Impact of the ECB's asset purchase programme

BMCG meeting, 7 February 2017
Frankfurt am Main

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Summary

- Context:
  - Where is money going
  - How have correlations been impacted
  - What bubbles are there
  - What are implications of reinvestment / extension or tapering

- Main findings:
  - Most investors reduced their holding of Euro Area Sovereign Debt, with the exception of insurance, Pension Funds, and Japanese investors
  - They compensated by:
    - Going down the credit spectrum (European Area equities, credit, real estate, etc.),
    - Increasing the duration in their portfolio
    - Investing in the Rest of the World
  - Resulting in:
    - Spread compression
    - Perceived lower risk aversion
    - Change in ownership dynamics
    - Shift of power between borrowers and lenders
  - ECB APP eligible assets and real estate suggest some element of a “bubble”. Equity market implication is less clear. Private markets see some rotation and deterioration of investor protection
  - The price impact for an announcement on reduction in pace or eventual tapering and exit will depend on a number of factors. The environment in which we find ourselves will be critical as will the interplay of Global monetary and fiscal actions.

Where is the money going?

Allianz

How did the flows change since the beginning of ECB QE?

How did the flows change since the beginning of ECB QE?
New flows into Euro area government bonds; €bn

Monthly avg.	Net govt. issuance	ECB		Domestics						Foreign		
		QE*	SMP	Total	MFI	Inv. fund**	Ins. Co.**	Pension funds**	Other domestics	Total	Japan***	Other
2014	26	0	-3	28	6	5	6	3	8	1	-1	2
1Q15	48	14	-1	3	15	10	6	1	-29	32	2	30
2Q15	15	44	-2	-16	-8	0	4	1	-12	-10	-8	-1
3Q15	0	42	-2	-19	0	2	1	0	-22	-20	1	-21
4Q15	-4	44	-2	-32	-28	-5	0	0	1	-15	2	-17
1Q16	48	47	-1	-5	22	-7	4	0	-24	7	5	2
2Q16	16	69	-4	-35	-7	-7	5	0	-26	-15	-1	-14
Jul-16	-41	63	-1	-114	-29	-5	n/a	n/a	n/a	12	7	5
Aug-16	-3	45	0	-38	-29	-5	n/a	n/a	n/a	-10	2	-12
Sep-16	-9	63	-3	-45	-36	-5	n/a	n/a	n/a	-24	0	-24
Oct-16	12	66	-2	n/a	-12	n/a	n/a	n/a	n/a	-14	1	-15
Nov-16	41	63	-2	n/a	2	n/a	n/a	n/a	n/a	-10	2	-12
QE avg. (since Mar15)	10	51	-2	-28	-9	-3	3	0	-17	-8	0	-9

* Includes a small portion of agency purchases
** Quarterly data evenly split across months, in line with flow information
*** Sum of Germany, France, Italy and Netherlands
Source: ECB, J.P. Morgan

- Most categories of investors that we track have been overall net sellers of Euro area government securities since the start of QE, with the exception of Insurance companies, pension funds and Japanese investors (broadly stable)
- Euro area banks were small net buyers of government debt securities in November (€2bn) after months of net selling
- Foreign investors excluding Japanese investors were net sellers in November (-€12bn); Japanese investors were small net buyers (+€2bn)

J.P.Morgan

Germany: steady net selling by non-German investors

NCB and ECB via QE have been the only net buyer of German bonds between Jan-Jul 2016

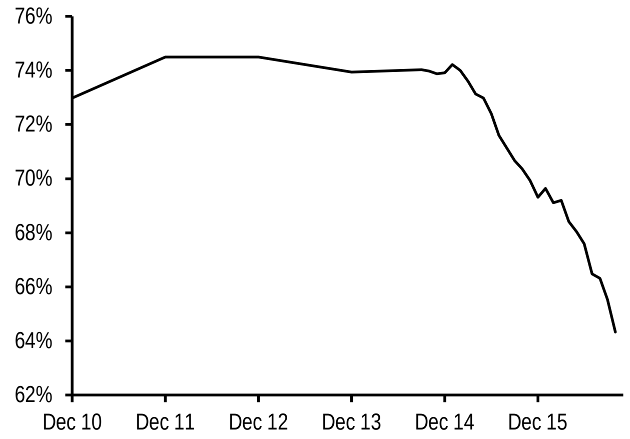
Composition of investor base in German general government bond securities;

	Oct-16		Change (€bn)					
	€bn	%	YTD	2015	2014	2013	2012	2011
MFIs ex QE	232	14%	-19	5	2	4	42	-15
Incos & PFs	17	1%	0	0	-1	2	-1	3
Other financial corp.	63	4%	-3	-2	0	-1	-14	-6
General government	76	5%	4	-1	1	17	-1	3
Households	5	0%	-1	-3	-2	-4	-4	-2
Other domestics	8	0%	-2	0	-1	0	-1	0
Non-domestics ex QE	1,044	64%	-74	-79	-6	17	60	39
QE	179	11%	105	74	0	0	0	0
Total	1,623	100%	10	-7	-7	35	81	23

Source: Bundesbank, J.P. Morgan

Non-domestic investor holdings have declined by almost 10% since the start of sovereign QE

Evolution of non-domestic investor holdings of German general government bond securities; ex-PSPP; %



