^{***}		
		(-6.927)	(-7.114)		
$Convexity_i$		0.000^{***}	0.000^{***}		
		(4.839)	(5.070)		
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$\times$ 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
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  - more spec. dividend → higher price → Lower yields
- Alternative to control for credit risk and IR exposure: (net) Asset Swap spread

$$P = \frac{C}{(1+S_1+ASW)^1} + \frac{C}{(1+S_2+ASW)^2} + \cdots + \frac{C+FV}{(1+S_\tau+ASW)^\tau} \qquad NetASW = ASW - CDS(\tau)$$

(Net) Asset Swap Spreads and Specialness: Germany

● Specialness (L) ● Asset Swap Spread net of CDS (R)

July Hike: Specialness vs NetASW PT
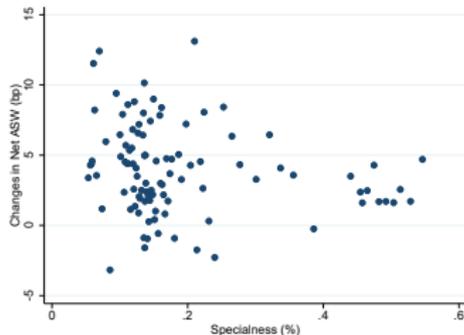
**Heterogeneity in the participation to the repo market**

► Bonds that are on special tend to be held by investors less likely to take advantage of increased specialness

Why do some bonds experience worse pass-through?

► 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
  ► Asset holders differ in their elasticity to rate changes

How does it relate to scarcity?

► QE changes the holder composition of bonds, concentrate some holdings in price-inelastic investors in the cash market ("preferred habitat").
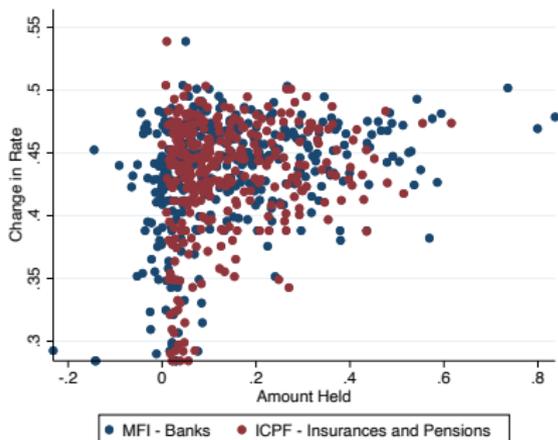
Change in Rate / Amount Held

MFI - Banks ● ICPF - Insurances and Pensions

- ▶ **Finding:** assets ex-ante held by sophisticated investors—MFI and ICPF—tend to have better pass-through

- ▶ Consistent with these institutions actively extracting specialness dividend

- ▶ Confirm the results with regression, repeat using participation in repo market directly, rather than ownership

- ▶ ECB behaves similar to passive holders

Change in Rate vs Amount Held by Foreign Investors
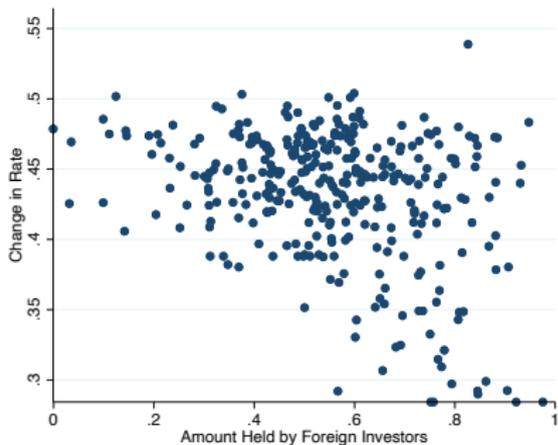
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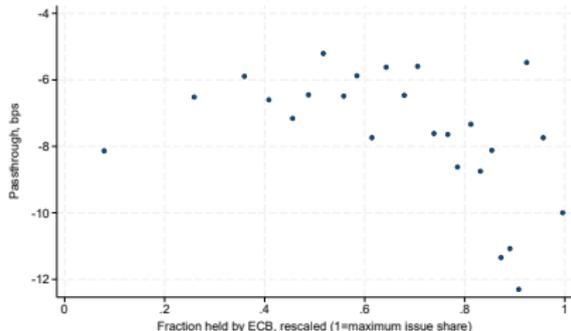
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► The lack of pass-through comes from dealers using their market power over their less sophisticated customers (Eisenschmidt, Ma and Zhang, 2022)

