

Government Bond Data Report

European market data update

Q4: 2019



Table of Contents

Table of Contents	2
Highlights and Market Environment	4
1. Annual changes in Government Bond average daily trading volumes.....	4
(4Q19 vs 4Q18) Selected European jurisdictions	4
2. Quarterly change in Government Bond average daily trading volumes.....	4
(4Q19 vs 3Q19) Selected European jurisdictions	4
4. EU government bonds data summary box	4
5. Seasonality of EU government bond trading (quarterly trading volumes, average daily, EUR bn).....	5
6. Outstanding EU green sovereign bonds (2006-2019, EUR bn).....	5
7. Number of credit rating upgrades assigned by Fitch, Moody's and S&P by country (2018-2019 Ytd).....	5
8. Various valuation metrics (Dec 19, Mar 20).....	6
Major upcoming regulatory, legislative and policy initiatives	6
1. Issuance	7
1.1 EU Government Bond gross issuance (EUR bn)	7
1.2 EU Treasury Bills gross issuance (EUR bn).....	7
1.3 Eurozone bonds and bills gross issuance (Ytd, EUR bn)	7
1.4 Non-Eurozone bonds and bills gross issuance (Ytd, EUR bn)	7
1.5 Euro area net sovereign debt issuance (EUR bn)	7
1.6 UK Gilts net issuance (GBP bn)	7
2. Recent auctions and primary dealers	8
2.1 Average bid-cover ratios and issued volumes in selected jurisdictions (EUR bn)	8
2.2 Average bid-cover ratios by tenor (years) of issued instrument.....	8
2.3 Average bid-cover ratios by size of issued instruments	8
2.4 Average auction size in selected European jurisdictions (EUR bn).....	8
2.5 Average auction size in selected jurisdictions (EUR bn).....	8
2.6 Average auction size in selected jurisdictions (EUR bn).....	8
2.7 Average bid-cover ratios by jurisdictions.....	9
2.8 Average bid-cover ratios by jurisdictions.....	9
2.9 Average bid-cover ratios in selected jurisdictions: 2013-19	9
2.10 Number of primary dealers relative to historic number	10
2.11 Average and median number of primary dealers in selected EU countries	10
2.12 Number of primary dealers in Europe by country: 2006-20	10
3. Outstanding	11
3.1 Outstanding debt securities issued by Central Governments (Nominal, EUR tn).....	11
3.2 European government bonds outstanding by country (EUR tn).....	11
3.3 Change in outstandings 3Q19 to 4Q19 (EUR bn).....	11
3.4 % Change in outstandings from 3Q19 to 4Q19	11
3.5 European outstanding green government bonds (EUR bn)	11
3.6 European outstanding green government bonds by country (EUR bn)	11
3.7 Average years to maturity for outstanding government bonds in EU countries.....	12
3.8 Quarterly change in weighted average years to maturity for outstanding government bonds 3Q19 to 4Q19	12
3.9 European government bonds outstanding by currency (EUR tn).....	12
3.10 European government bonds outstanding by current rating of issuer (EUR tn).....	12
4. Credit quality	13
4.1 Long-term sovereign credit rating (Central and Northern Europe).....	13
4.2 Long-term sovereign credit rating (Nordics and Southern Europe).....	13
4.3 Long-term sovereign credit rating (Visegrad 4 and Baltic states)	13
4.4 Long-term sovereign credit rating (Balkans, CY, MT and LU)	13
4.5 European rating actions on long-term sovereign credit ratings (Ytd).....	13
5. Secondary market trading volumes and turnover ratios	14
5.1 EU28: Average daily trading volumes (Government and sovereign bonds, EURbn).....	14
5.2 Eurozone: Average daily trading volume (bonds and bills, EURbn)	14
5.3 United Kingdom: Average daily trading volume (bonds only) and turnover ratio	14
5.4 Germany: Average daily trading volume (aggregated bonds and bills) and turnover ratio	14
5.5 Italy: Average daily trading volume (bonds and bills) and turnover ratio.....	14
5.6 Spain: Average daily trading volume and turnover ratio	14
5.7 Portugal: Average daily trading volume and turnover ratio	15
5.8 Belgium: Average daily trading volume and turnover ratio.....	15
5.9 Sweden: Average daily trading volume and turnover ratio.....	15
5.10 Ireland: Average daily trading volume (aggregated bonds and bills) and turnover ratio	15
5.11 Netherlands: Average daily trading volume (bonds only) and turnover ratio	15
5.12 France: Average daily trading volume (bonds only) and turnover ratio	15
5.13 Denmark: Average daily trading volume (bonds and bills) and turnover ratio.....	16
5.14 Greece: Average daily trading volume (bonds only) and turnover ratio.....	16
5.15 Poland: Average daily trading volume (bonds only) and turnover ratio.....	16
5.16 Finland: Average daily trading volume (aggregated bonds and bills) and turnover ratio.....	16
5.17 Hungary: Average daily trading volume and turnover ratio	16
5.18 Bulgaria: Average daily turnover volume and turnover ratio.....	16
5.19 Romania: Average daily turnover ratio.....	17
5.20 Quarterly change in average daily turnover volumes of EU government bonds: 3Q19 to 2Q19	17

5.21 Annual change in average daily turnover volumes of EU government bonds: 3Q18 to 3Q19.....	17
6. Valuations	18
6.1 Selected European 10Y spot yields.....	18
6.2 Sovereign spot yield curve of selected jurisdictions: 12 March 2019	18
6.3 Slope: 1Y10Y spread (bps).....	18
6.4 Market-implied inflation expectations (EuroZone).....	18
6.5 Overnight index swap (OIS) yield curve: 12 March 2020.....	18
6.6 5Y Sovereign Credit Default Swap (CDS, bps)	18
Annex	19

Highlights and Market Environment

This report provides a comprehensive data source with updated statistics of the Government bond¹ primary and secondary markets in Europe (EU28).

Among the main findings of this report are:

- **Average daily trading volumes** of European government bonds increased by 8% YoY during 4Q19, driven by a substantial increase in trading in France (22% YoY), Spain (18% YoY), Sweden (18% YoY) and Hungary (49% YoY). There was a reduction in trading in Germany (-12% YoY), the Netherlands (-30% YoY) and Poland (-45% YoY) (see chart 1).

Overall, throughout 2019 annual average trading volumes increased 15% when compared to volumes traded in 2018, this significant increase marks a reversal of the trend of decreasing annual average trading volumes since 2015 (see chart 3, and chart 5 on the next page).

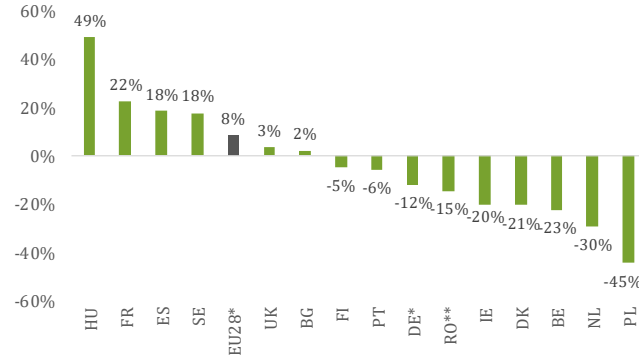
- **European Government bond and bills gross issuance** totalled €469.1 bn in 4Q19, a decrease of 18.5% from the volume issued in 3Q19 (€590.8 bn) and 0.7% less than the volume issued in 4Q18 (€472.5 bn). Total issuance during 2019 was €2119.4 bn, an annual decrease of 8% from €2304.0 bn in issuance volume during 2018.
- **The average bid-cover ratio** (demand/amount allocated)² was 2.13 in 4Q19, a slight annual decrease of -0.49% from 4Q18 and a -0.73% quarterly decrease from 3Q19. The most significant quarterly change was in Denmark (40.7% QoQ) whilst the most substantial annual change was in Germany (23.0% YoY). **The bid-cover ratio in Germany during 4Q19, at 2.01, represents the highest value since records began in 2010.**
- During 4Q19 there were **4 long-term credit rating upgrades for EU countries** (following 3 in 3Q19, 2 in 2Q19 and 5 in 1Q19) and no downgrades, bringing the 2019 total to 14 upgrades and no downgrades. There have been **a further 4 upgrades in 2020 YtD**.

4.EU government bonds data summary box

	2015	2016	2017	2018	2019
Gross Issuance (€ bn)	2595.3	2553.8	2480.7	2304.0	2321.6
Bonds (€bn)	1209.7	1184.7	1231.2	1085.8	1146.5
Bills (€bn)	1385.6	1369.1	1249.6	1218.1	1175.1
Outstandings (€ tn)	9.73	9.60	9.68	9.88	10.12
Bid-cover ratio	2.22	2.16	2.13	2.15	2.19
Average daily turnover (% YoY change)	-8.4%	-7.2%	-0.3%	-9.8%	15.1%

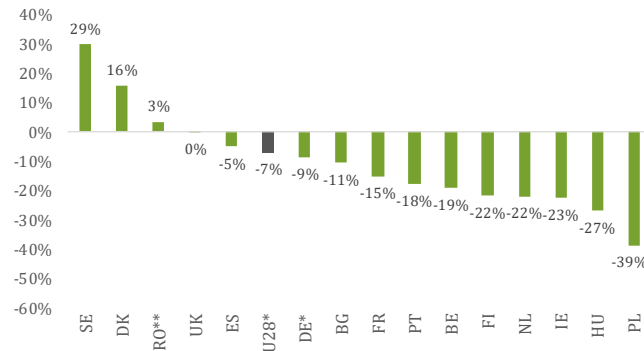
1. Annual changes in Government Bond average daily trading volumes

