

Bond Convenience Curves and Funding Costs

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- Consider two EUR-denominated investments with same duration
 1. buy a German bond
 2. buy a synthetic safe bond: Italian bond + CDS
- Both have same cash flows \Rightarrow yields should equal
- The latter trades on average at 40bps higher yield, gap spikes in a crisis
- New policy interest due to ECB's Transmission Protection Instrument (announced July 2022)
 - activated if "experiencing a deterioration in financing conditions not warranted by country-specific fundamentals"

European Central Bank

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Spread betting: how will the ECB's new bond-buying tool work?

Policymakers hope new programme will give central bank cover to raise rates without triggering market turmoil

- The gap has several names: inconvenience yield (Jiang et al. 22), CDS-bond basis, segmentation premium

$$icy_t^i(\tau) = y_t^i(\tau) - cds_t^i(\tau) - (y_t^{DE}(\tau) - cds_t^{DE}(\tau)),$$

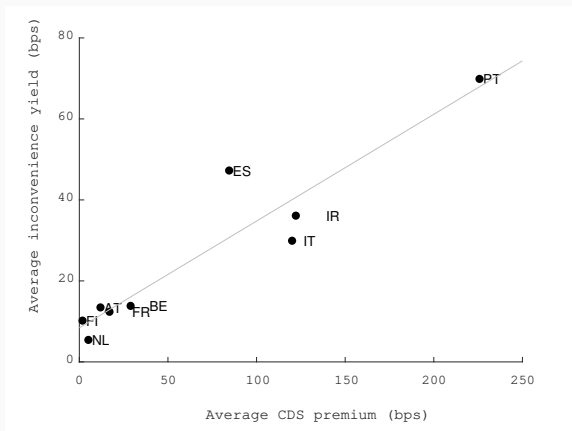
This paper:

- Two assumptions explain eurozone sovereign inconvenience curves:
 - Funding costs on riskier bonds higher
 - Funding costs uncertain and arbitrageurs risk averse
- Use exogenous changes in Eurosystem haircuts to find causal evidence that funding costs affect yields
- Changes in inconvenience yields key for monetary policy transmission to yields spreads

Facts

Stylized Fact 1

Riskier bonds, as measured by CDS premia, command higher inconvenience yields (weaker time-series relation)



plots the average inconvenience yield for each country against the corresponding average CDS premium.

Stylized Fact 2

Inconvenience yields are associated with funding costs and funding risks.

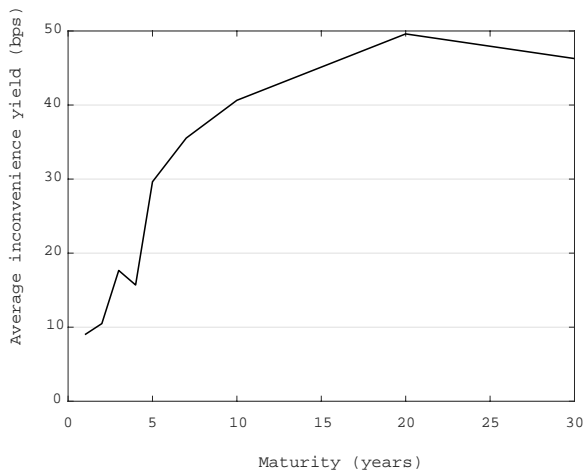
	(1) ICY (\overline{icy}_t^i)	(2) ICY (\overline{icy}_t^i)	(3) ICY Slope $icy_t^i(10Y) - icy_t^i(1Y)$	(4) ICY Change $\Delta^{1M} icy_t^i(1Y)$
CDS diff. ($\overline{cds}_t^i - \overline{cds}_t^{DE}$)	0.037* (1.79)			
Repo rate diff.		0.80** (2.19)		
Repo rate vol.			3.24*** (3.47)	
ICY Slope $icy_t^i(10Y) - icy_t^i(1Y)$				0.106*** (2.61)
R^2	0.084	0.140	0.050	0.042
Country fixed effects	x	x	x	x

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Stylized Fact 3

The inconvenience curve is upward sloping on average



the average term structure of inconvenience yields. For each maturity the inconvenience yields are averaged both over time and countries.

