Discussion: The Price of Money: The Reserves Convertibility Premium over the Term Structure

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9th IWH-Fin-Fire Workshop
19 October 2023

Is an asset's degree of convertibility into reserves priced ?

- Central bank money (reserves) are used as means of exchange for all transactions
- An asset's degree of convertibility into reserves could affect its utility and market price
  - The price impact could also vary with the maturity of the asset
- The paper studies this question focusing on the collateral policy of the Eurosystem

The Eurosystem's Collateral Framework

	Coupon type	Residual maturity (years) 0-1	1-3	3-5	5-7	7-10	>10
Panel A: Regular haircuts							
Rating		**Apr. 8, 2010 – Sep. 30, 2013**					
AAA to A–	Fixed	0.5	1.5	2.5	3.0	4.0	5.5
(Category 1)	Zero	0.5	1.5	3.0	3.5	4.5	8.5
BBB+ to BBB–	Fixed	5.5	6.5	7.5	8.0	9.0	10.5
(Category 2)	Zero	5.5	6.5	8.0	8.5	9.5	13.5

The Experiment - Part 1 (differences)

ISIN	Maturity	Haircut (in %)	Rating category	Yield (in %)	Rating agency	Issue rating	Country rating
Panel A: Example 1							
ES00000120C3	Jan. 31, 2015	0.5	1 (AAA to A–)	0.205	S&P	–	BBB
					Fitch	–	BBB+
					Moody's	–	Baa2
					DBRS	**AL**	AL
ES0000011892	Jan. 31, 2015	6.0	2 (BBB+ to BBB–)	0.284	S&P	–	BBB
					Fitch	**BBB+**	BBB+
					Moody's	–	Baa2
					DBRS	–	AL

- Identification of the convertibility premium relies on *haircut inconsistencies*
- The haircut schedule depends on the security ratings (and not the issuer rating)
- At specific dates, two bonds from a same issuer can have different ratings
- This occured repeatedly from April 2010 to December 2014 (1,142 securities)

The Experiment - Part 2 (DID)

- The authors then focus on specific events:

1. June-July 2013: ECB 'corrected' an error in haircut assignment which led to a series of IT and ES bonds downgraded to category 2
2. October 2013: Update of haircut schedule with higher haircut for category 2
3. September 2014: Announcement of move to issuer-level ratings for government bonds
4. December 2014: Implementation of move

Data and specification

- Full sample has 2,454 unique securities with market prices from 2010 to 2015 $\rightarrow$ 1.2 million security-days
- Regression sample focuses on ES and IT and has 249 zero coupon bonds from May 2013 to Jan 2015 $\rightarrow \approx$ 62,000 security days
- For the event study, focus on windows of 10 and 20 days around the event (8 country-events) with country and event specific estimation

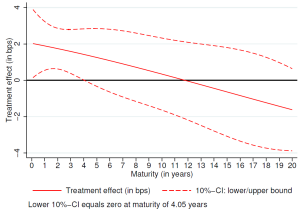
- The main specification is

$$\text{yield}_{it} = \ldots + \Gamma_4' \, \text{Mat}_{it} \times 1_{\text{Treated},i} \times 1_{\text{Post},t} + \varepsilon_{it}. \tag{1}$$

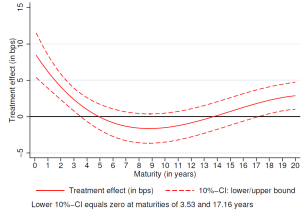
were

- Mat_{it} is a 4×1 vector $\begin{bmatrix} 1 & x_{it} & x_{it}^2 & x_{it}^3 \end{bmatrix}'$, where x_{it} is the residual time-to-maturity
- $1_{\text{Treated},i}$ is a dummy for category 2 (high haircut)
- $1_{\text{Post},t}$ is the event dummy