(4Q19 vs 4Q18) Selected European jurisdictions



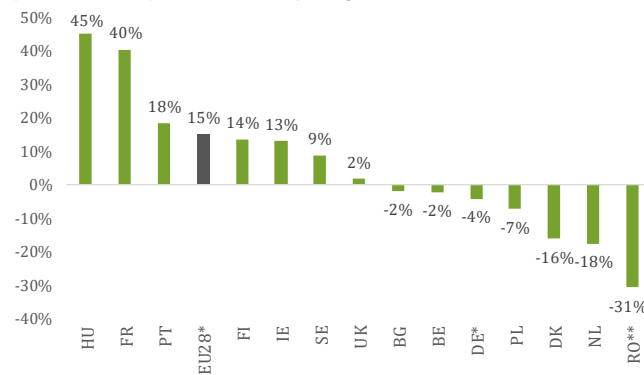
2. Quarterly change in Government Bond average daily trading volumes

(4Q19 vs 3Q19) Selected European jurisdictions



3. Annual aggregate change in Government Bond average trading volumes

(4Q19 vs 3Q19) Selected European jurisdictions

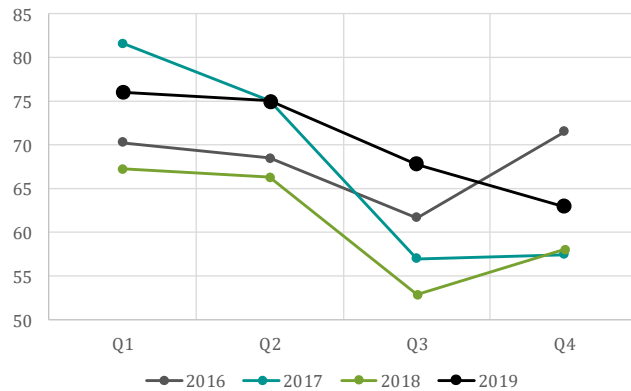


Source: AFME with information from European DMOs and other agency sources and Trax, a MarketAxess subsidiary. See section 5 for details on aggregation basis and sources. *Europe total and German turnover is sourced from Trax Facts as the quarterly variation of average daily volumes of government and sovereign bonds. **Romanian turnover volume calculated using outstanding volumes in Section 3

¹ Fixed income securities issued by central governments. The report includes Bonds and Treasury Bills and excludes agencies and Central Bank origination.

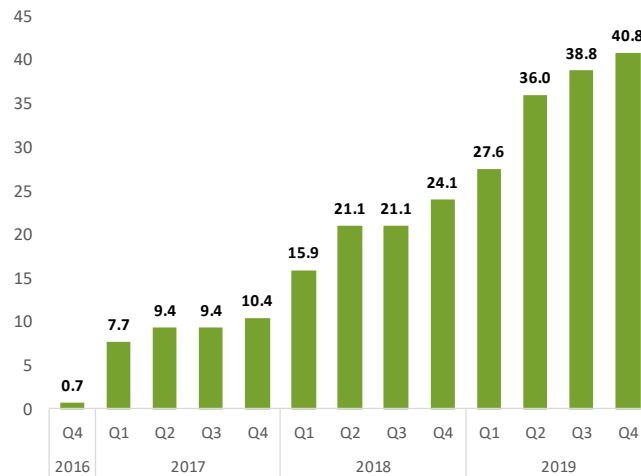
² Weighted average (by issuance volume) of bid-cover ratios in the United Kingdom, Spain, France, Italy, Germany, Belgium, Sweden, Netherlands, Denmark and Austria.

5. Seasonality of EU government bond trading (quarterly trading volumes, average daily, EUR bn)



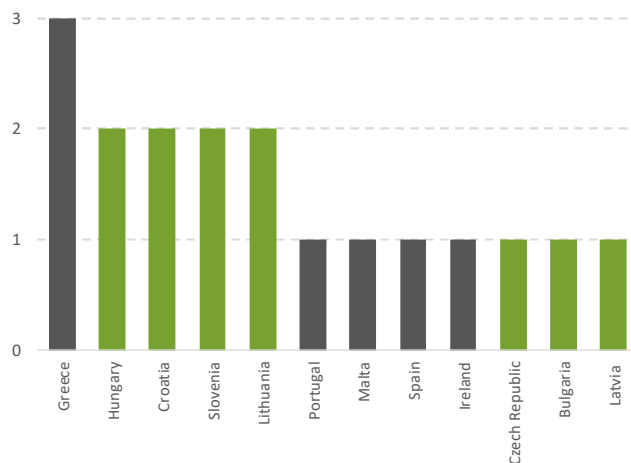
Source: Trax, a MarketAxess subsidiary

6. Outstanding EU green sovereign bonds (2006-2019, EUR bn)



Source: Thomson Reuters Eikon

7. Number of credit rating upgrades assigned by Fitch, Moody's and S&P by country (2018-2019 YtD)



Source: Thomson Reuters Eikon. Green indicates CEE country. A credit rating upgrade within the chart indicates an upward movement in sovereign credit rating by one notch.

Highlights

2019 EU Government Bond trading at highest volume in 4 years

Throughout 2019 there was robust trading activity with quarterly volumes 15% greater on average than the record-lows observed during 2018 (see chart 5).

While volumes rose across the EU as a whole in 2019, relative to previous years, there is significant heterogeneity between member states with regards to sovereign trading activity. As can be seen in section 5 of this report (p.14), many countries remain below their historical highs in the sovereign bond space.

When compared to 4Q18, EU trading activity increased 8% in 4Q19 (YoY) Compared with other trading activities, FX trading rose 1% YoY (CLS) while in contrast equities trading declined 16% YoY according to CBOE markets.

Outstanding amount of EU green sovereign bonds surpasses EUR 40 bn

An additional EUR 2 bn of green sovereign bonds were issued in EU markets during Q4 2019, via a tap issuance in Ireland.

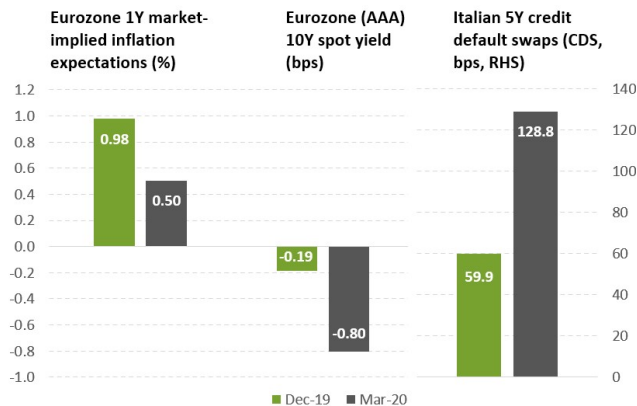
This brings the total amount outstanding in the EU to EUR 40.8bn at year-end 2019, a 69% increase compared to outstanding balances at the end of 2018 (see chart 6). With the additional tap issuance, the total amount outstanding of the Irish green bond is now EUR 5 bn, see chart 3.2 in section 3 for a country breakdown of outstanding amounts of EU green government bonds (p.11).

Continuous improvement in credit quality of CEE countries

Of the fourteen credit rating upgrades involving European countries during 2019 (and a further four in 2020 YtD), eleven rating-actions (61%) concerned CEE countries (see chart 7).

As of February 2020, Latvia and Lithuania have been assigned the highest rating position in both countries' history following rating upgrades to A+ assigned by S&P to each country. The sustained trend of credit quality improvements reflects the strengthening fiscal metrics and budgetary prudence of EU member states and in particular CEE countries.

8. Selected market valuation metrics (31-Dec 19, 12-Mar 20)



Source: Thomson Reuters Eikon

Recent repricing of sovereign bond markets

In the course of the year, Eurozone 1Y market-implied inflation expectations have fallen to 5-year low, Eurozone (AAA) 10Y spot yield at lowest value on record³ and Italian 5Y CDS at 5-month high (see chart 8).

The large-scale disruption triggered by the Covid-19 pandemic has been priced into European sovereign financial markets as of 12 March 2020. Compared to the end of December 2019, Eurozone 1Y inflation expectations have halved, Eurozone spot yields have dropped 61bps and Italian 5Y credit default swaps have more than doubled, increasing 68.9bps. For more valuation metrics and country-specific analysis see section 4 of the report (p.18).

Major upcoming regulatory, legislative and policy initiatives

There are several regulatory initiatives currently being considered at the European and national level with expected impact on the government bond markets. Some of the key initiatives recently implemented or soon to be applied:

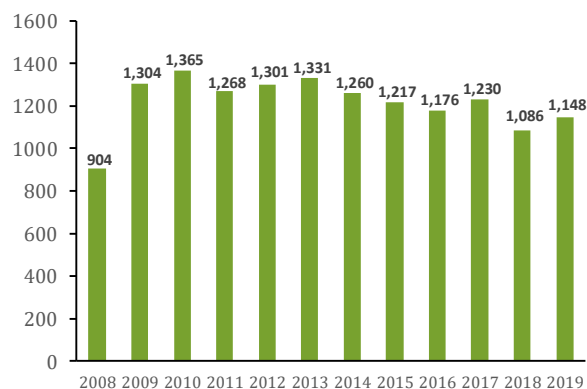
- Basel III
- CSDR
- Fundamental Review of the Trading Book (FRTB)
- Prospectus Regulation

AFME and its members are actively contributing on all of these and other initiatives.