Model

Model: Structure

- Builds on Vaynos & Vila (20) but with two countries and differential bond funding costs
- Debt issued by core riskless but that issued by periphery not
 - Default given by a Poisson jump process with default intensity ψ and severity δ
- An arbitrageur (banks + hedge funds) trades all bonds
- Also preferred habitat investors
 - Demand shock induces funding risk since it implies arbitrageurs must finance more bonds.
- Bond funding costs depend on risk as well as bond funding market liquidity.
- Key assumptions: periphery funding cost $\Lambda_t \geq 0$ and uncertain.

$$\Lambda_t =$$

Constant \times Default probability \times Amount of bonds financed $\equiv \lambda B_t^*$

- Model admits an affine solution for the prices of core, periphery and synthetic safe bonds as well as CDS premia.
- These depend on maturity, level of short rates and the demand shock

Proposition 2 *We can decompose a τ -maturity inconvenience yield to an expected funding cost component and a funding risk component:*

$$icy(\tau) \approx \frac{1}{\tau} \mathbb{E}_t \int_t^{t+\tau} \Lambda_s ds + \text{Funding risk}_t$$

Here $icy_t(\tau) \rightarrow \Lambda_t$ as $\tau \rightarrow 0$. The short end of the convenience yield curve is determined by the current funding cost. The long end also reflects expected future funding costs and a funding risk premium.

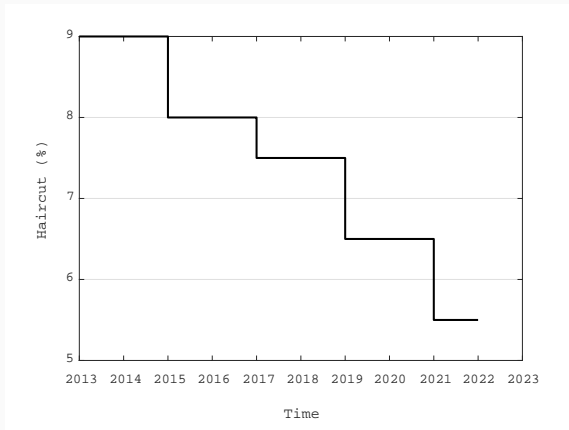
Causal Evidence for the impact of funding costs

Funding from Repo market and Eurosystem

- Key financial intermediaries in the bond market rely on external financing
 - Bonds financed through repo market or through more expensive unsecured funding(unsecured loans, deposits etc.)
- Collateralized funding can be obtained either from the private repo market or Eurosystem
 - Eurosystem TLTRO rates competitive for Italian bonds, but not German
- Funding cost of Italian bond depend on the funding rate and haircut
 - Haircut specifies the amount of funding available for a given collateral

Eurosystem Haircuts

- All eligible Italian bonds have a public Eurosystem haircut
- Focus on haircut changes due to switches in maturity
- Switches depend only on bond's issue date, current date and the thresholds
- For each bond switching buckets there is a control group of similar bonds



Effects of Eurosystem Haircuts on Italian Yields

	$\Delta Yield$			
	(1)	(2)	(3)	(4)
<i>HCI</i>	-0.30 (-0.74)	-0.23 (-1.61)	-0.20 (-1.43)	
<i>HCI1</i>	-1.36*** (-3.44)	-0.39*** (-3.08)	-0.36*** (-2.83)	
<i>HCI2</i>	-0.44 (-1.05)	-0.23 (-1.41)	-0.19 (-1.20)	
<i>HCIALL</i>				-0.25*** (-3.35)
# of Obs.	625981	625981	625981	625981
R^2	0.0001	0.0000	0.0000	0.0000
Bond fixed effects			x	x
Time fixed effects		x	x	x

Note:

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

- *HCI* is indicator variable that gets value of one on the date the haircut changes in Eurosystem data, published at 18.15 CET on ECB's website
- NO effect for German bonds
- NO effect for CDS
- NO effect when integer part of maturity changes without haircut change

Convenience yields and unconventional monetary policy

Convenience yields and unconventional monetary policy

Policy	ICY Share
Collateral Policy Changes	66 %
Securities Market Program	39 %
Outright Monetary Transactions Program	9 %
Draghi Whatever-It-Takes Speech	15 %
Extended APP	36 %
PEPP	54 %
Liquidity Support	38 %
Average	48 %

shows the share of yield spread changes around monetary policy announcements that are due to changes in inconvenience yields.

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