Source: Bundesbank, J.P. Morgan

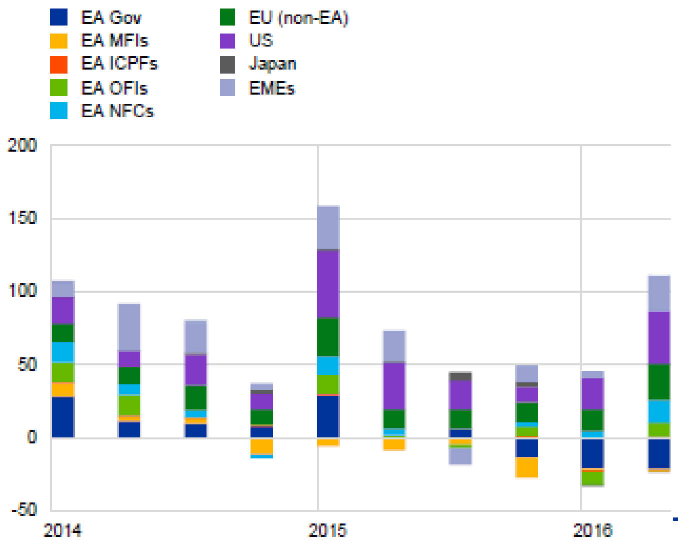
Source: Bundesbank, J.P. Morgan

Euro area holdings of debt securities: increase in foreign assets holdings, in credit risk and in duration, up to Q2-2016

EA investment funds have become a net seller of EA government bonds

Quarterly net purchases of fixed income securities by euro area investment funds

(Q1 2014 – Q2 2016; net transactions in EUR billions)

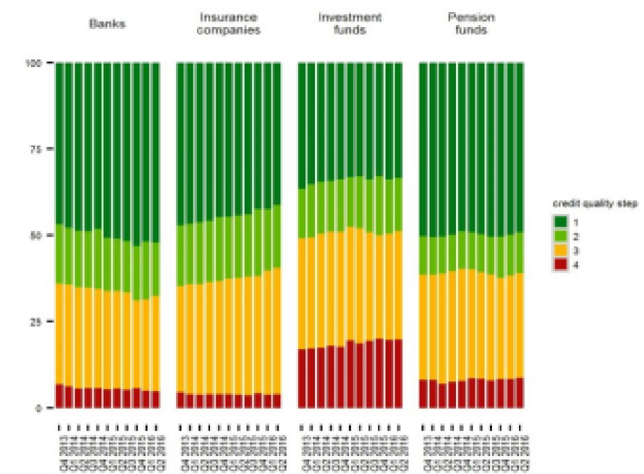


Sources: ECB investment fund statistics and ECB calculations.
Notes: EMEs stands for emerging market economies, NFCs for non-financial corporations, OFIs for other financial intermediaries, ICPFs for insurance corporations and pension funds and MFIs for monetary financial institutions.

Some slowdown in the portfolio shifts of investment funds towards lower-rated debt securities

Euro area financial institutions' holdings of debt securities, broken down by rating and sector

(Q4 2013 – Q2 2016; percentage of total assets)

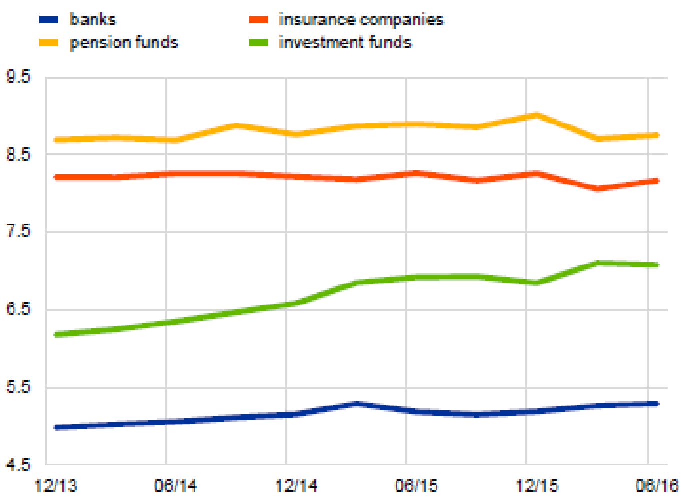


Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Credit quality steps are defined in accordance with the Eurosystem credit assessment framework (ECAF), which provides a harmonised rating scale classifying ratings into three credit quality steps. The first category includes securities rated from AAA to AA-, the second from A+ to A- and the third from BBB+ to BBB-. A fourth category is added which includes all rated securities with a rating below credit quality step three. The analysis is based on the nominal amounts of euro and foreign currency-denominated securities, including "alive" and "non-alive" securities. The investment fund sector excludes money market funds.

Investment funds continued to increase residual maturities in their portfolios

Average residual maturity of debt securities held by the euro area financial sector

(Q4 2013 – Q2 2016; average residual maturity in years)



Sources: ECB Securities Holdings Statistics by Sector and ECB calculations.
Notes: Long- and short-term, euro and foreign currency-denominated debt securities are included only if they have an ISIN reported, are considered "alive" and have a residual maturity of up to 30 years. Banks hold a particularly large share of securities with reported maturity exceeding 30 years for which precise information is less reliable (e.g. for securities without a definite date of maturity) and which are therefore excluded. In order to estimate the average, residual maturities are weighted by the nominal amount held of each security by each sector over the total debt holdings of each sector.