³ AFME records backdate to March 2010

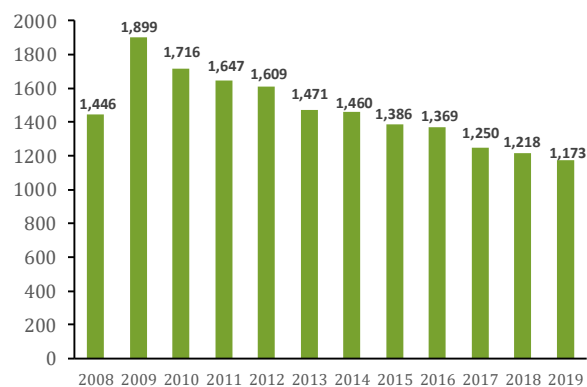
1. Issuance

1.1 EU Government Bond gross issuance (EUR bn)



Source: ECB and National Debt Management Offices

1.2 EU Treasury Bills gross issuance (EUR bn)



Source: ECB and National Debt Management Offices

1.3 Eurozone bonds and bills gross issuance (YtD, EUR bn)



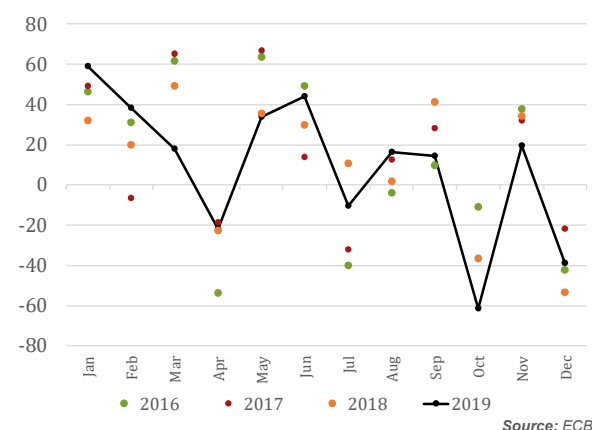
Source: ECB and National Debt Management Offices

1.4 Non-Eurozone bonds and bills gross issuance (YtD, EUR bn)



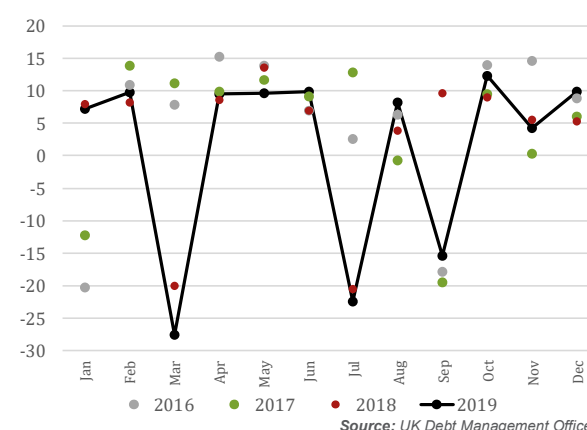
Source: ECB and National Debt Management Offices

1.5 Euro area net sovereign debt issuance (EUR bn)



Source: ECB

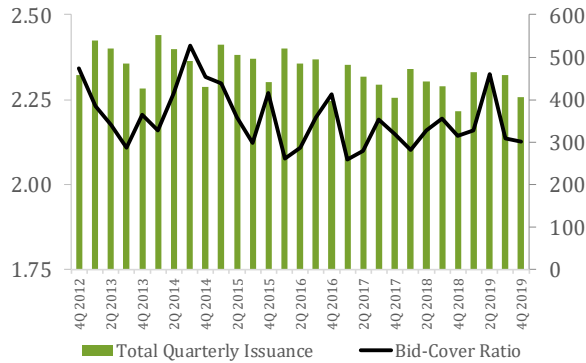
1.6 UK Gilts net issuance (GBP bn)



Source: UK Debt Management Office

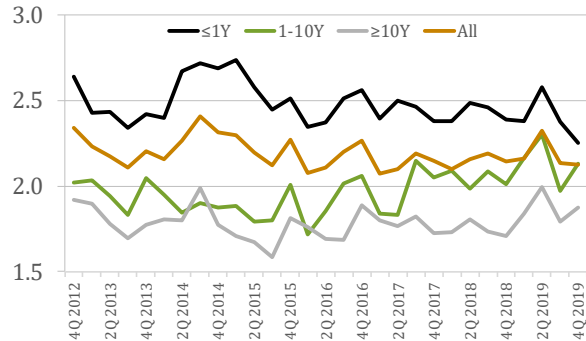
2. Recent auctions and primary dealers

2.1 Average bid-cover ratios and issued volumes in selected jurisdictions (EUR bn)



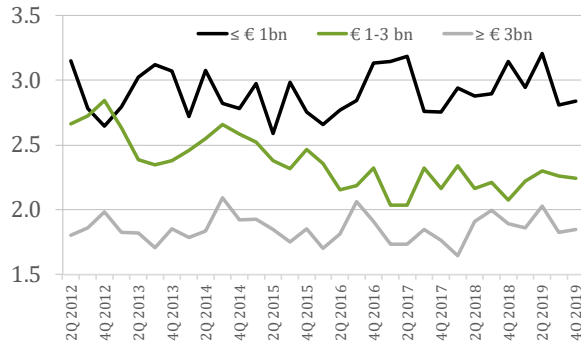
Source: Thomson Reuters Eikon. Weighted average of UK, DE, FR, ES, IT, BE, SE, NL, DK, and AT bonds and bills

2.2 Average bid-cover ratios by tenor (years) of issued instrument



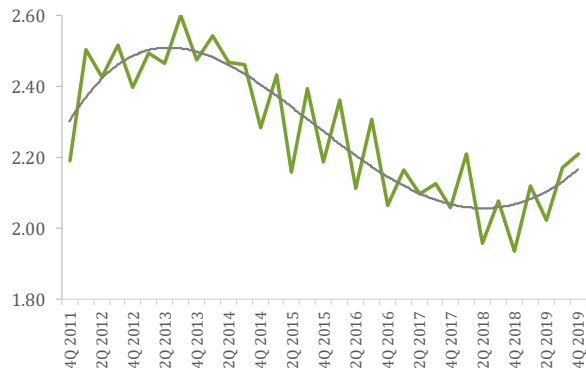
Source: Thomson Reuters Eikon. Weighted average of UK, DE, FR, ES, IT, BE, SE, NL, DK, and AT bonds and bills

2.3 Average bid-cover ratios by size of issued instruments



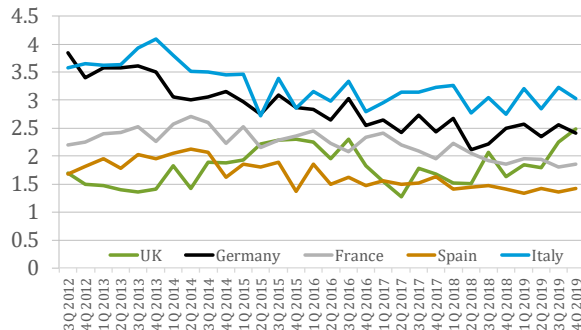
Source: Thomson Reuters Eikon. Weighted average of UK, DE, FR, ES, IT, BE, SE, NL, DK, and AT bonds and bills

2.4 Average auction size in selected European jurisdictions (EUR bn)



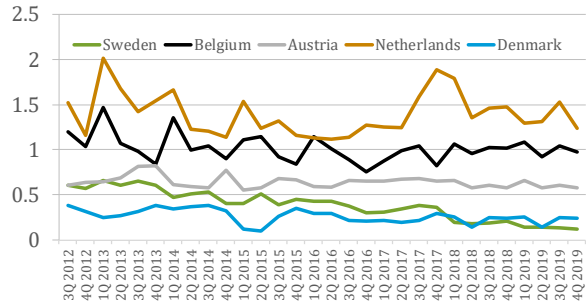
Source: Thomson Reuters Eikon. Weighted average of UK, DE, FR, ES, IT, BE, SE, NL, DK, and AT bonds and bills. Polynomial trendline in grey.

