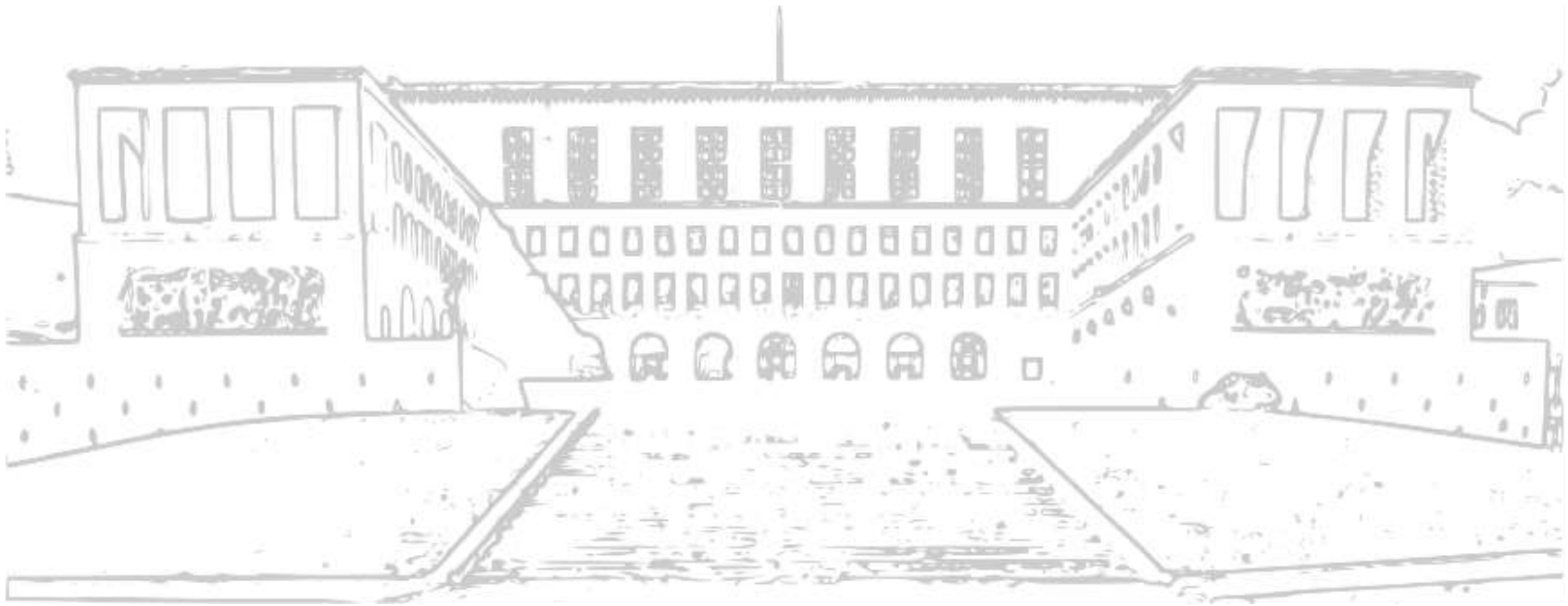


FINANCIAL MARKETS AND INSTITUTIONS

MONEY MARKETS

A.Y. 2021/2022

Prof. Alberto Dreassi – adreassi@units.it



DEAMS
University
of Trieste

AGENDA



- Why do money markets exist?
- Who is active on MM?
- What is traded in MM?

NATURE AND PURPOSE

Aims:



- Provide **low-cost** and **quick** funds for short-term liquidity shortages
- Allowing **returns** and **safety** for short-term funds' availability

How?

- Trading quasi-money instruments (**not money!**)
 - mostly OTC
 - very liquid (active secondary market)
 - short-term (less than 1y, mostly within 3m)
- Large denomination: millions €/ \$ per deal
- Low risk of default:
 - CBs/banks are the main operators, gov. bonds used extensively
 - safety-nets



NATURE AND PURPOSE

Why so important?