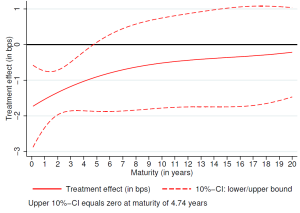
Main Results



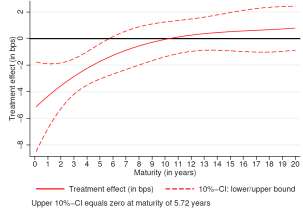
(a) First divergence
August 9, 2013



(b) Haircut update
October 1, 2013



(c) Harmonization announcement
September 1, 2014



(d) Harmonization implementation
December 15, 2014

Praise

- Large data collection exercise
- Detailed documenting of collateral rules
- Creative use of a policy ‘inconsistency’
- Big question

Contribution / Interpretation

- The authors currently interpret their finding relative to e.g. new monetary models à la Lagos, Rocheteau and Wright (2017) and in the tradition of Hicks (1939)
- Key in their argument is that haircuts determine the convertibility in *central bank reserves*
- This differentiates the paper from the work of e.g. Krisnamurthy and Vissing-Jorgensen (2012) or Nagel (2016) who focus on safe assets such as Treasuries
- While central bank reserves differ from treasuries, how do they differ from private money (e.g. bank deposits)? (can also be used in transactions)
- Reserves are specific because central banks are specific
  - Lender of last resort (Acharya, Gromb and Yorulmazer 2012)
  - Regulator
- If focus on Lagos, Rocheteau and Wright (2017), what are the implications for these models?
  - Is there e.g. a key parameter to estimate?

State contingent convertibility premium

- The authors document how the convertibility premium varies across the term structure, using data from May 2013 to January 2015
  - After the 2012 sovereign debt crisis and 'whatever it takes' / OMT announcements
  - Before QE and PSPP
- In practice the convertibility premium could vary
  - Over time: financial stress might increase the value of liquidity
  - Across users / intermediaries (e.g. liquidity constrained)
- Suggestions
  - Do you have cases of haircut inconsistencies in e.g. 2011-2012? Any variation after QE?
  - What about other countries than IT and ES? (stylized facts could suffice?)

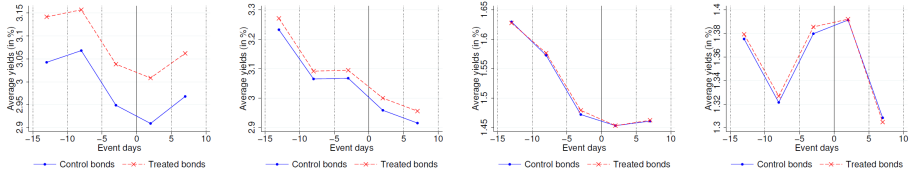
Eurosystem collateral rules and the private market

- The Eurosystem collateral rules can be used as a benchmark in private markets
- For instance Eurex mentions that "Eurex Clearing accepts approximately 10.000 securities that are as well admissible as collateral for the European Central Bank or the Swiss National Bank."
  - "Collateral can be used to cover margin requirements arising from any product cleared by Eurex Clearing"
- If so, convertibility premium also captures e.g. opportunity to use as collateral in private transactions?

On the run / Off the run

- The haircut inconsistencies are striking: same issuer, same maturity
- What is then the difference? (appart from the different ratings)
- One well known feature of bond markets is that of 'on the run' bonds: bonds with most recent issuance dates tend to be more liquid and trade at a premium
- Could e.g. on the run bonds benefit from better ratings on average, thus biasing the estimates?

Parallel trends



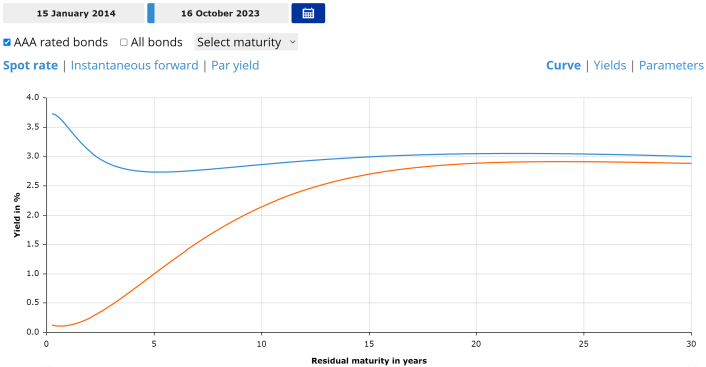
August 9, 2013
Italy

June 3, 2013
Spain

(a) First divergence (b) Haircut update October 1, 2013 (c) Harmon. announcement September 1, 2014 (d) Harmon. implementation December 15, 2014

- Reassuring that both bond groups have similar rate movements before the event.
- But shouldn't we expect a divergence between treatment and control groups after the event?

