

Safe Asset Scarcity and Monetary Policy Transmission

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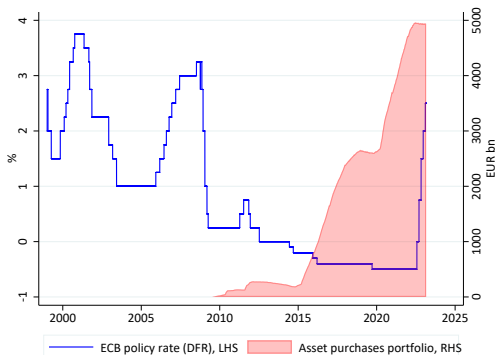
European Central Bank, Darden School of Business, Banque de France

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

EMMEC – June 27, 2024

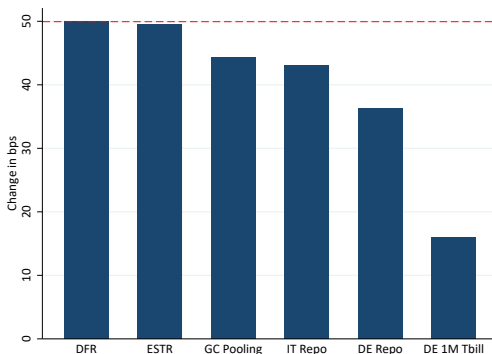
RIISING RATES WITH A LARGE CB BALANCE SHEET

- ▶ First time central banks **raise** interest rates with so **large** balance sheets
- ▶ QE purchases have affected repo markets functioning and collateral scarcity. **Does safe asset scarcity impede pass-through of conventional monetary policy?**



RISING RATES WITH A LARGE CB BALANCE SHEET

- ▶ First 50bp hike (27Jul2022): Imperfect pass-through



- ▶ GC Repo: cash is lent against an unspecified bond inside a basket (eg. any bond from the Eurex GC ECB Extended basket)
- ▶ Special Repo: cash is lent against a specific individual bond (eg. German Bund 2,20% maturing in 2034).

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)

SCARCITY AND THE TRANSMISSION OF HIKES TO MM

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

- ▶ Sources of the specialness premium – how much market participants want to borrow a specific bond in the Special Repo market vs an unspecified bond in the GC market : Duffie (1996)
- ▶ Central bank purchases as a source of specialness: Corradin and Maddaloni (2020), Arrata, Nguyen, Rahmouni and Vari (2020), Greppmair and Jank (2022), Pelizzon *et al.* (2022), Brand *et al.* (2019), Carrera de Souza *et al.* (2022)
- ▶ Monetary policy passthrough in the money market: Bech and Klee (2011), Frost *et al.* (2015), Copeland, Duffie and Yang (2022), Eisenschmidt *et al.* (2022), Ballensiefen, Ranaldo and Winterberg (forth.)
- ▶ Repo rates and bond pricing: Jordan and Jordan (1997), Fontaine and Garcia (2012), D’Amico and Pancost (2022), Ballensiefen and Ranaldo (forth.)
- ▶ The demand for Government bond-backed repo: Krishnamurthy and Vissing-Jorgensen (2012), Greenwood *et al.* (2015), Nagel (2016)

OUR RESEARCH QUESTIONS

- ▶ 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?
What do we learn from a repo market microstructure point of view ?
 - ▶ Repo for bonds that were purchased more during QE show lessened pass-through
 - ▶ Competition or concentration alone does not explain this lack of pass-through
 - ▶ Holder matters, specifically whether they participate in the repo market
- ▶ 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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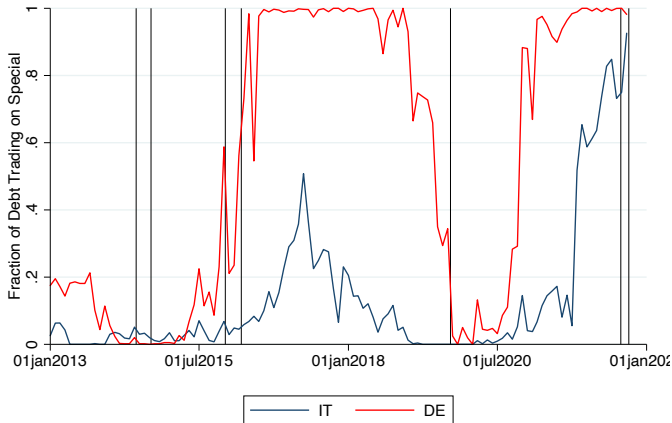
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OUTLINE OF THE PRESENTATION