- Markets are not perfectly efficient and are limited by regulation
- Banks need to cover short-term funds' excesses or deficits:
 - reserve requirements designed to avoid bank-runs
 - regulation for financial stability limits competition
 - money markets host wholesale operations: less restrictions
- All make **treasury decisions** more often than investing/borrowing



INTERMEDIARIES

The same intermediaries act as both lenders and borrowers, from time to time

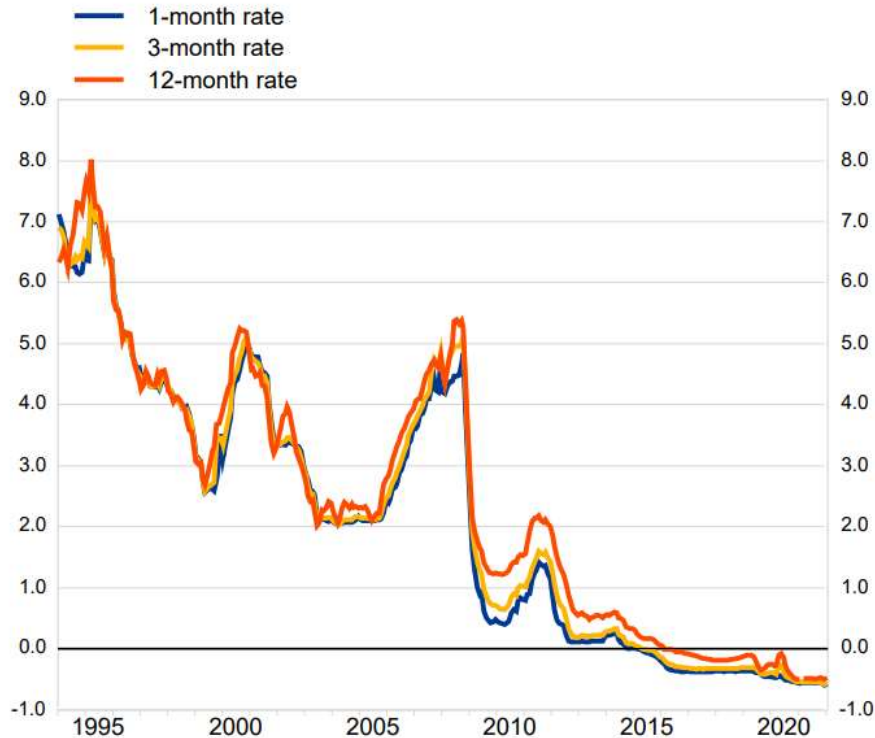
- Gov.'s treasuries: borrower only
- Central banks: monetary policy
- Banks: short-term gov. bonds, CDs, acceptances, interbanking deposits, repos, ...
- Investment corporations and securities' firms:
 - Money brokerage firms and MMMF
 - Finance companies, insurers and pension funds
- Few major non-financial corporations



DATA

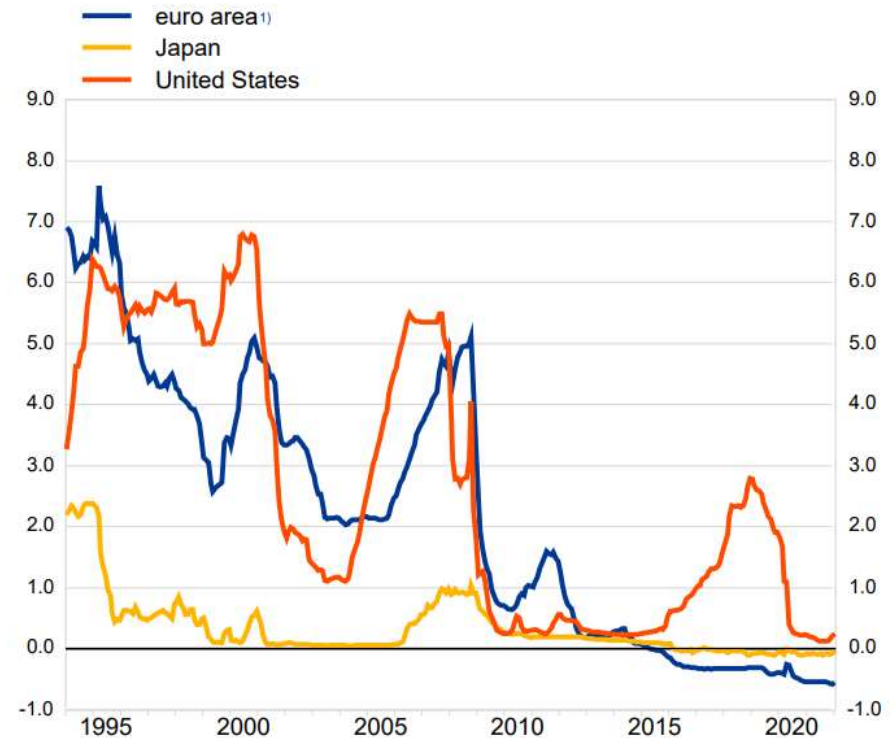
The following data, from ECB, reports figures on the money market.