Investment funds and insurance companies: selling of Euro area debt securities and buying of non-Euro area debt securities in 1Q-3Q16

Investment funds sold Euro area debt securities and bought non-Euro area debt securities in first nine months of 2016

Euro area investment funds net flows into debt securities; excluding money market funds; €bn

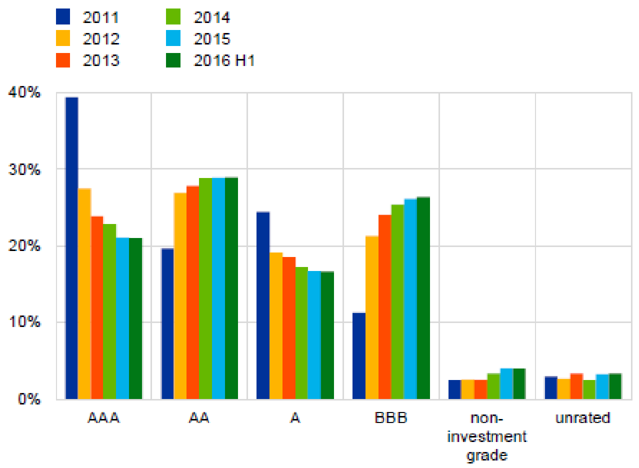
	Grand total	Euro Total	Euro Gen. govt	Euro Other	RoW	% of gen.govt
2010	216	21	7	14	195	3%
2011	32	-10	-17	6	42	-51%
2012	258	74	14	60	183	6%
2013	205	89	60	29	116	29%
2014	296	110	56	54	186	19%
2015	268	29	21	9	239	8%
1Q16	13	-27	-21	-6	41	-162%
2Q16	88	2	-22	24	86	-25%
3Q16	96	4	-16	20	92	-17%
Memo: size	4,208	2,032	935	1,097	2,176	22%

Source: ECB

The trend towards increasing exposures to higher-yielding bonds slowed down …

Bond investments of selected large euro area insurers split by rating category

(2011 – H1 2016; percentage of total investment portfolio, weighted average)

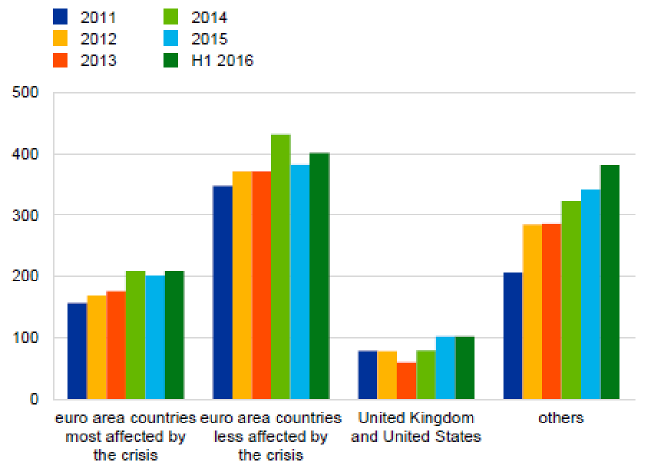


Sources: JPMorgan Cazenove, individual institutions' financial reports and ECB calculations.
Note: Based on data for 15 large euro area insurers and reinsurers.

… while exposures to non-euro area sovereigns continued to increase

Geographical split of the government bond holdings of selected large euro area insurers

(2011 – H1 2016; EUR billions)

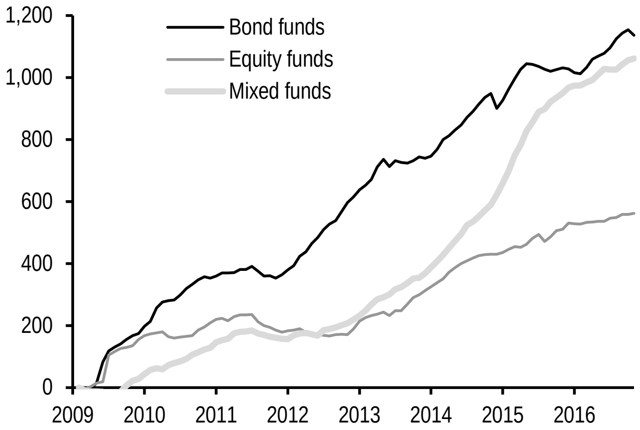


Sources: JPMorgan Cazenove, individual institutions' financial reports and ECB calculations.
Notes: Euro area countries most affected by the crisis include Greece, Ireland, Italy, Portugal and Spain. Euro area countries less affected by the crisis include Belgium, France, Germany, Luxembourg and the Netherlands. The countries are split into the two different groups on the basis of whether a country experienced a significant deterioration in its long-term credit rating since the onset of the financial crisis. A significant deterioration is defined as a downgrade by two or more credit quality steps on the Eurosystem's harmonised rating scale between the end of 2008 and the end of 2015 according to at least one of the three credit rating agencies which cover all euro area sovereigns. Based on available data for 15 large euro area insurers and reinsurers.