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

	(1)	(2)	(3)	(4)	(5)
$Specialness_i$	-0.442***	-0.445***	-0.430***	-0.437***	
	(-8.60)	(-8.39)	(-8.05)	(-8.28)	
Coupon rate	0.00258	0.00224	0.00196	0.00208	0.0174***
	(0.54)	(0.48)	(0.43)	(0.45)	(3.10)
Init. maturity	-0.000149	-0.000317	-0.000262	-0.000318	-0.00364**
	(-0.10)	(-0.23)	(-0.19)	(-0.23)	(-2.27)
Resid. maturity	0.000570	0.000641	0.000552	0.000669	0.00279*
	(0.38)	(0.43)	(0.37)	(0.44)	(1.67)
ECB haircut	0.000213	0.000518	0.000272	-0.0000345	0.00385**
	(0.14)	(0.33)	(0.18)	(-0.02)	(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 e ects and bond controls explains 13% of the variance in pass-through, but adding specialness explains 14 % more.

▶ D   E   S -

▶ R
   ▶ Preliminary Results
   ▶ Specialness and Pass-through
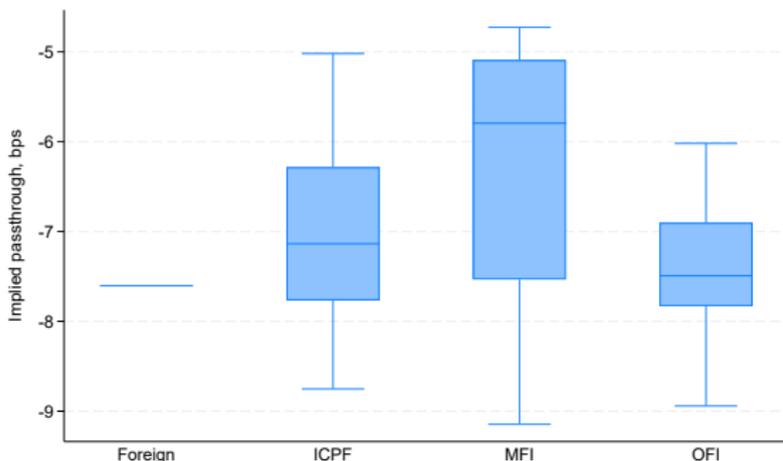   ▶ Bond Prices