4.6.2 Euro area money market rates ¹⁾ (monthly averages; percentages per annum)



Source: Refinitiv and ECB calculations.

4.6.3 3-month money market rates (monthly averages; percentages per annum)



Source: Refinitiv and ECB calculations.

DATA

The following data, from ECB, reports figures on the money market.

4.6.1 Money market rates for the euro area, the United States and Japan

(percentages per annum; period averages)

	Euro area ¹⁾						United States	Japan
	Euro short-term rate (€STR) ²⁾	Overnight deposits (EONIA)	1-month deposits (EURIBOR)	3-month deposits (EURIBOR)	6-month deposits (EURIBOR)	12-month deposits (EURIBOR)	3-month deposits (LIBOR)	3-month deposits (LIBOR)
	1	2	3	4	5	6	7	8
2019	-0.48	-0.39	-0.40	-0.36	-0.30	-0.22	2.33	-0.08
2020	-0.55	-0.46	-0.50	-0.43	-0.37	-0.31	0.64	-0.07
2021	-0.57	-0.48	-0.56	-0.55	-0.52	-0.49	0.16	-0.08
2020 Q4	-0.56	-0.47	-0.55	-0.52	-0.51	-0.48	0.23	-0.10
2021 Q1	-0.56	-0.48	-0.56	-0.54	-0.52	-0.50	0.20	-
Q2	-0.57	-0.48	-0.56	-0.54	-0.51	-0.48	0.16	-
Q3	-0.57	-0.48	-0.56	-0.55	-0.52	-0.49	0.13	-0.09
Q4	-0.57	-0.49	-0.57	-0.57	-0.54	-0.49	0.17	-0.08
2021 Jan.	-0.56	-0.48	-0.56	-0.55	-0.53	-0.50	0.22	-0.08
Feb.	-0.56	-0.48	-0.55	-0.54	-0.52	-	0.19	-0.09
Mar.	-0.56	-0.48	-0.55	-0.54	-	-0.49	0.19	-0.08
Apr.	-0.57	-0.48	-0.56	-0.54	-0.52	-0.48	0.19	-0.07
May	-0.56	-0.48	-0.56	-0.54	-	-0.48	0.15	-0.09
June	-0.56	-0.48	-0.55	-0.54	-0.51	-0.48	0.13	-0.09
July	-0.57	-0.48	-0.56	-0.54	-0.52	-0.49	0.13	-0.08
Aug.	-0.57	-0.48	-0.56	-0.55	-0.53	-0.50	0.12	-0.10
Sep.	-0.57	-0.49	-0.56	-0.55	-0.52	-0.49	0.12	-0.08
Oct.	-0.57	-0.49	-0.56	-0.55	-0.53	-0.48	0.13	-0.08
Nov.	-0.57	-0.49	-0.57	-0.57	-0.53	-0.49	0.16	-0.09
Dec.	-0.58	-0.49	-0.60	-0.58	-0.54	-0.50	0.21	-0.08
2022 Jan.	-0.58	-	-0.56	-0.56	-0.53	-0.48	0.25	-0.03

DATA

The following data, from ECB, reports figures on the overall European money market.

Weighted average rate for wholesale sector borrowing in the unsecured segment by tenor and maintenance period

(percentages)