- ▶ DATA AND EMPIRICAL SET-UP
- ▶ RESULTS
 - ▶ Preliminary Results
 - ▶ Specialness and Pass-through
 - ▶ Bond Prices
- ▶ CHANNELS AND COMPETING EXPLANATIONS
- ▶ CONCLUSIONS

- ▶ **Money Market Statistical Reporting (MMSR) + Securities Financing Transactions (SFT)**: fully identified repo transactions data
 - ▶ **Brokertec/MTS**, additional repo data and bond yields
 - ▶ **ECB asset purchases**: transactions conducted in PSPP/PEPP 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.

RATES, SPECIALNESS, AND ECB PURCHASES



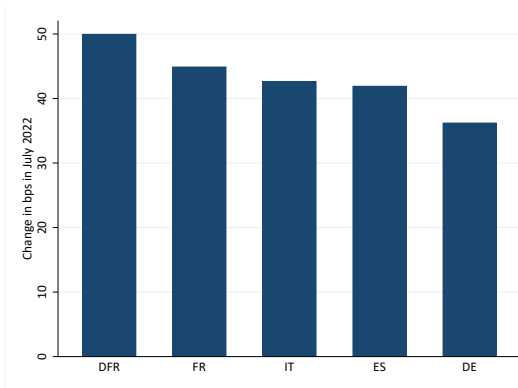
- Fraction of government debt trading on special was very high when hiking cycle starts ($Specialness_{it} > 10bp$).

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PRELIM. RESULTS: PASSTHROUGH IN REPO MARKET

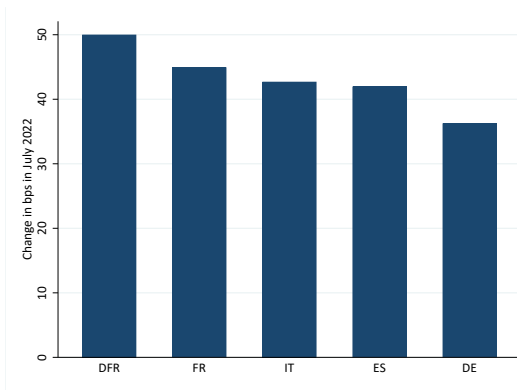
- ▶ Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,
 - ▶ especially depending on the issuer country of the collateral



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

PRELIM. RESULTS: PASSTHROUGH IN REPO MARKET

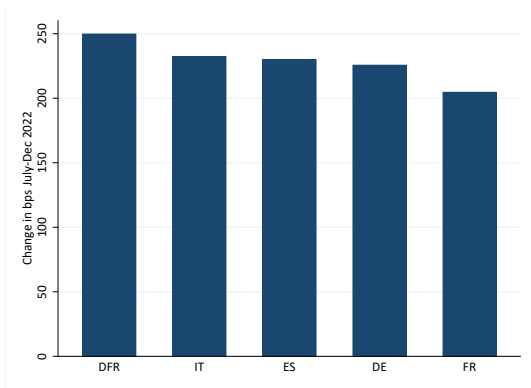
- ▶ Transmission of the policy rate has been near-perfect on unsecured ESTR rate, less so for repo rates,
 - ▶ especially depending on the issuer country of the collateral
- ▶ For the July 2022 rate hike: 50bp, missing 8 for Italy, 13 for Germany



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

PRELIM. RESULTS: PASSTHROUGH IN REPO MARKET

- For the July–December 2022 rate hike series: 250bp, missing 22 for Italy, 50 for France



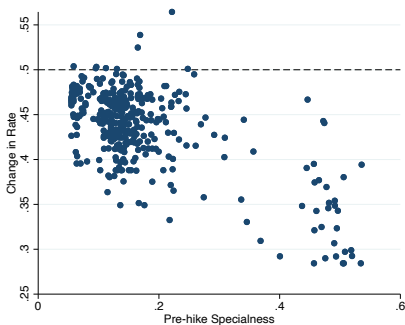
Source: MMSR, GC and SC repo transactions secured by DE, FR, IT, ES government bonds, S/N tenor.