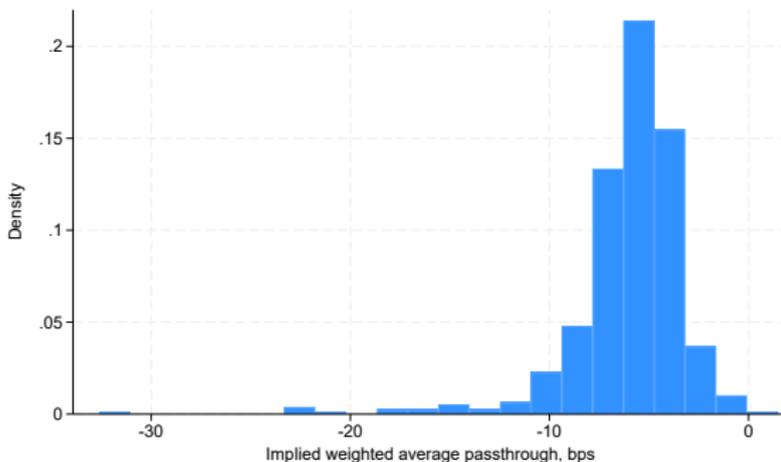▶ C   C   E

▶ F   C   & B   P   -

▶ C
   ▶ Extending the results

- ► 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 e ectiveness

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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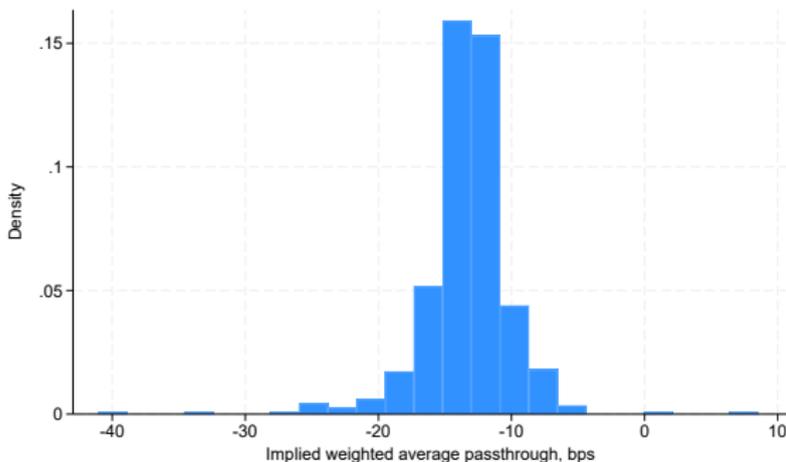
▶ We repeat the analysis, increasing the distance of the 5-day post window from the hike.
▶ Passthrough improves with time, but still impeded by next hike.
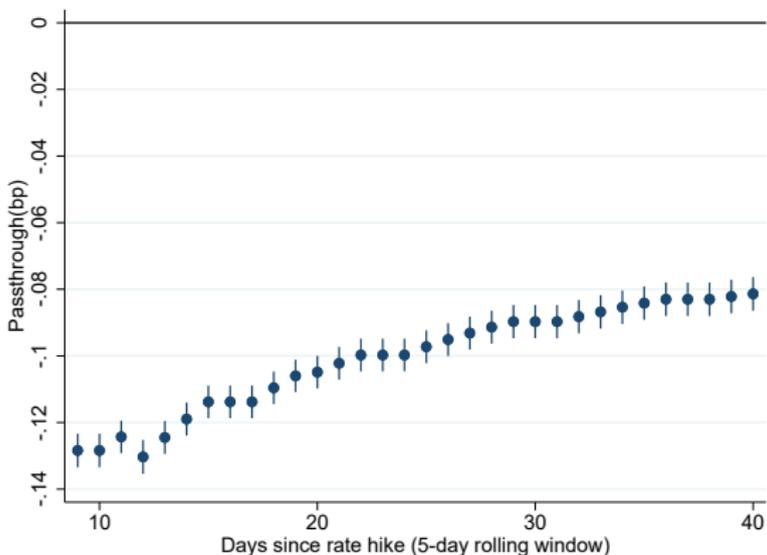
- ▶ Du   e and Krishnamurthy, 2016: rate dispersion as a measure of monpol pass-through.
- ▶ **Finding:** *within-repo market* dispersion increases in rates.
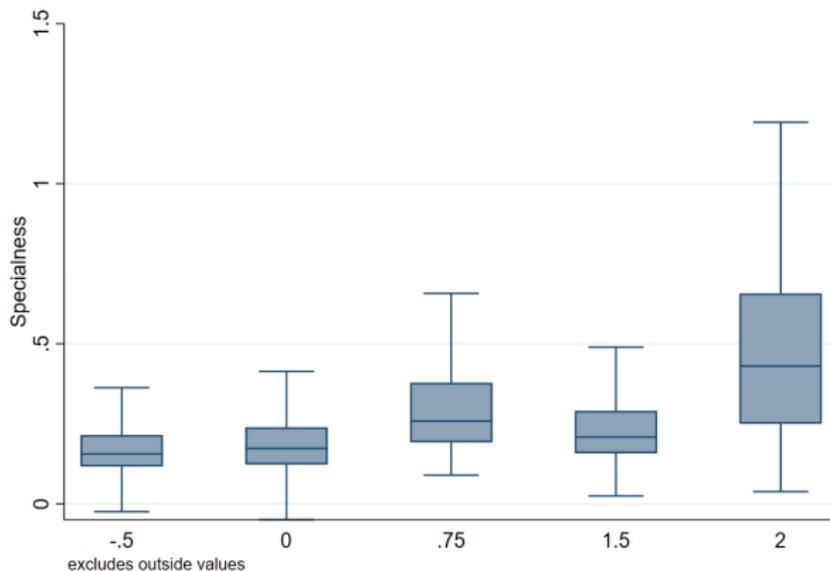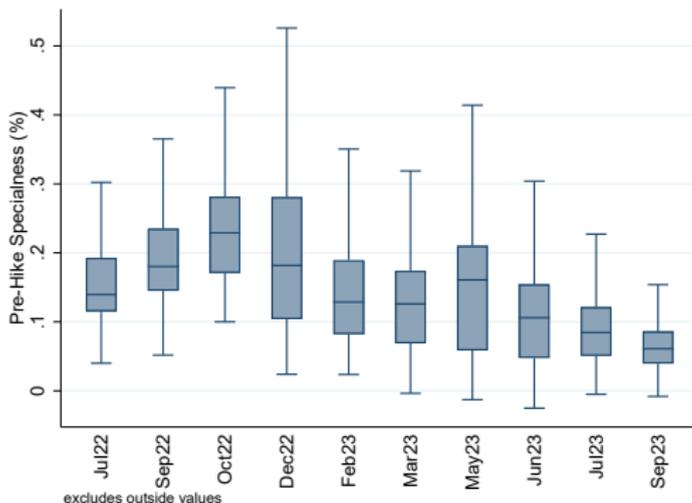