2.5 Average auction size in selected jurisdictions (EUR bn)



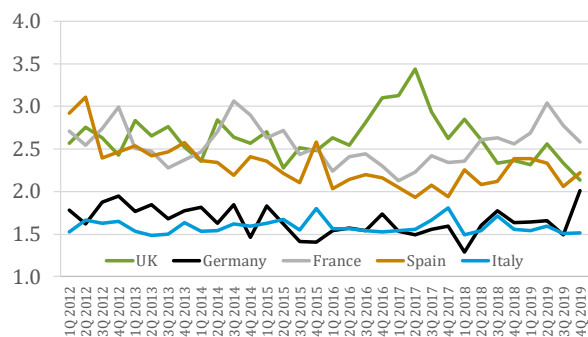
Source: Thomson Reuters Eikon

2.6 Average auction size in selected jurisdictions (EUR bn)



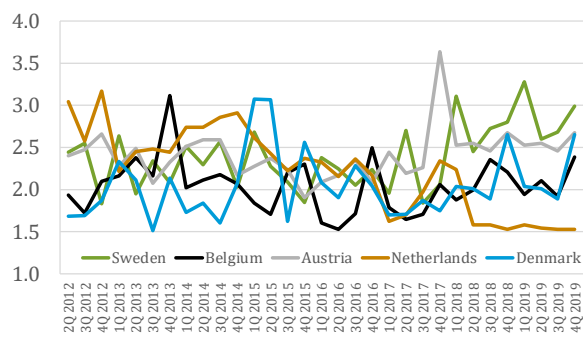
Source: Thomson Reuters Eikon

2.7 Average bid-cover ratios by jurisdictions



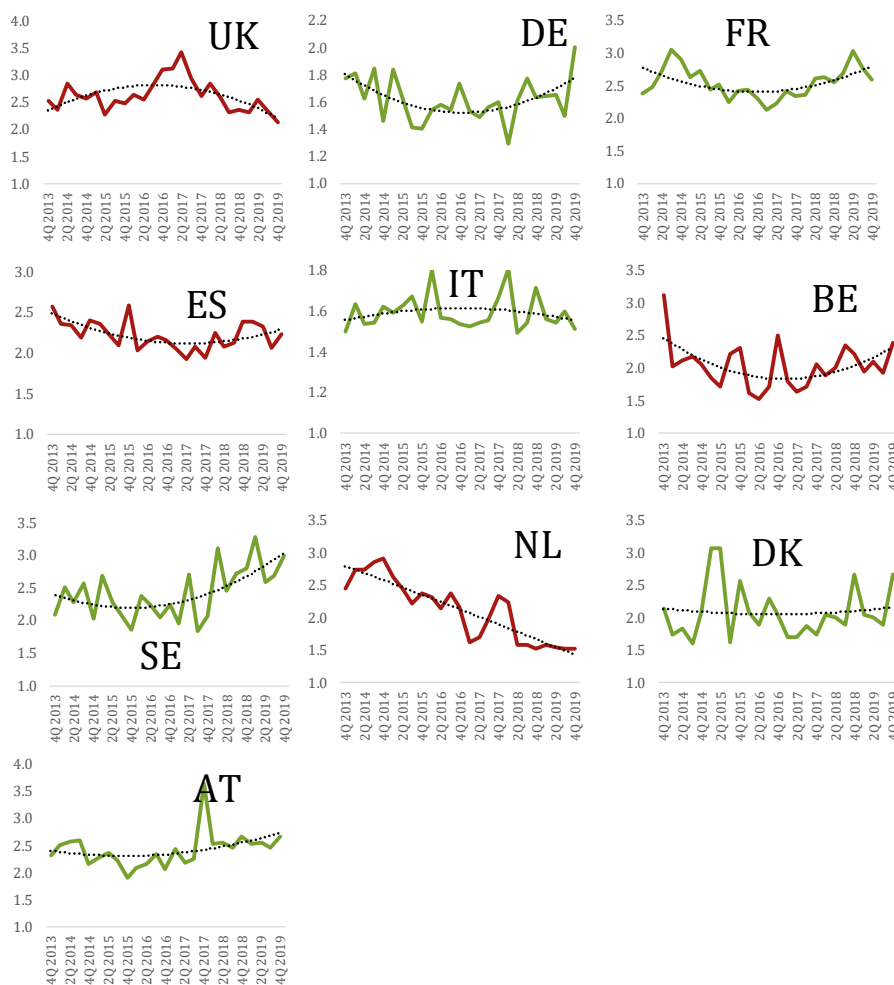
Source: Thomson Reuters Eikon

2.8 Average bid-cover ratios by jurisdictions



Source: Thomson Reuters Eikon

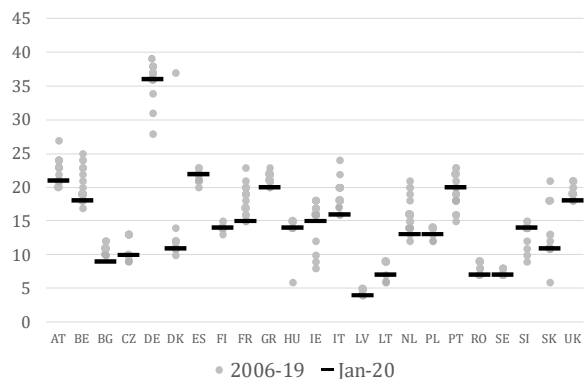
2.9 Average bid-cover ratios in selected jurisdictions: 2013-19⁴



Source: Thomson Reuters Eikon

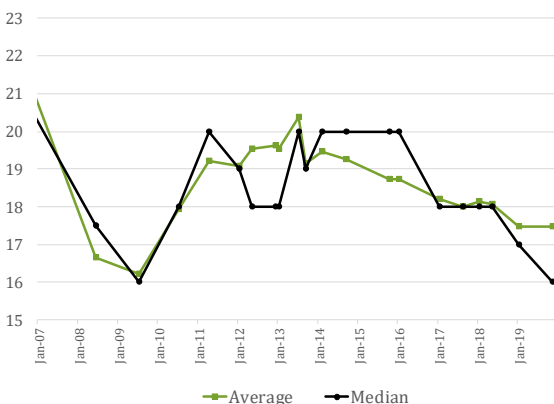
⁴ Chart colour indicates slope of trendline. Green indicates end value of trendline above starting value and red indicates end value of trendline below starting value.

2.10 Number of primary dealers relative to historic number



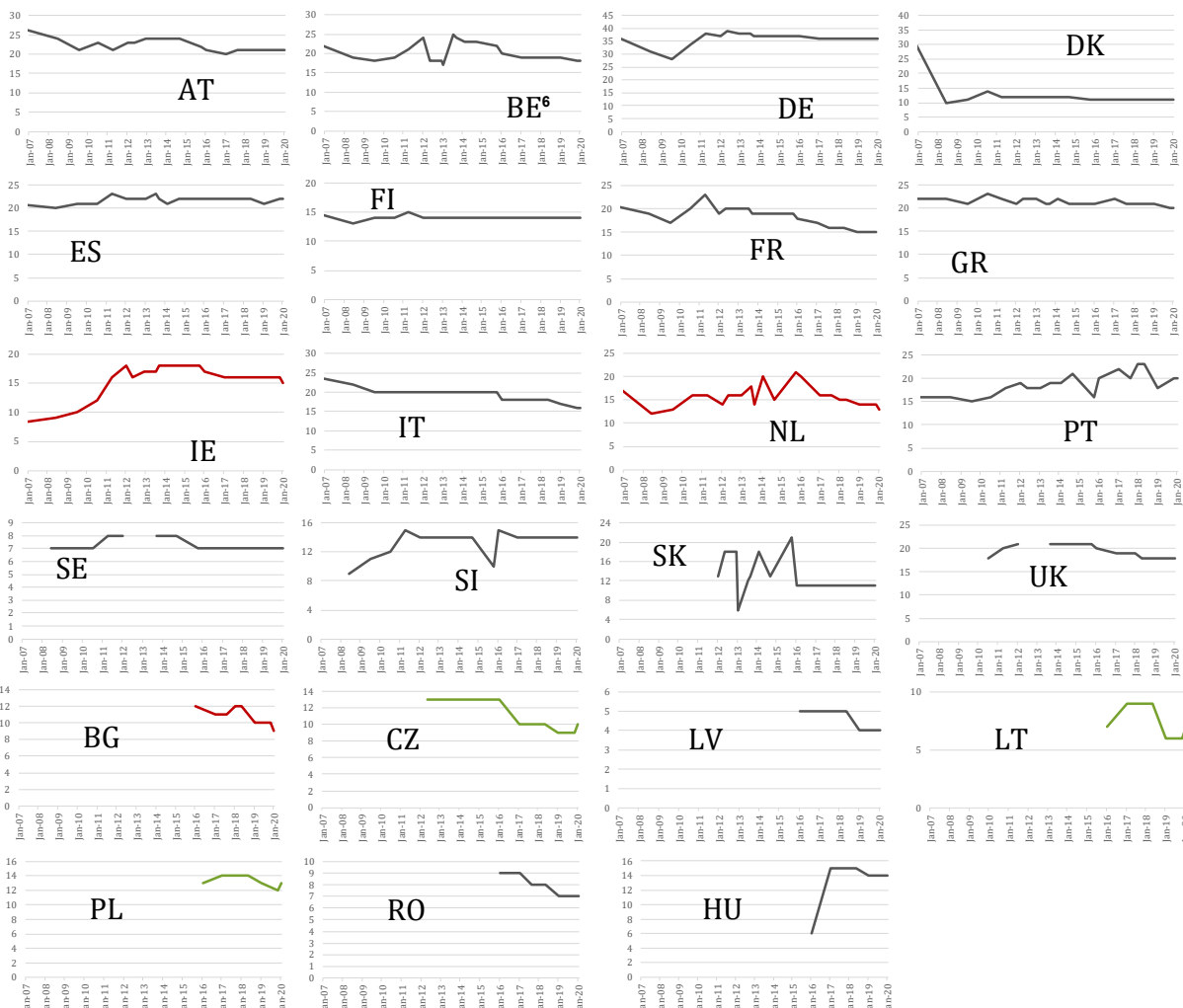
Source: AFME Primary Dealers Handbooks and national DMOs

2.11 Average and median number of primary dealers in selected EU countries



Source: AFME HRF Table and national DMOs. Average and medians of AT, BE, DE, DK, ES, FI, FR, GR, IE, IT, NL, PT, SE, SI and UK

2.12 Number of primary dealers in Europe by country: 2006-20⁵



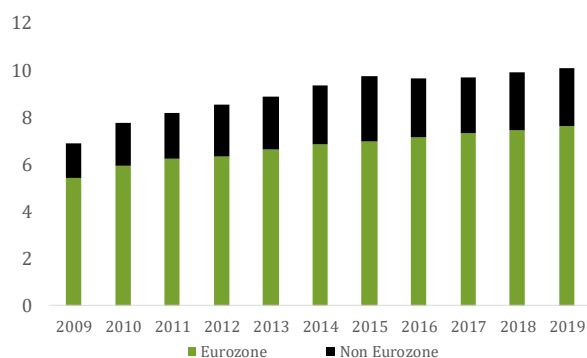
Source: AFME HRF Table and national DMOs

⁵ The gap in the lines for UK and Sweden indicates data not recorded in the relevant period. Chart colour indicates change in PDs since January 2019. Green indicates an increase; red indicates a decrease and grey indicates no change.

⁶ Due to the system of Recognised Dealers formally ending in Belgium at the end of 2019, values in Belgium represent total Primary Dealers and Dealers in Euro Commercial Paper.