On yield curve fitting



- The maturity of bonds in the treatment group is higher than in the control group
- Could this yield to overestimating the long term rate for the control group and underestimating the short end for treatment?
- What is the R2 by maturity? Using simple maturity group dummies?

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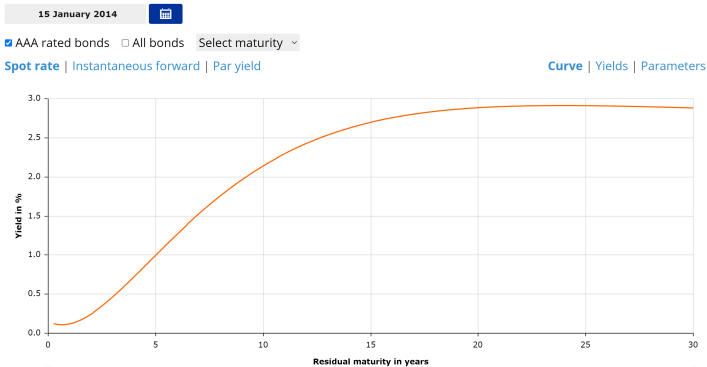

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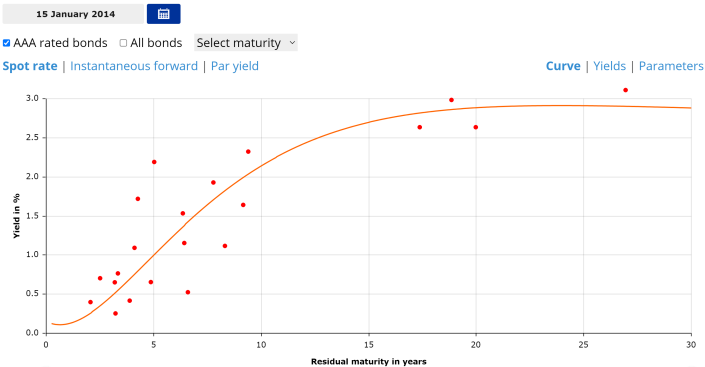

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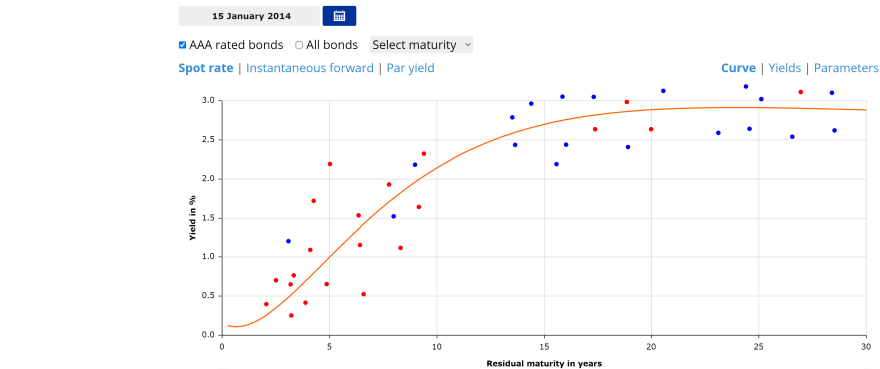

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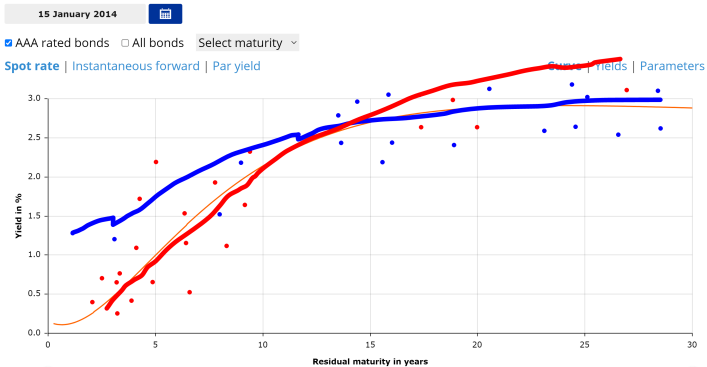