excludes outside values

- The ECB's QE interventions were aimed at lowering long term bonds. By increasing the scarcity of bonds, they lowered repo rates.

- Interest rate reversal is taking place before QE is unwound

- Rate hikes are less-than-passed-through to short-term rates: consequences for the transmission to the yield curve and funding costs

- Rate hikes passthrough depends on the central bank footprint: reduction in the balance sheet and/or SLF expansion ease collateral scarcity and improve pass-through
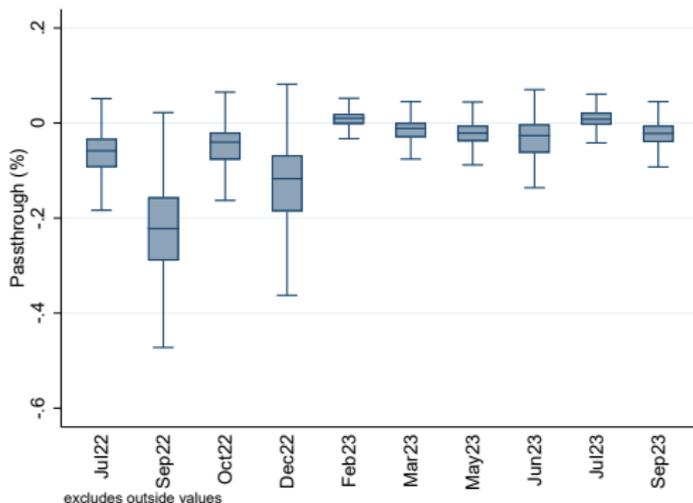
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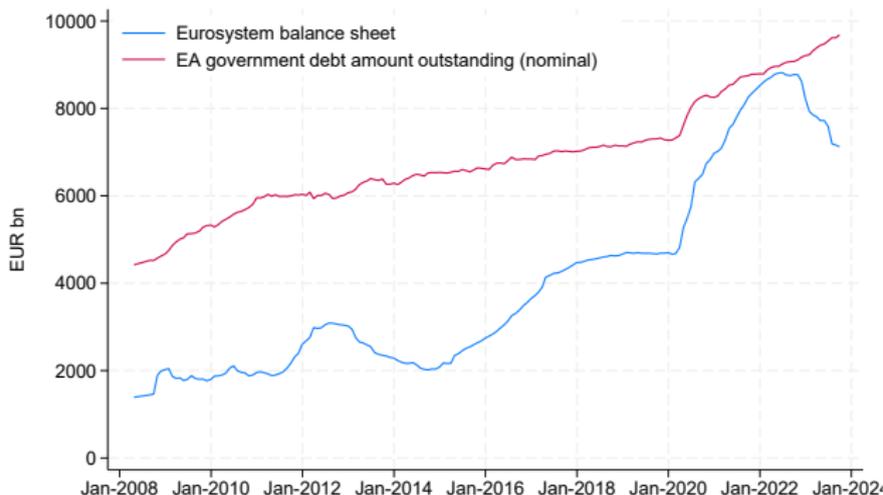
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