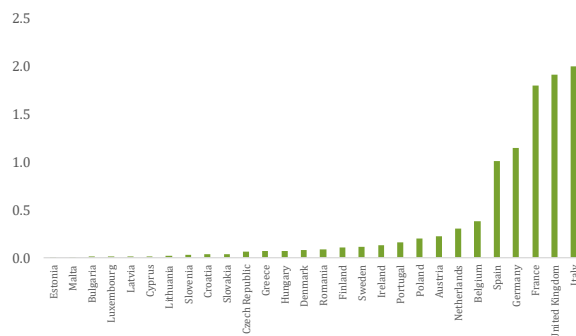
3. Outstanding

3.1 Outstanding debt securities issued by Central Governments (Nominal, EUR tn)



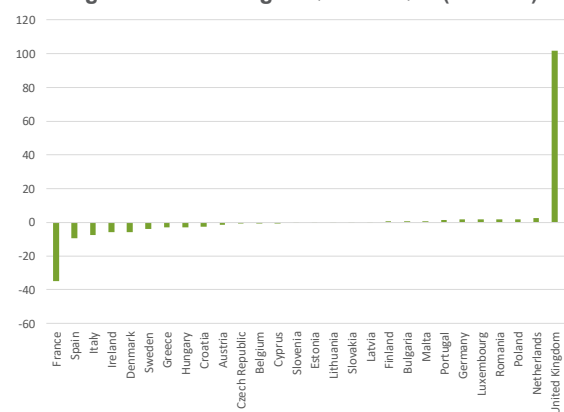
Source: ECB and Thomson Reuters Eikon

3.2 European government bonds outstanding by country (EUR tn)

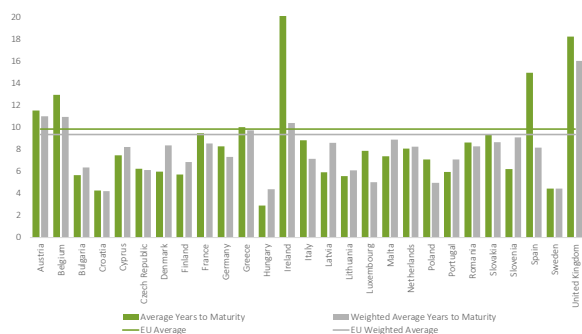


Source: Thomson Reuters Eikon and the UK DMO

3.3 Change in outstandings 3Q19 to 4Q19 (EUR bn)

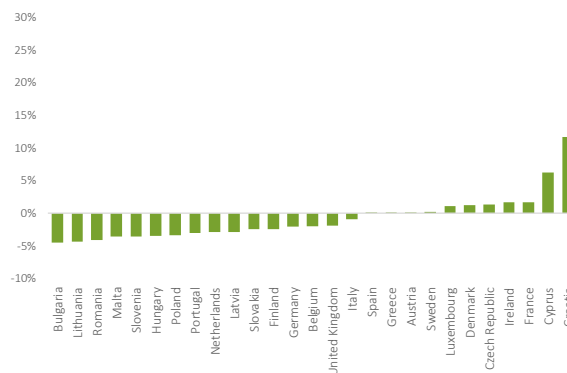


3.7 Average years to maturity for outstanding government bonds in EU countries⁷



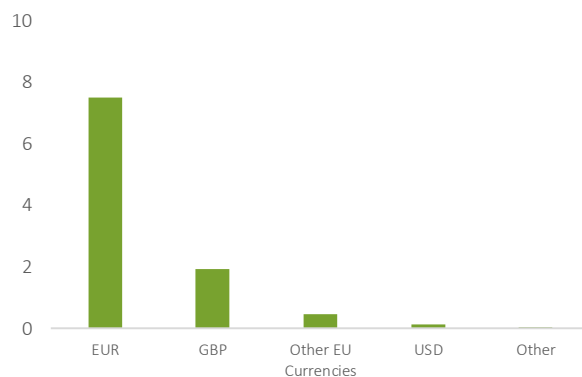
Source: Thomson Reuters Eikon

3.8 Quarterly change in weighted average years to maturity for outstanding government bonds 3Q19 to 4Q19⁸



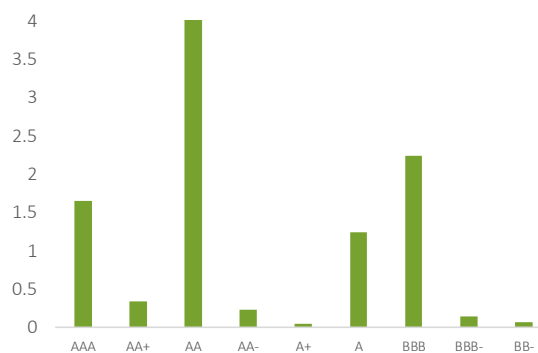
Source: Thomson Reuters Eikon

3.9 European government bonds outstanding by currency (EUR tn)



Source: Thomson Reuters Eikon

3.10 European government bonds outstanding by current rating of issuer (EUR tn)

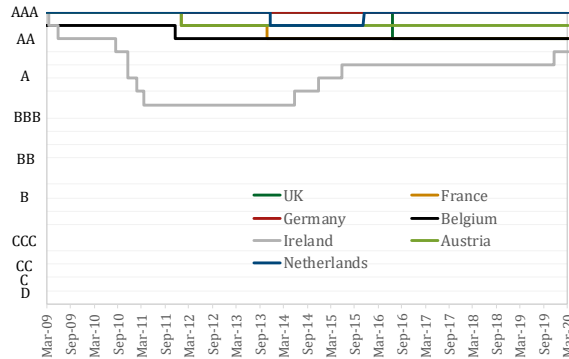


Source: Thomson Reuters Eikon and Standard and Poor's

⁷ Weighted average by outstanding amount
⁸ Weighted average by outstanding amount

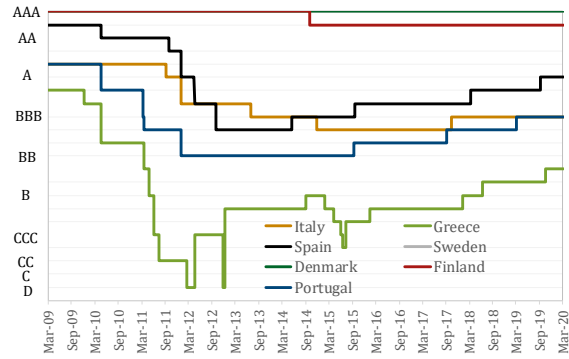
4. Credit quality

4.1 Long-term sovereign credit rating (Central and Northern Europe)



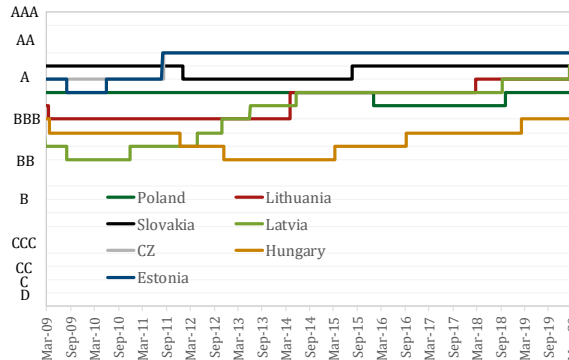
Source: Thomson Reuters Eikon with data of Standard and Poor's

4.2 Long-term sovereign credit rating (Nordics and Southern Europe)



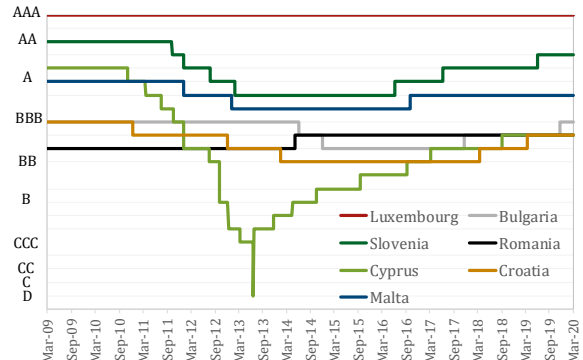
Source: Thomson Reuters Eikon with data of Standard and Poor's

4.3 Long-term sovereign credit rating (Visegrad 4 and Baltic states)



Source: Thomson Reuters Eikon with data of Standard and Poor's

4.4 Long-term sovereign credit rating (Balkans, CY, MT and LU)



Source: Thomson Reuters Eikon with data of Standard and Poor's

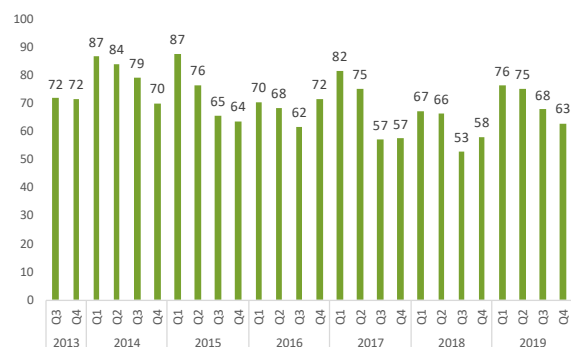
4.5 European rating actions on long-term sovereign credit ratings (YtD)