Mixed funds and equity funds saw inflows in 2015 – but outflows in 1Q-3Q 2016

Bond funds saw large outflows in November

Cumulative flows into bond, equity and mixed funds in the Euro area; €bn



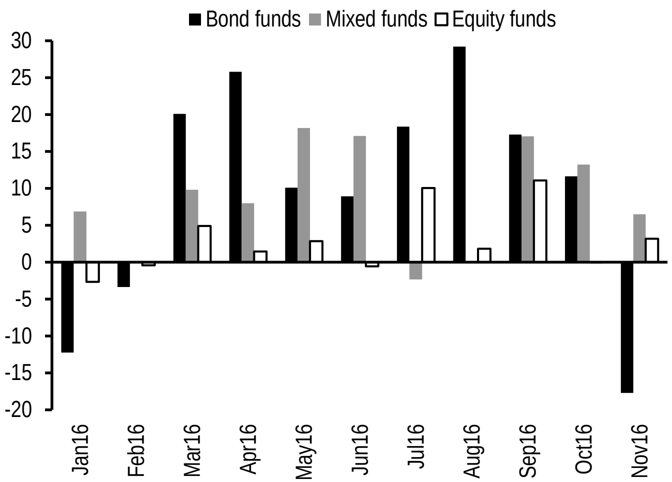
Source: ECB

Equity inflows in 2015 have been largely reversed in 2016

Equity Fund Flows in % of Net Asset Value of all major fund classes including ETFs	2015	2016 ytd[1]
Western Europe	+12%	-9.5%
US	-4%	-1.4%
Total Equity Funds	0%	-1.5%

Source: AIM; EPFR Global; Deutsche Bank, Weekly Fund Flows, as of 13th Dec 2016

Monthly flows into bond and equity funds in the Euro area; €bn



Source: ECB

Both bond and mixed funds sold Euro area government securities in first nine months of 2016

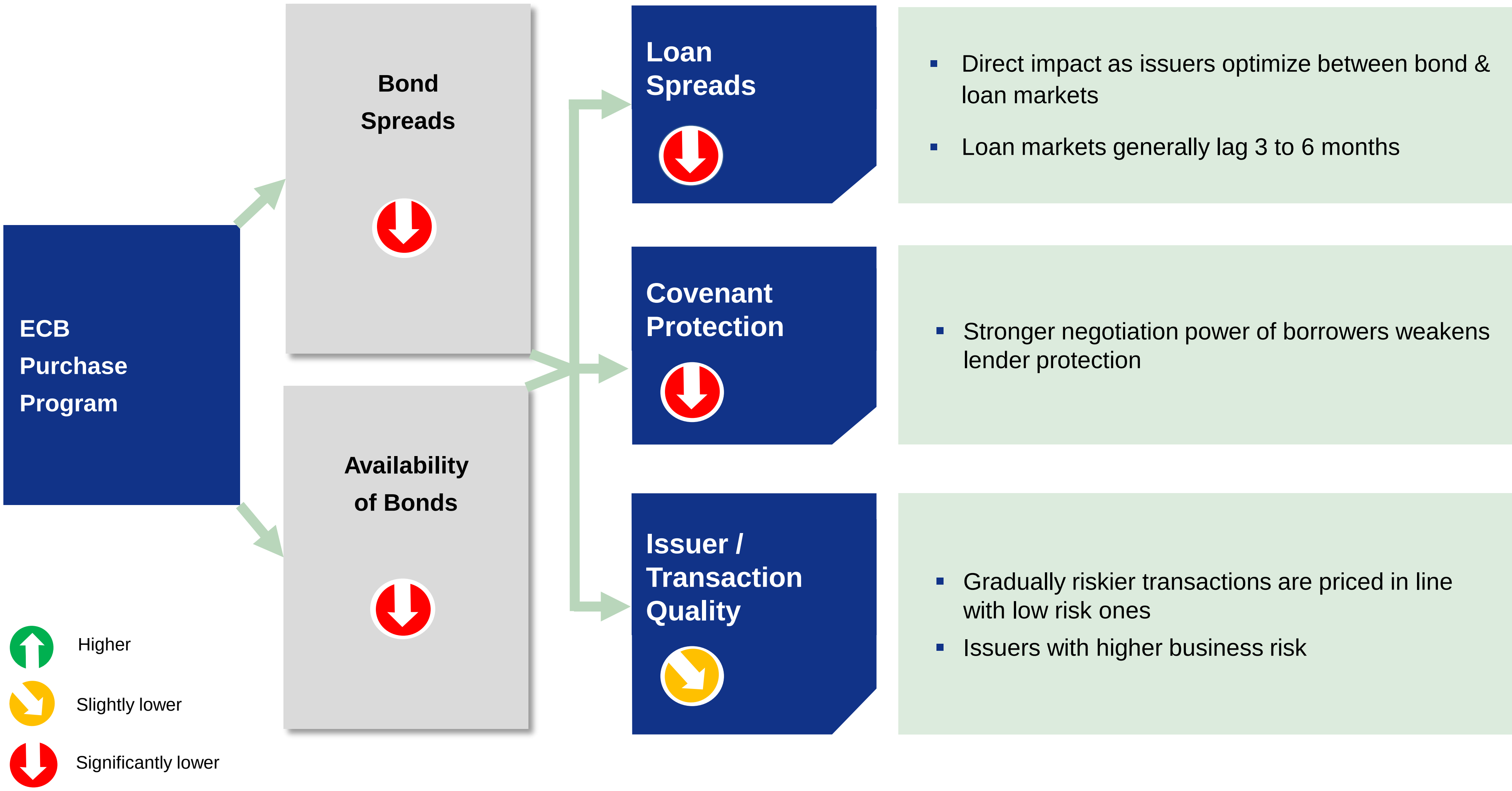
Purchases of Euro area government funds by type of fund; €bn