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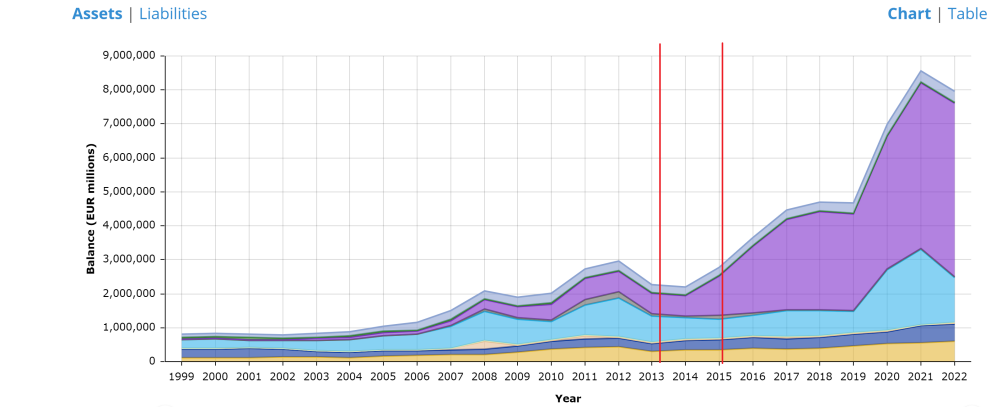
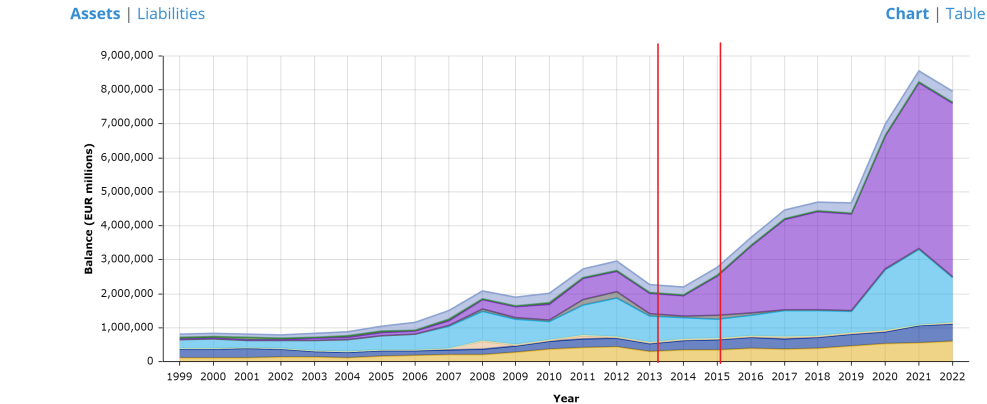
Welfare / Policy Implications (1)



- The balance sheet of the ECB has changed dramatically since 2007
- Collateral framework was substantially broadened to include e.g. credit claims (loans)
- Lending through repo operations is currently at €1.2 trillion, down from €2.1 trillion but much higher than the 2007 levels

Welfare / Policy Implications (2)



- Would the convertibility premium change with 'narrow' monetary policy implementation (collateral becomes less attractive?)
- Conversely, would a change in collateral policy affect the convertibility premium?
- If so, is there an 'optimal' convertibility premium?

More comments

- Have you tried using bonds that change maturity bucket? (RDD)
- What application to the US? (where the Fed uses direct purchases and banks cannot 'choose' the asset purchased)
  - Also relevant in Europe with QE
- Can you give evidence on the rating agencies? (e.g. if some agencies are systematically more optimistic but are not listened by the market)
- Semantics: Are these policy 'mistakes'? What is the 'right' rule? Maybe the issuer rating rule is inconsistent?
  - For risky countries (e.g. Argentina), different bonds can carry very different risks
- Small point: in tables, focus on relevant info only (e.g. remove foreign currency in T1)?