Issuer	Rating action	Date	Rated by	Rationale
Hungary	Upgrade to BBB (stable) from BBB-	Feb-19	S&P	Sound growth prospects, supported by high private savings and real wage gains, as well as ongoing expansion of export capacity
Hungary	Upgrade to BBB (stable) from BBB-	Feb-19	Fitch	Rapid external deleveraging, reduction in external debt, consistent current account surpluses, stable FDI inflows and capital transfers from the EU
Greece	Upgrade to B1 (stable) from B3	Mar-19	Moody's	Implementation of reforms, strengthening economy and fiscal structural improvement, re-establishment of market based sovereign funding
Portugal	Upgrade to BBB- (positive) from BBB-	Mar-19	S&P	Declining debt and balanced growth, expected budget surpluses for the next three years
Croatia	Upgrade to BBB- (positive) from BB+	Mar-19	S&P	Strengthening fiscal metrics and declining government debt
Croatia	Upgrade to BBB- (positive) from BB+	Jun-19	Fitch	Positive fiscal developments underpinned by expenditure restraint, increased revenue, lower interest costs and favourable macro-economic conditions
Slovenia	Upgrade to AA- (stable) from A+	Jun-19	S&P	Expected solid economic and fiscal results, whilst running substantial net external surpluses with the rest of the world
Malta	Upgrade to A2 (positive) from A3	Jul-19	Moody's	Continued improvement of fiscal strength, driven by fiscal prudence and Malta's strong medium-term growth prospects
Slovenia	Upgrade to A (stable) from A-	Jul-19	Fitch	Improvement in public debt sustainability stemming from a combination of primary surpluses, strong growth dynamics and asset sales
Spain	Upgrade to A (positive) from A-	Sep-19	S&P	Balanced economic growth, improved budgetary position and increased prospects for continued consolidation
Greece	Upgrade to BB- (positive) from B+	Oct-19	S&P	Continued implementation of economic reforms, reduction of risks and lifting restrictions on bank deposits and capital flows
Czech Republic	Upgrade to Aa3 (stable) from A1	Oct-19	Moody's	Strong budgetary performance and low debt debt, in addition to government reforms fostering innovation across countries
Ireland	Upgrade to AA- (stable) from A+	Nov-19	S&P	Strong fiscal outcomes and vigorous economic growth in addition to very long dated average maturity of Ireland's debt
Bulgaria	Upgrade to BBB (positive) from BBB-	Nov-19	S&P	Resilient economic growth, strong fiscal and external balance sheets and steadfast progress on entering the Exchange Rate Mechanism II (ERM2)
Greece	Upgrade to BB (stable) from BB-	Jan-20	Fitch	GDP growth and fiscal prudence leading to government debt remaining at sustainable levels
Latvia	Upgrade to A+ (stable) from A	Feb-20	S&P	Effectively containing fiscal deficits, setting government debt to GDP on a firm declining trajectory
Lithuania	Upgrade to A+ (stable) from A	Feb-20	S&P	Strong economic expansion, robust growth prospects and fiscal performance leading to a gradual reduction in net general government debt
Lithuania	Upgrade to A (stable) from A-	Feb-20	Fitch	Real GDP growth, decreasing government debt and debt servicing costs, and growing government sector and current account surplus

Source: Fitch, Moody's, S&P

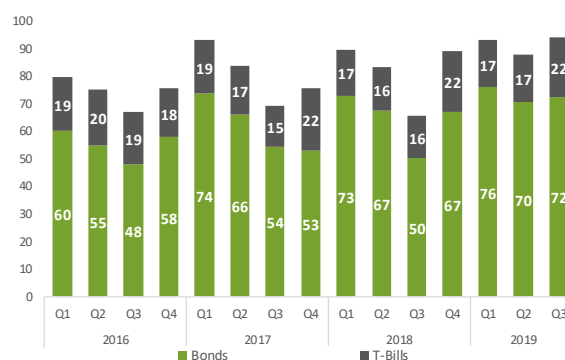
5. Secondary market trading volumes and turnover ratios⁹

5.1 EU28: Average daily trading volumes (Government and sovereign bonds, EURbn)¹⁰



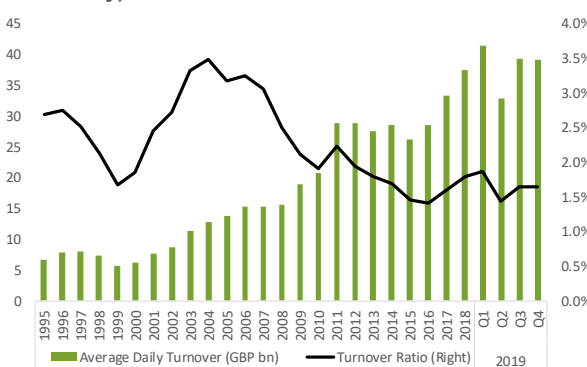
Source: Trax, a MarketAxess subsidiary

5.2 Eurozone: Average daily trading volume (bonds and bills, EURbn)¹¹



Source: EFC Sub-Committee on ESDM

5.3 United Kingdom: Average daily trading volume (bonds only) and turnover ratio¹²



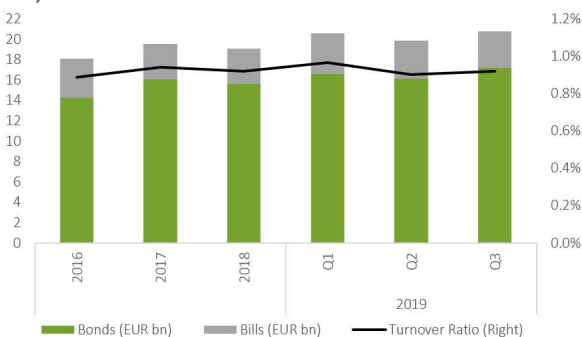
Source: UK Debt Management Office

5.4 Germany: Average daily trading volume (aggregated bonds and bills) and turnover ratio¹³



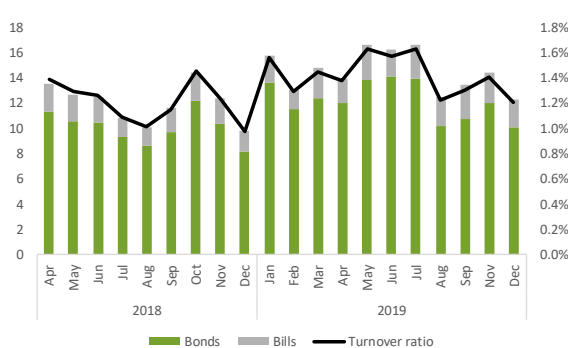
Source: Deutsche Finanzagentur und ECB

5.5 Italy: Average daily trading volume (bonds and bills) and turnover ratio.¹⁴



Source: Italian Dipartimento del Tesoro

5.6 Spain: Average daily trading volume and turnover ratio¹⁵



Source: BME Market Data and Tesoro Público de España

⁹ Turnover ratios are calculated as the average daily trading volume relative to total outstandings. Cash trading only (excludes repo and derivatives transactions). Given the differences in the aggregation basis across jurisdictions, the data is not fully comparable between countries.

¹⁰ Secondary Market Volumes (please note this is restricted to 2013-Q3 onwards as split not available prior to this date. Volumes are calculated by converting the individual traded securities to EUR using the prevailing exchange rate on the date of each trade. ADV calculated by dividing the total converted volume by the number of UK trading days for quarter. Government & Sovereign bond volumes for EU28 member states as per the AFME methodology.

¹¹ Turnover data reported in the Euro Market Activity Report (EMAR), including turnover on a trade by trade basis traded by reporting dealers. A comprehensive list of reporting dealers can be found in the EMAR reports on the website of the Economic and Financial Committee's Sub Committee on EU Sovereign Debt Markets.

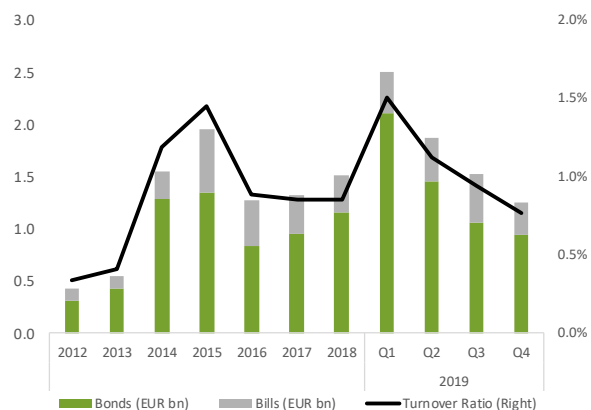
¹² Turnover data reported to the DMO by the Gilt-edged Market Makers (primary dealers).

¹³ Turnover of both electronic and OTC trading. The traded volume is aggregated for a representative part of the members of the Bund Issues Auction Group with trades with all counterparties. Bubills, Schaetze, Bobls, Bunds and inflation-linked securities. Capital and coupon strips as well as US-dollar bonds are excluded. Data not currently available for H2 2019.

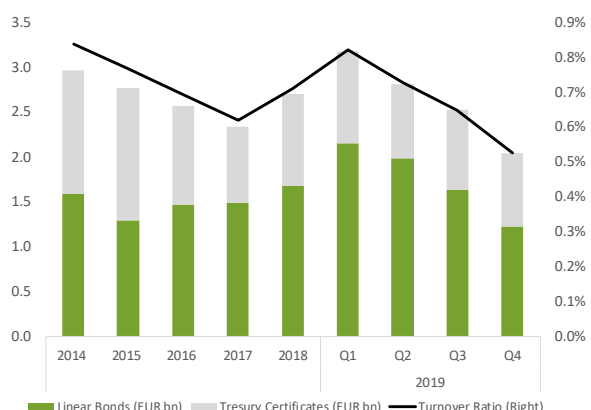
¹⁴ Turnover on all trading venues and OTC as per data provided to the Italian Dipartimento Del Tesoro by Primary Dealers through HRF ('single counted' volumes).

¹⁵ Due to data reconciliation activities of the Bank of Spain, data from April 2018 is from BME Market Data, a subsidiary of Bolsas y Mercados Españoles. Turnover is derived from settlement data from Iberclear.