	Total funds	Bond funds	Mixed funds	Other funds
2013	60	19	25	16
2014	56	15	28	14
2015	21	-6	33	-6
1Q16	-21	-12	-8	0
2Q16	-22	-12	-10	0
3Q16	-16	-9	-6	-1
Memo: size	935	586	285	64

Source: ECB

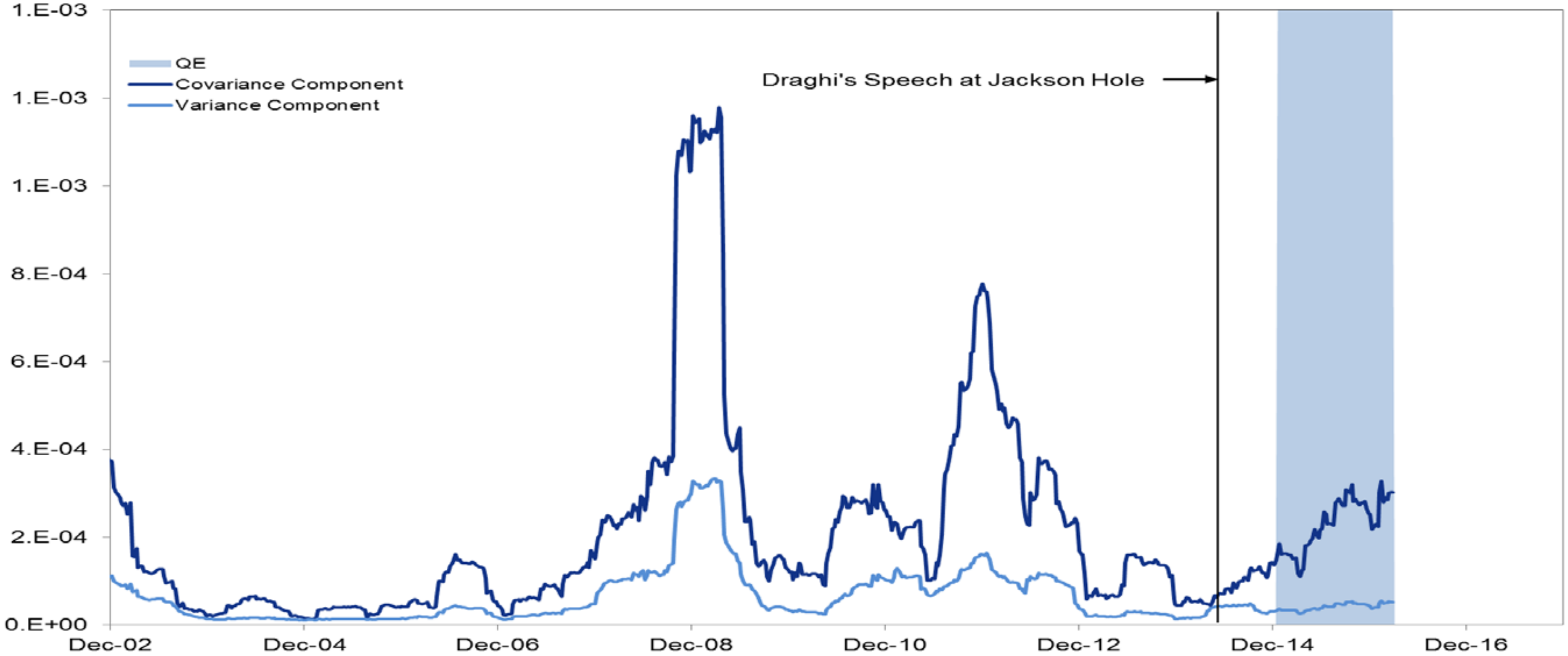
How have correlations been impacted? What bubbles are there?

The impact of ECB asset purchases is not only visible through spread tightening



Asset Correlation - QE lifting all boats

Equally-weighted portfolio of 14 European assets
(Government bonds, Equities and Real Estate in Germany, France, Italy, Spain, and Corporates and ABS)