Euro money market statistics

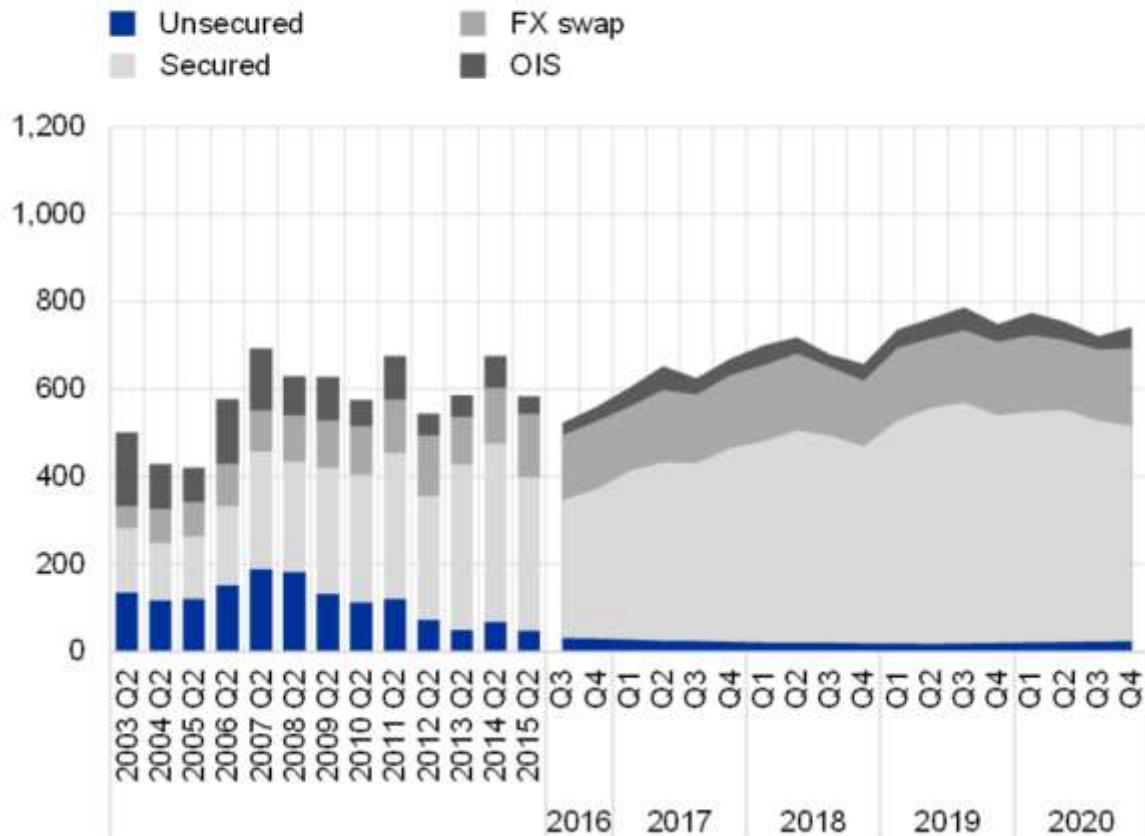
		Turnover (EUR billions)				Average rate O/N (percentages)	
		Daily average		Total			
		MP 6 2021	MP 7 2021	MP 6 2021	MP 7 2021	MP 6 2021	MP 7 2021
Unsecured	Borrowing, wholesale	120	120	4,184	4,193	-0.56	-0.56
	Of which, interbank	12	12	408	413	-0.57	-0.57
	Lending, interbank	7	6	256	225	-0.44	-0.43
Secured	Borrowing, wholesale	409	390	14,318	13,650	-0.55	-0.6
	Lending, wholesale	328	313	11,466	10,952	-0.58	-0.62

DATA

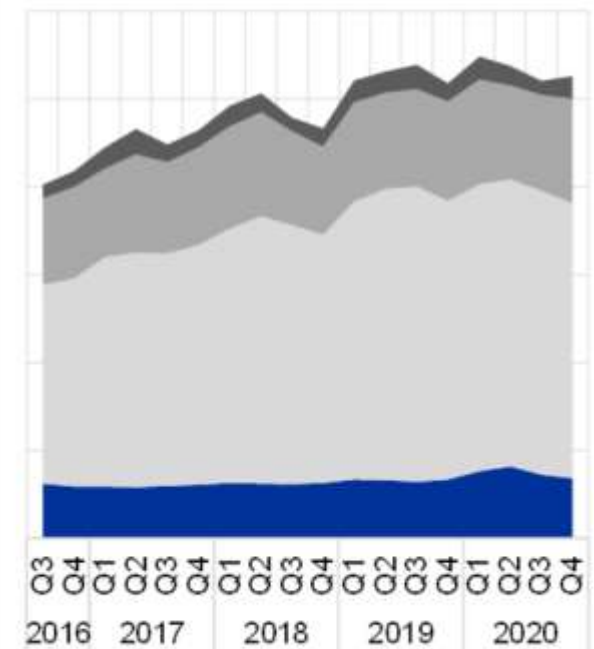
Market share per segment

(EUR billions)