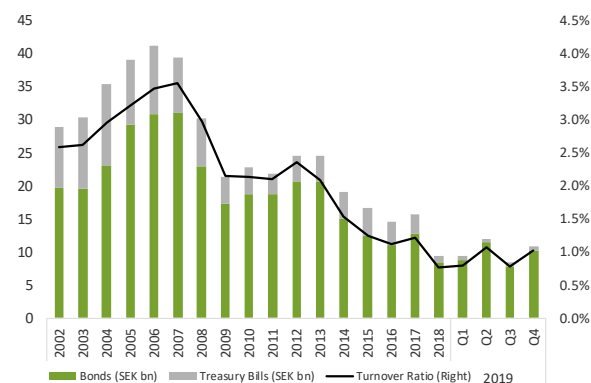
5.7 Portugal: Average daily trading volume and turnover ratio¹⁶



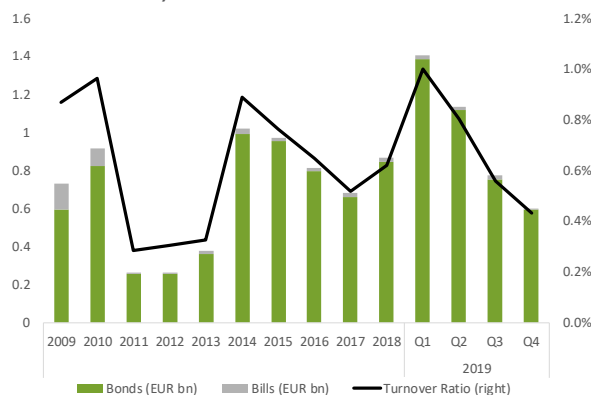
5.8 Belgium: Average daily trading volume and turnover ratio¹⁷



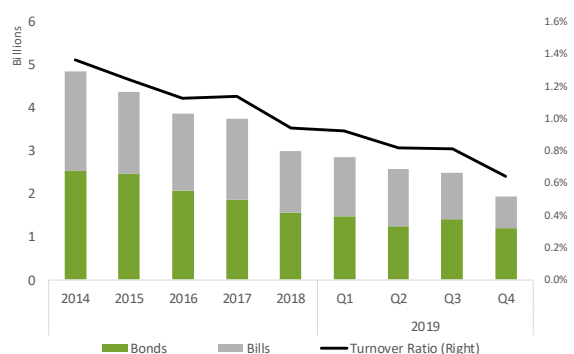
5.9 Sweden: Average daily trading volume and turnover ratio¹⁸



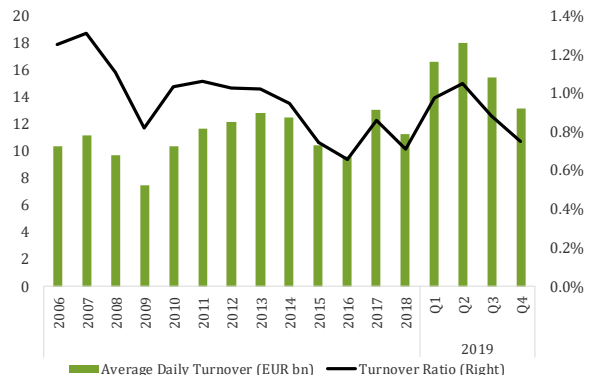
5.10 Ireland: Average daily trading volume (aggregated bonds and bills) and turnover ratio¹⁹



5.11 Netherlands: Average daily trading volume (bonds only) and turnover ratio²⁰



5.12 France: Average daily trading volume (bonds only) and turnover ratio²¹



¹⁶ Turnover of electronic and OTC trading reported on MTS-Portugal, BrokerTec and eSpeed.

¹⁷ Turnover is total outright transactions.

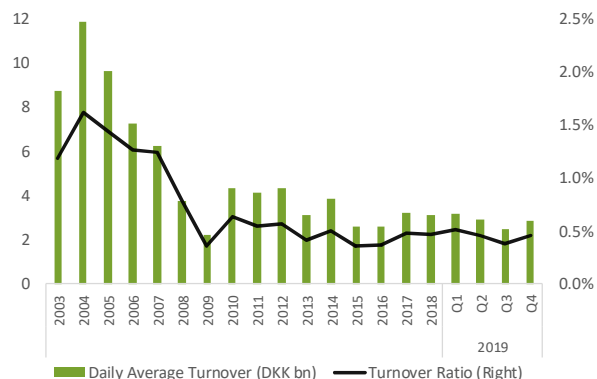
¹⁸ Turnover is total outright transactions.

¹⁹ Turnover on Irish Stock Exchange.

²⁰ Turnover is customer and interdealer trading. Total outright transactions, including electronic and OTC trading.

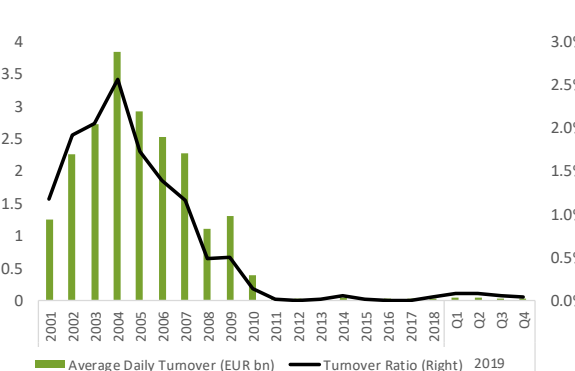
²¹ Turnover of voice and electronic trading (not including PSPPT transactions or trading without an SVT).

5.13 Denmark: Average daily trading volume (bonds and bills) and turnover ratio²²



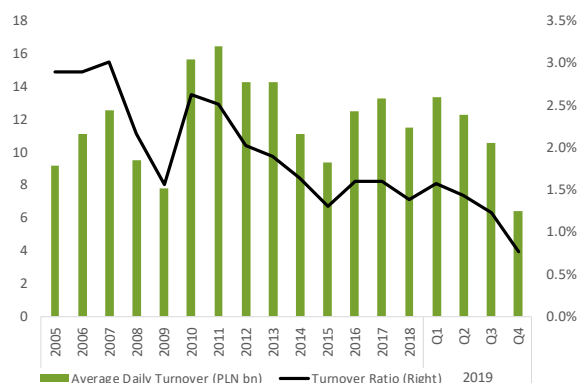
Source: Danmarks Nationalbank

5.14 Greece: Average daily trading volume (bonds only) and turnover ratio²³



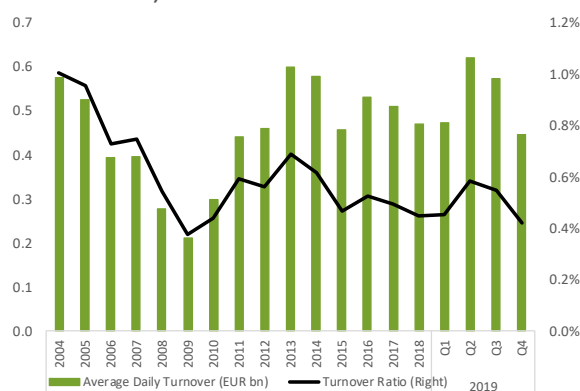
Source: Bank of Greece and ECB

5.15 Poland: Average daily trading volume (bonds only) and turnover ratio²⁴



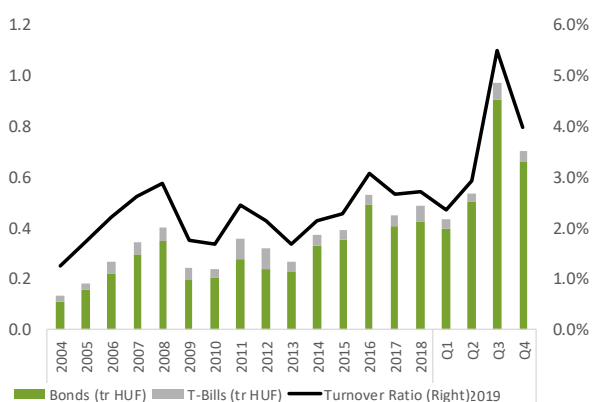
Source: National Depository for Securities (KDPW), WSE

5.16 Finland: Average daily trading volume (aggregated bonds and bills) and turnover ratio²⁵



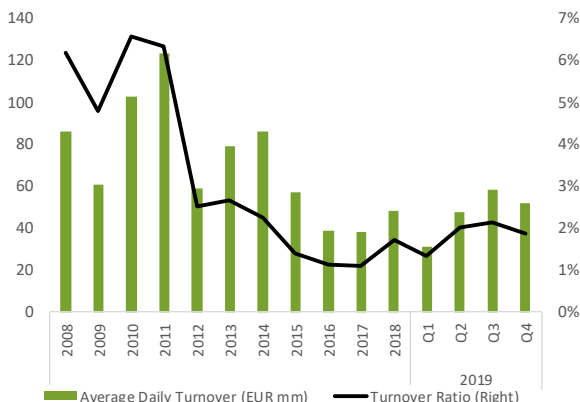
Source: Finland Valtiokonttori and ECB

5.17 Hungary: Average daily trading volume and turnover ratio²⁶



Source: ÁKK

5.18 Bulgaria: Average daily turnover volume and turnover ratio²⁷



Source: Ministry of Finance of the Republic of Bulgaria

²² Turnover of MTS, TradeWeb, Bondvision and trades reported to Nasdaq OMX (including voice trading).

²³ Turnover on Electronic Secondary Securities Market (HDAT).

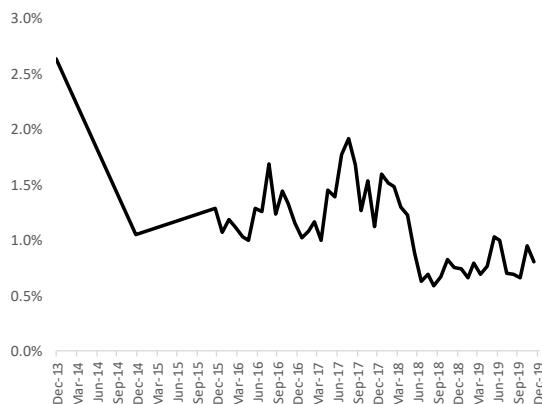
²⁴ Turnover is total outright transactions. Data from KDPW are presented according to the date of the settlement, while data from WSE are presented according to the date of conclusion of a transaction.