SPECIALNESS AND PASS-THROUGH

- 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

PASS-THROUGH VS QE

- ▶ 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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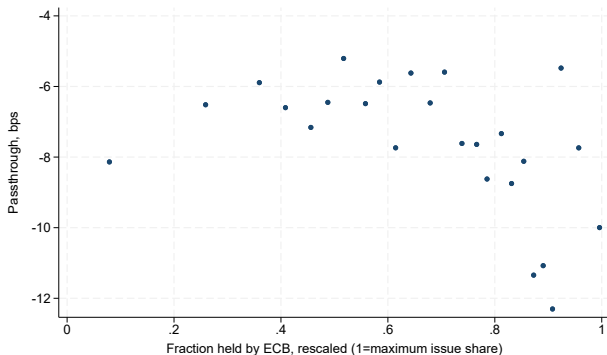
PASS-THROUGH VS QE

- ▶ 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

PASS-THROUGH VS QE

- ▶ Binscatter plotted from 357 gov bonds issued by DE, FR, IT, ES.
- ▶ **Finding:** Worse passthrough to repo collateralized by bonds bought more during QE.

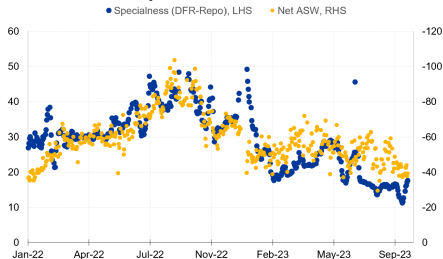


PASS-THROUGH TO YIELDS

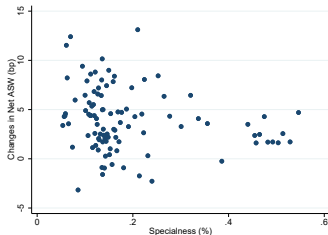
- ▶ **Finding:** Imperfect pass-through leads to lower increase in Yield/NetASW
 - ▶ Larger specialness → smaller pass-through → more spec. dividend
 - ▶ more spec. dividend → higher price → Lower yields
- ▶ Alternative to control for credit risk and IR exposure: (net) Asset Swap spread

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

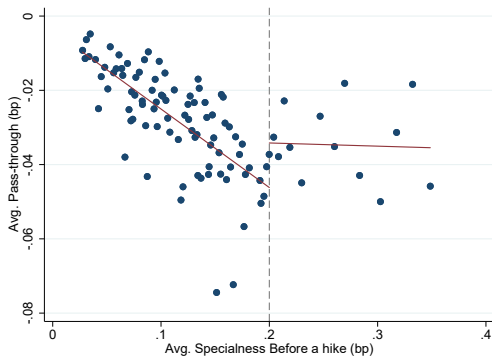
DE Specialness vs NetASW



July Hike: Specialness vs NetASW PT



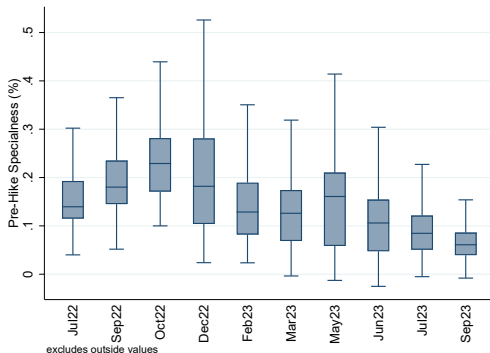
WHAT ELSE DO WE LEARN FROM THE HIKE ?



What else do we learn from all 10 hike of July 2022 to October 2023?

- ▶ Less pass-through for repo-transactions that are collateralized by more special bonds.
- ▶ Clear discontinuity around SLF pricing.
- ▶ Scarcity has abated in 2023, results hold in more compact support
- ▶ Consistent with the increasing availability of bonds

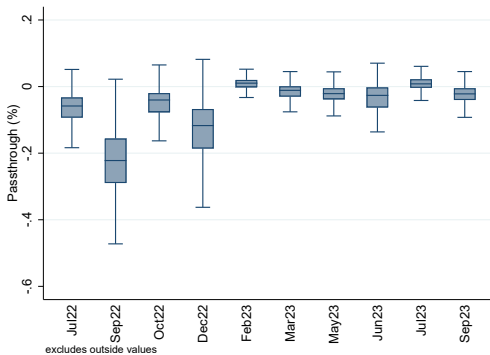
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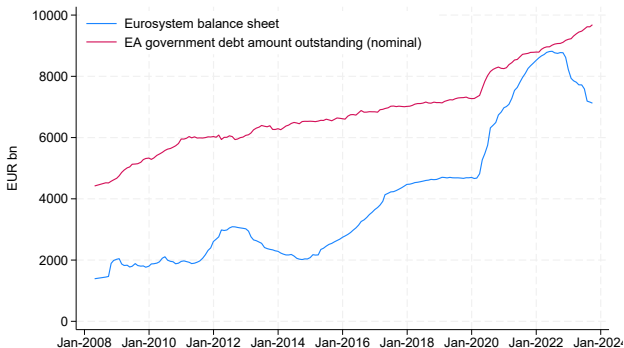
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WHAT IS DRIVING OUR RESULTS?