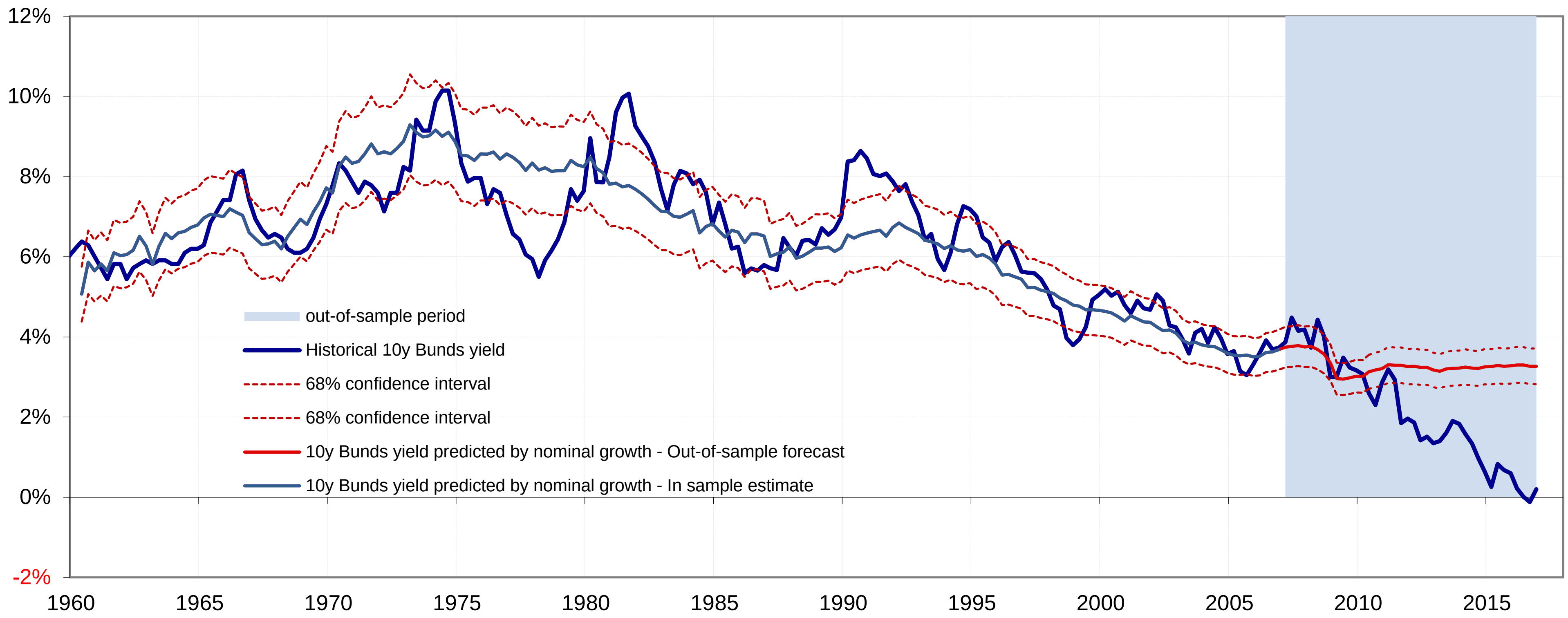


The chart shows 6-months, weekly data, rolling estimates. However, the 3-months, 12-months, 24-months rolling windows lead to the same conclusion.

- Correlation between more than two asset classes can be measured synthetically by decomposing the variance of a notional diversified portfolio into two components: first, the sum of the variances of the constituent asset classes; second, the sum of their covariances. A rise in the second term indicates that different asset classes increasingly move in the same direction (i.e. the benefits of diversification vanish).
- Correlation went up in 2007-09, and in 2010-11 alongside increased volatilities of individual asset classes during those episodes of crises.
- The pattern seen since 2014 is unusual: Cross asset class correlation has gone up, while the volatility of the individual asset classes has remained subdued.

QE pushing bunds into „bubble“ territory

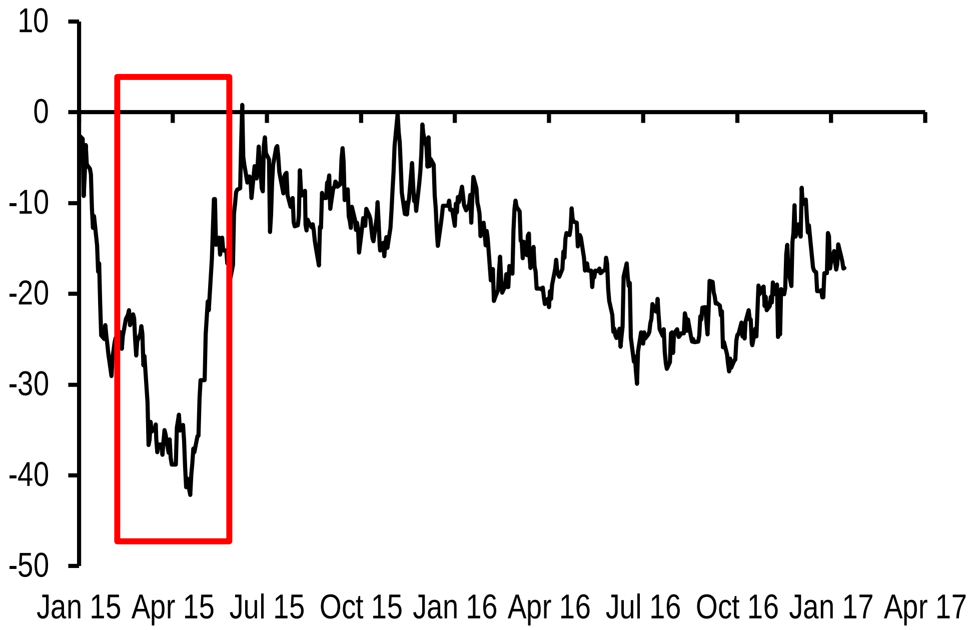
Germany: Historical vs. Predicted 10y Bunds Yield



- We see QE and in particular the Asset Purchase Program being a main driver of compressed Bund (and other European Government Bond) yields
- Levels are excessively low – historically and in the context macroeconomic development

20bp QE premium in Bunds versus money markets?