a) Interbank and CCP



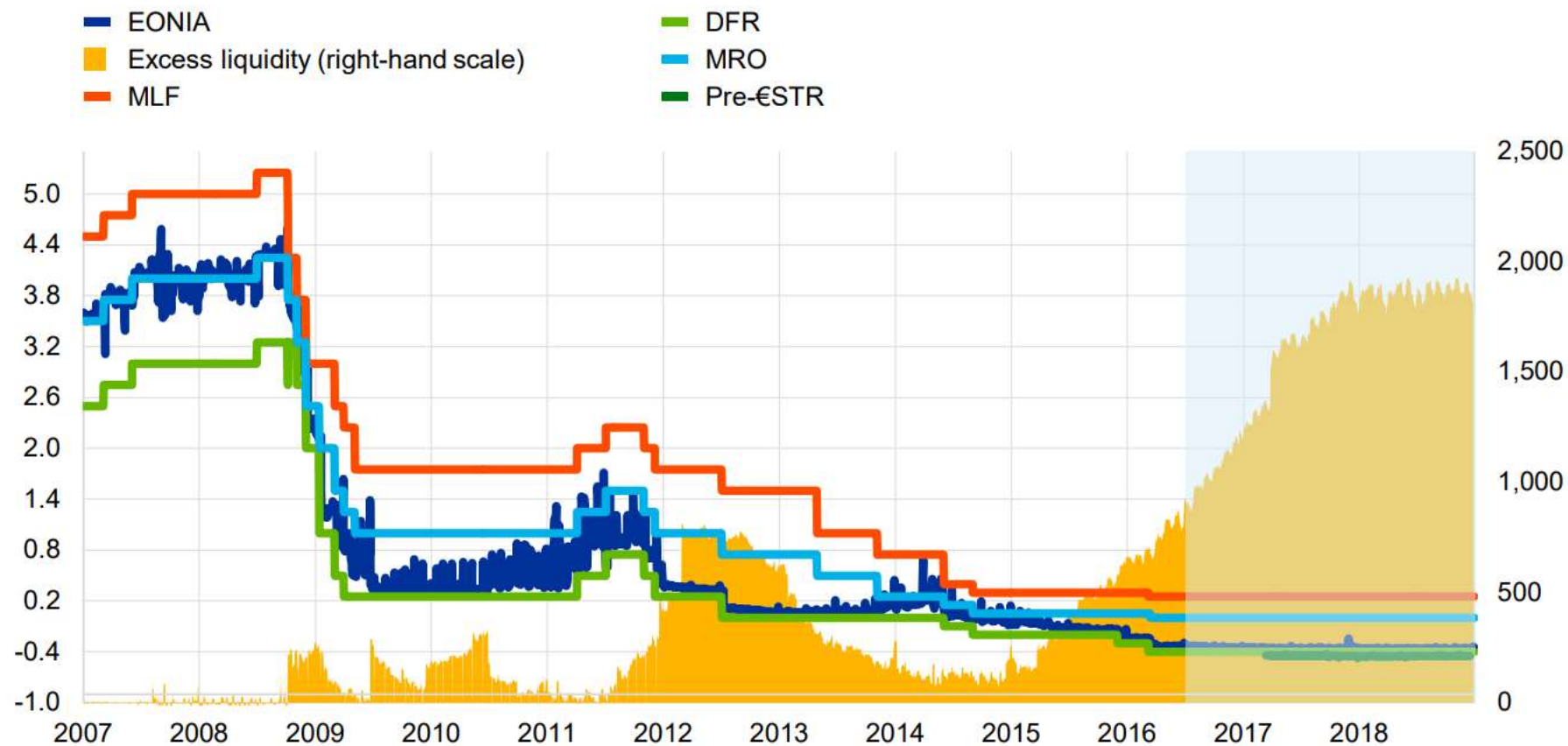
b) All counterparties



INTERMEDIARIES

Key ECB interest rates, market reference rates and excess liquidity

(left-hand scale: percentages; right-hand scale: EUR billions)



PRODUCTS AND SECURITIES

Short-term gov. bonds:

- Short-term liquidity (f.i. gap between tax inflows and salaries of public employees)
- Usually ZC
- Very low IR: low default-risk, low inflation risk, low liquidity risk
- Placement usually occurs through biddings (competitive and noncompetitive)
- Dematerialisation
- Very low IR



BIDDINGS

Competitive bidding:

- Maturity, amount and features are announced
- Operators make P/Q bids that are classified by the offered price (H to L) or, equivalently, required yield (L to H)
- Bids are accepted until the total amount is achieved
- Each bid is priced as bidded (yet other rules apply)



Noncompetitive bidding:

- Bidders communicate only amounts (not prices)
- All offers are accepted and priced through a linked competitive bidding