²⁵ Turnover of customer trades, MTS Finland and Euro MTS.

²⁶ Turnover on MTS Hungary and Keler OTC.

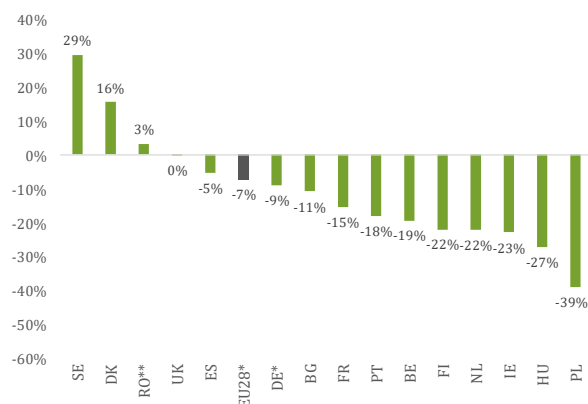
²⁷ Turnover on ESROT and of domestic bonds only.

5.19 Romania: Average daily turnover ratio²⁸



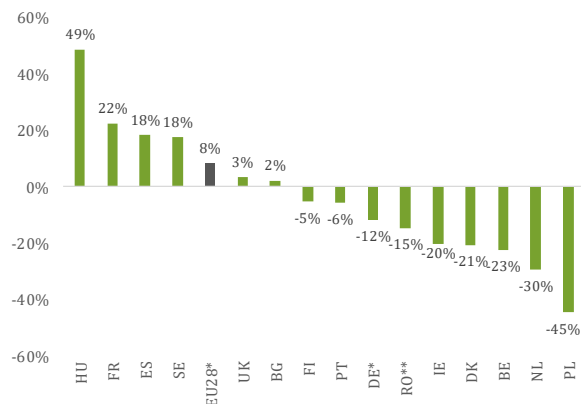
Source: Ministerul Finantelor

5.20 Quarterly change in average daily turnover volumes of EU government bonds: 4Q19 to 3Q19



Source: AFME with information from European DMOs and other agency sources. See section 5 for details on aggregation basis and sources. *Europe total and Germany is sourced from Trax Facts as the quarterly variation of average daily volumes of government and sovereign bonds. **Romanian turnover volume calculated using outstanding volumes in Section 3.

5.21 Annual change in average daily turnover volumes of EU government bonds: 4Q18 to 4Q19

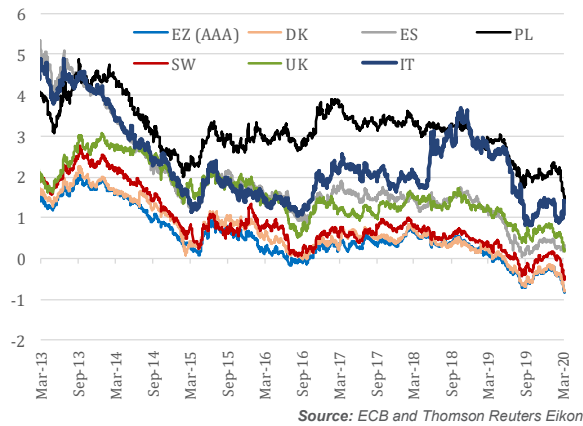


Source: AFME with information from European DMOs and other agency sources. See section 5 for details on aggregation basis and sources. *Europe total and Germany is sourced from Trax Facts as the quarterly variation of average daily volumes of government and sovereign bonds. **Romanian turnover volume calculated using outstanding volumes in Section 3.

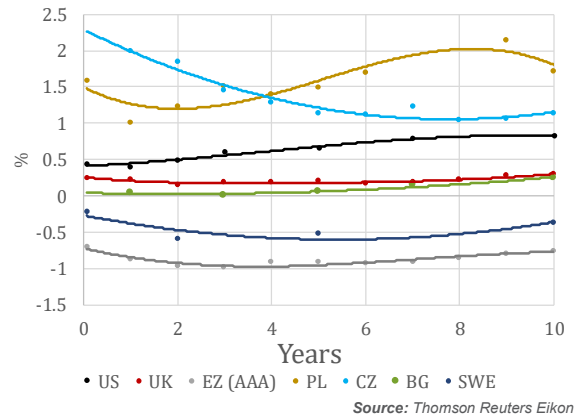
²⁸ Turnover ratio of the government securities issued on domestic market. Official values reported as average monthly turnover ratios, which have been converted assuming 20 business days per month. Turnover volume not available.

6. Valuations

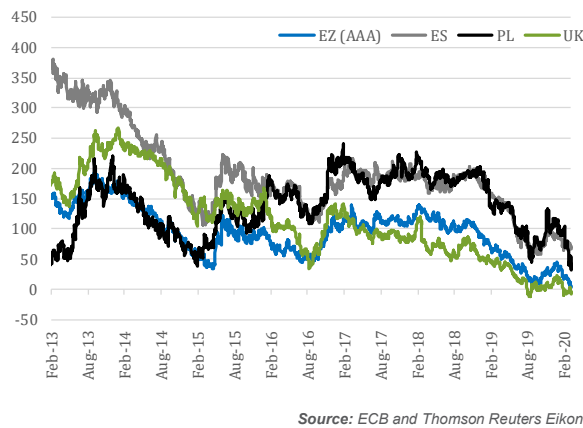
6.1 Selected European 10Y spot yields



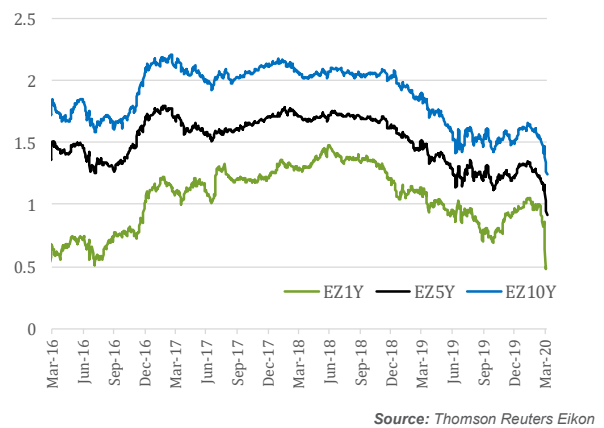
6.2 Sovereign spot yield curve of selected jurisdictions: 12 March 2019



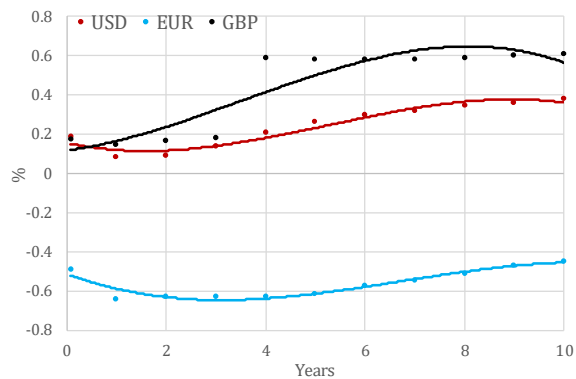
6.3 Slope: 1Y10Y spread (bps)



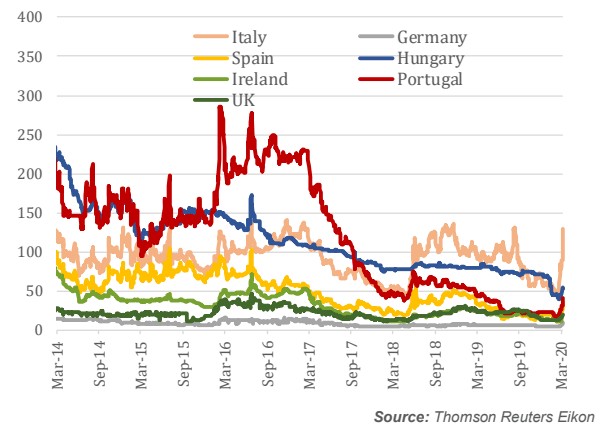
6.4 Market-implied inflation expectations (EuroZone)



6.5 Overnight index swap (OIS) yield curve: 12 March 2020



6.6 5Y Sovereign Credit Default Swap (CDS, bps)



Annex

Disclaimer

Your receipt of this document is subject to paragraphs 3, 4, 5, 9, 10, 11 and 13 of the Terms of Use which are applicable to AFME's website (available at <http://www.afme.eu/Legal/Terms-of-Use.aspx>) and, for the purposes of such Terms of Use, this document shall be considered a "Material" (regardless of whether you have received or accessed it via AFME's website or otherwise).

Methodologies

A summary of the methodologies adopted for this report is available at <https://www.afme.eu/en/reports/Statistics/Methodologies>

London Office

39th Floor
25 Canada Square
London E14 5LQ
United Kingdom

Switchboard:
+44 (0)20 3828 2700

Brussels Office

Rue de la Loi, 82
1040 Brussels
Belgium

Switchboard:
+32 (0) 2 788 3971

Frankfurt Office

Neue Mainzer Straße 75
60311 Frankfurt am Main
Germany

Switchboard:
+49 (0) 69 153 258 963

AFME

Matt Johnston –Analyst, Capital Markets

Julio Suarez –Director, Research

Victoria Webster –Director, Fixed Income

Francesca Bluck –Senior Associate, Fixed Income

www.afme.eu

Follow AFME on Twitter

@AFME_EU

AFME is registered on the EU Transparency Register, registration number 65110063986-76