The 10Y Bund QE premium is not large, consistent with soft tapering
Estimated 10Y Bund QE premium*; bp



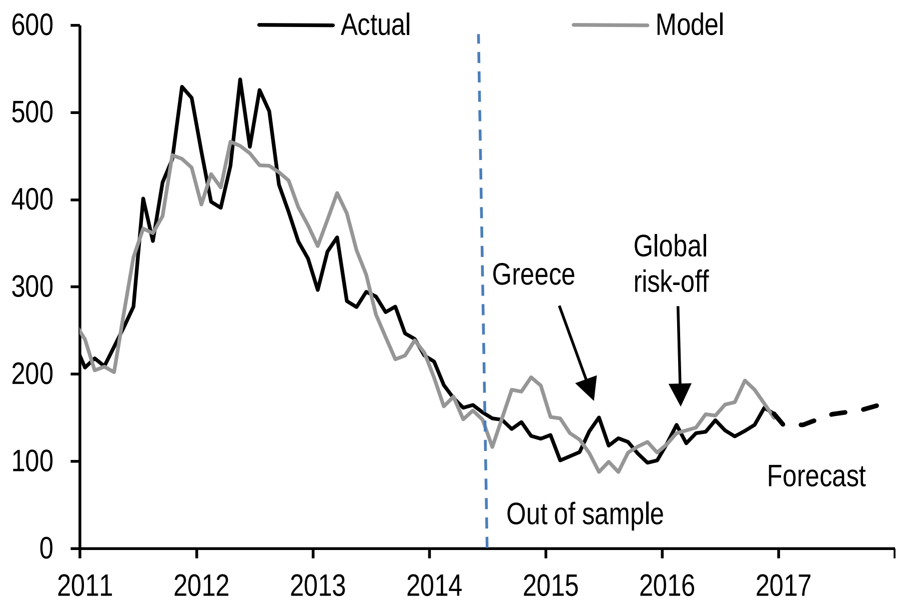
* Estimated as subset of the residual of Bund yields vs. money market reports. Model = -0.01*1Y Eonia OIS spot + 0.85*1Y Eonia OIS 3Y forward + 0.64; R*squared: 98%; January 2007 – current.

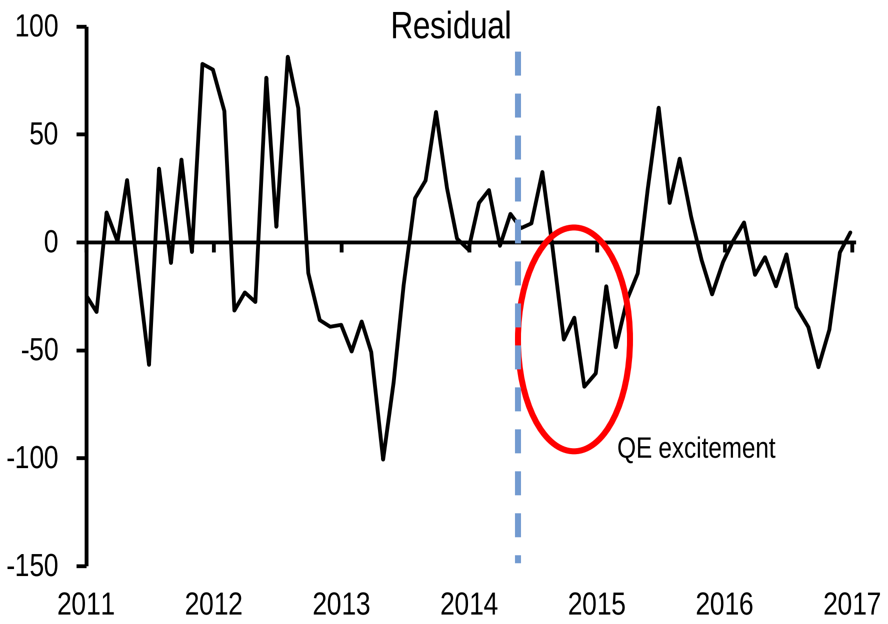
- Reaction to soft December 2016 tapering announcement was muted, also thanks to conditionality
- Even before December meeting investors showed expectations of a much more hawkish ECB reaction function than in September
- 2013 US “taper tantrum” suggests that caution should be exercised

Intra-EMU spreads: political risk is offsetting QE at the moment

Most intra-EMU spreads will tighten until 1H17 but will then widen in 2H17, reversing the multi-year tightening trend that started the with OMT announcement