Regulation is needed to avoid **market cornering**

BIDDINGS

Auction Results: 12 MONTH BOTS
Date: January 12, 2022 - January 13, 2022

ISIN Code	IT0005480345
Tranche	1st - 2nd
Days to Maturity	364
Issue date	January 14, 2022
Maturity Date	January 13, 2023
Auction Date	January 12, 2022
Settlement Date	January 14, 2022
Amount Offered	6,500.000
Amount Bid	9,128.000
Amount Allotted	6,500.000
Weighted Average Price	100.451
Weighted Average Yield	-0.444%
Maximum Accepted Yield	-0.437%
Minimum Accepted Yield	-0.450%
Bid To Cover Ratio	1.40
Cut-off Yield	0.555%
Gross Compound Yield	-0.444%
Price for fiscal purpose	100.000
Amount Offered to Specialists	650.000
Amount Bid to Specialists	697.675
Amount Allotted to Specialists	650.000

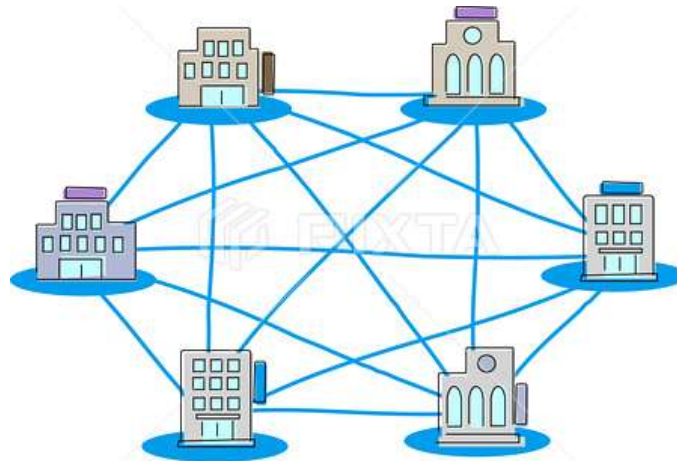
Issue Volume

Outstanding	7,150.000
Amounts allotted to Specialists in supplementary placements	650.000

PRODUCTS AND SECURITIES

Interbanking deposits (f.i. e-MID):

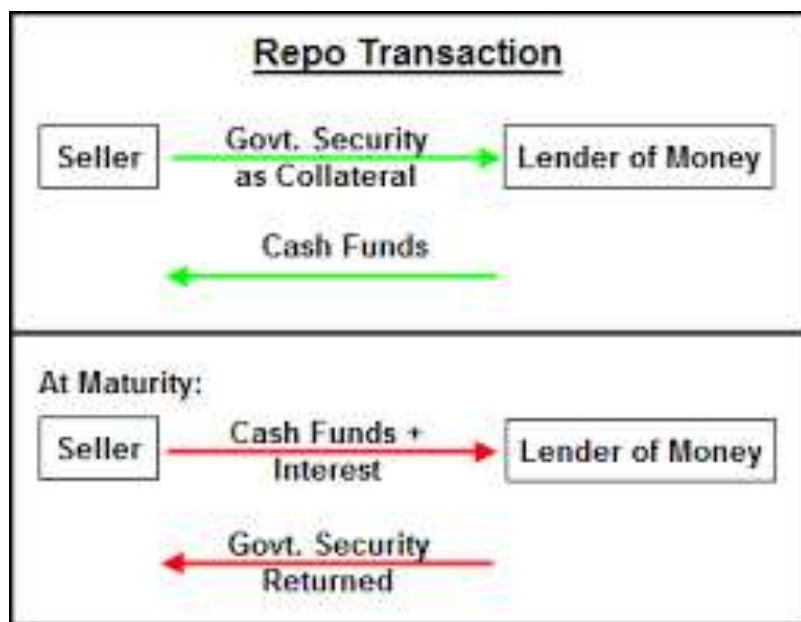
- Funds mostly **extremely short-term (1d)** between banks
- **Vast volumes**: European overnight averaging around 20 billions € daily only
- Both **unsecured** (no collateral, falling) and **secured**
- For **reserve requirements and temporary liquidity gaps**
- Typical maturities are **overnight** ($t, t+1$), **tomorrow next** ($t+1, t+2$), **spot next** ($t+2, t+3$), but also **on-sight** (t, n) and **broken date** (k, n) are available
- IR developed here (Euribor, Eonia, ...) influence other IR (and financial products)
- CBs **influence** these rates by acting on reserves or by producing/absorbing liquidity



PRODUCTS AND SECURITIES

REPOs:

- Very short term but longer than typical interbanking funds
- Loan is **collateralised by securities** traded in an active market (mostly, gov. bonds)



- Specified maturity, current market price, specific future price
- CBs are also active in the repo market, injecting or absorbing liquidity
- Low default risk

PRODUCTS AND SECURITIES

CDs:

- Securities issued by banks documenting a deposit and bearing a **maturity date** and **interest rate** (fixed or variable), usually closely tracking **inflation** or **short-term gov. bonds with a premium**
- **Could be bearer instruments**, allowing an easier negotiability (yet AML applies)
- Maturities are generally **between 1m and 4m**, concentrated in shorter maturities
- **High face values**: mostly greater than 1 million \$

Commercial paper:

- **Unsecured** promissory notes, mostly within 20-45 days and ZC
- **Only major and secure corporations as issuers** (liquidity/safety concerns)
- **Secondary markets are not deep and liquid**
- **Could be indirectly secured by a banking line of credit**
- **Asset-backed commercial paper (ABCP)**: secured by a specified asset (f.i. mortgages), quality of security depends on pledged assets (as happened for RMBS)

Banker's acceptances and other instruments are less relevant (we'll see **derivatives!**)

PRODUCTS AND SECURITIES

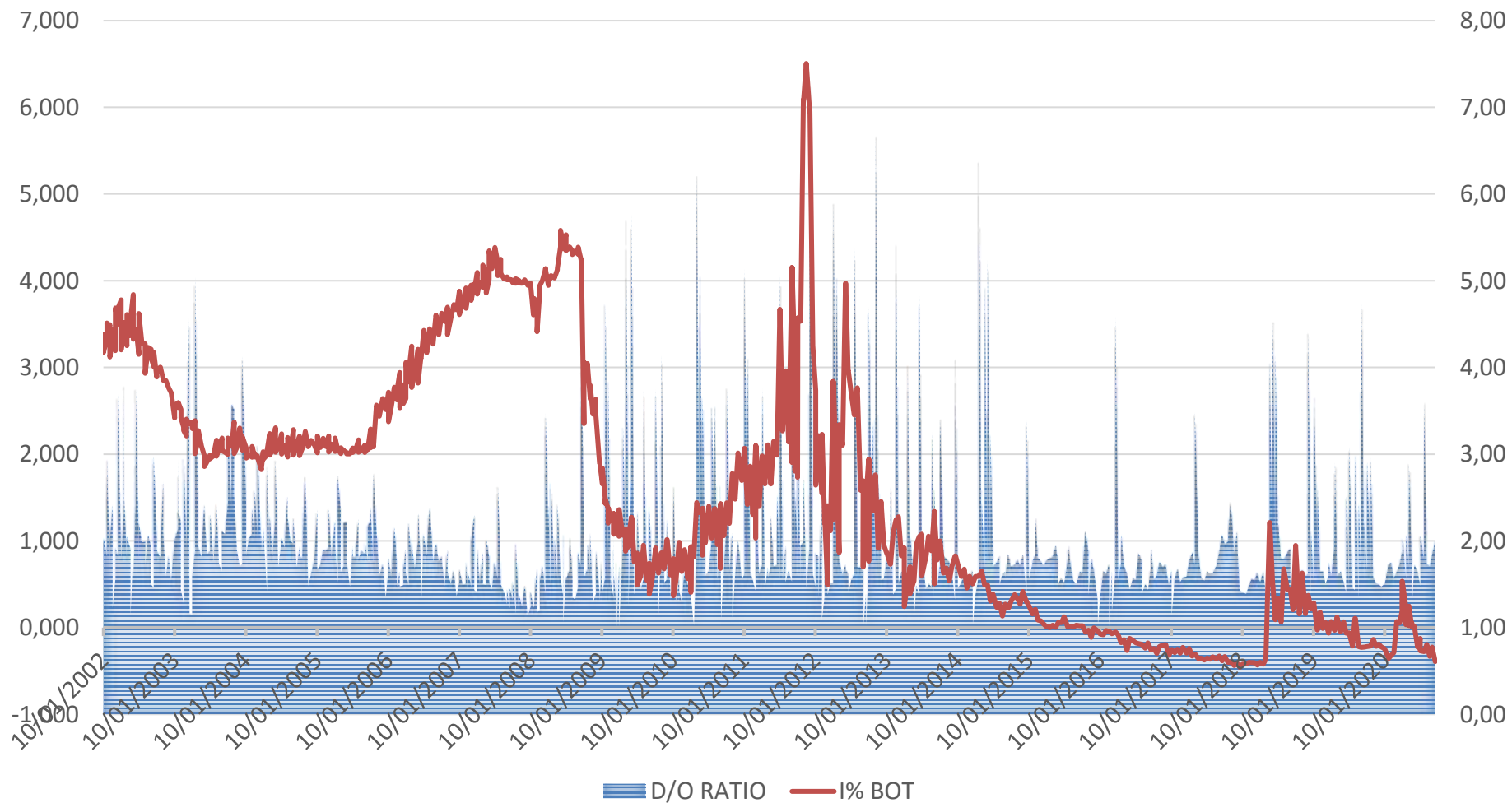
Eurodollars:

- Deposits in USD outside the US, originated by WWII and internal regulation
- Created the role of the London interbank market, developing reference IR such as LIBOR (London Interbank Offer Rate) and LIBID (London Interbank Bid Rate)
- Deep and highly competitive market
- Maturities and other features similar to interbanking funds
- Also Eurocurrencies, Eurodollar CDs, ...(yet thin markets)



EXAMPLES

1. The following graph presents the annual return on Italian short-term bonds (BOT) emerged during competitive biddings. Comments?



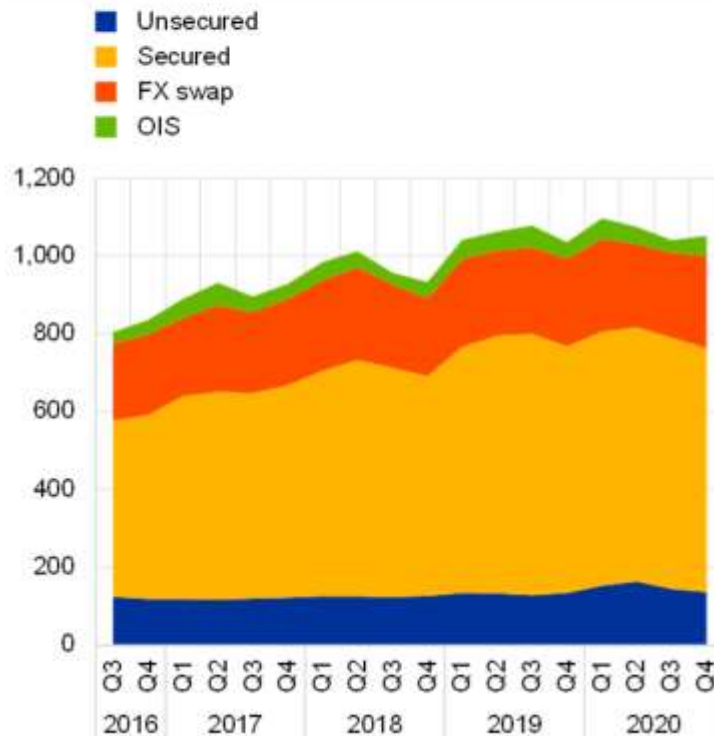
EXAMPLES

2. Consider the following data from ECB on Euro money market transactions. As presented:

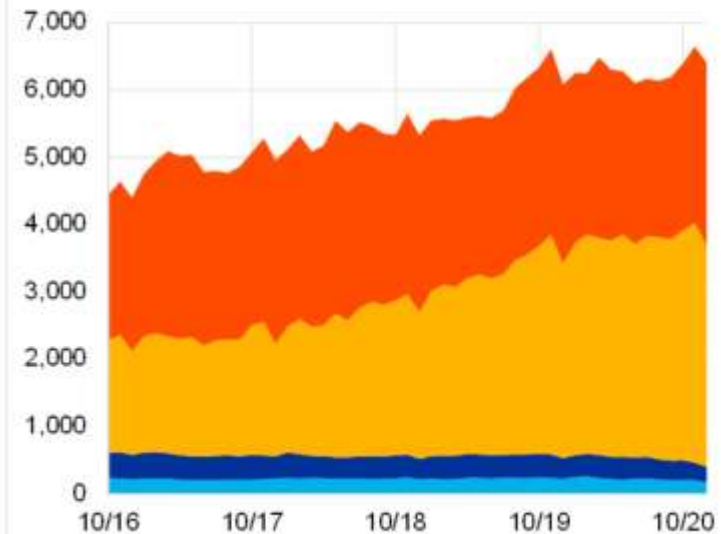
Overview of the size of the euro money market

(EUR billions)

a) Daily transaction volumes (flows)



b) Outstanding amounts (stock)



OIS: Overnight Index Swap (ON vs fixed rate)
FX swaps: foreign exchange swap (currencies)

EXAMPLES

3. Consider the following data from ECB on European money markets. Any comments?

Unsecured yield curve and volume evolution

(left-hand scale: yield, percentages; right-hand scale: volume, EUR billions)