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
- ▶ Bonds that are on special tend to be held by investors less likely to take advantage of increased specialness
- ▶ Passthrough depends on active participation of bond holders/repo participants: 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 (eg. DFR if banks, or GC). More of this “arbitrage” → better pass-through

DEALER COMPETITION

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

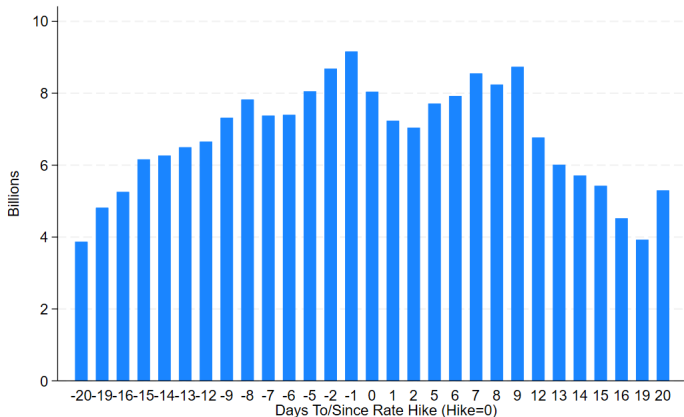
$$Passthrough_{icd} = \alpha + \beta_1 * Spec. premium_{icd} + \beta_2 * X_i + FE_d + FE_c + \epsilon_{icd}$$

	(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.

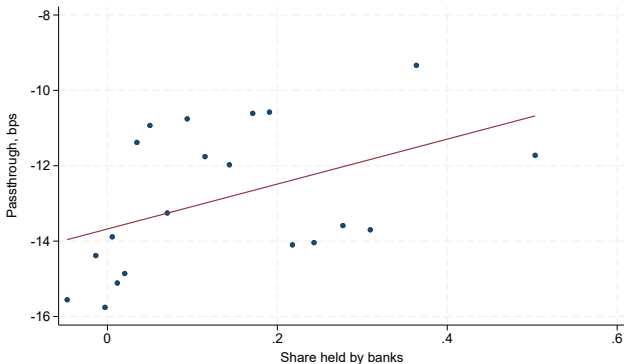
SHORT POSITIONING

- Some indications hedge funds borrowed more securities around rate hikes: shorting in the cash bond market



HOLDINGS AND PASS-THROUGH

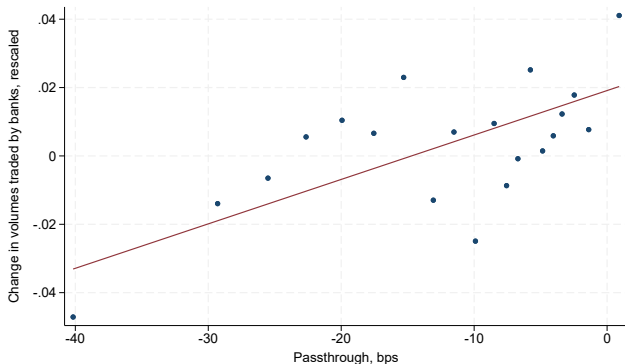
Figure: Passthrough and the impact of bond holding structure



Passthrough in bps, averaged for all rate hikes between July and December 2022. Holding data are from the SHSS dataset as of December 2021. Data on repo transactions are obtained from MTS, Brokertec, and MMSR.

REPO TRADING AND PASS-THROUGH

Figure: Passthrough and volumes traded as collateral by banks



Passthrough in bps, averaged for all rate hikes between July and December 2022. Average volumes at the ISIN level of collateral amount lent in the repo market around rate hikes scaled by the ISIN amount outstanding. Sources: MTS, Brokertec, and MMSR.

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CONCLUSIONS

- ▶ 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