J.P. Morgan 10Y weighted peripheral spread to Germany fair value model*; bp



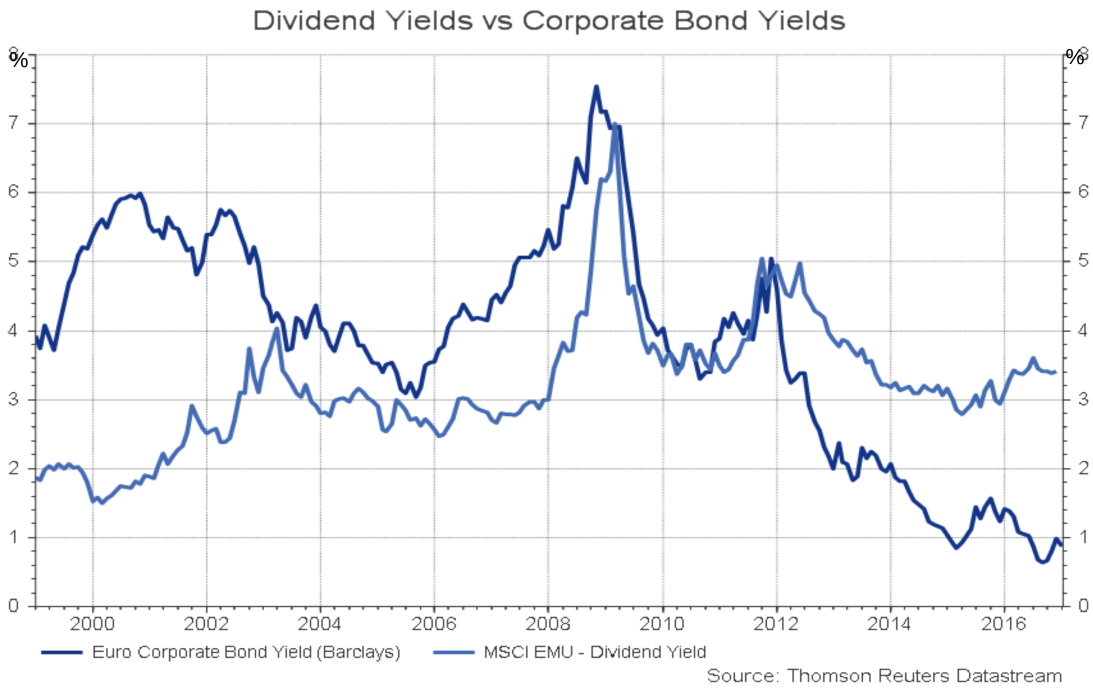


* J.P. Morgan 10Y weighted peripheral spread to Germany fair value model: - 25.5*Euro composite PMI + 21.6*3M MA Core-periphery PMI + 1532.0; R-squared: 84%. Regression period: Jan11-Jun14.
Source: Markit, J.P. Morgan

- Long term fair value model: intra-EMU spreads are driven by 1) EZ composite PMI; 2) periphery minus core composite PMI
- 2017 outlook: 1) macro component gives neutral signal; 2) political risks and 3) tapering risks, will be the main drivers
- In late 2014/early 2015, investors over-reacted to QE. Over-reaction to full tapering announcement and then recovery?

No bubbles indicated for equities

Yield spread over Corporate Bonds increased



Equity Inflows largely reversed in 2016

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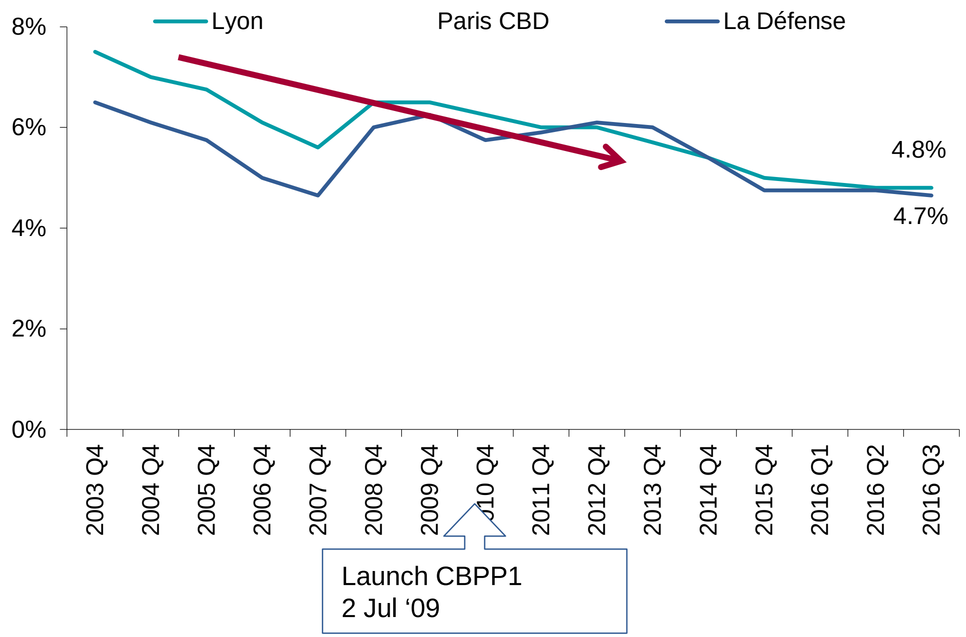
Total Equity Funds	0%	-1.5%

Source: AIM; EPFR Global; Deutsche Bank, Weekly Fund Flows, as of 13th Dec 2016.

- With the start of the ECB's Quantitative Easing program early 2015, investors moved into Western European equity funds at the expense of US equity funds.
- The flows in 2015 were neutral overall for equities as a whole.
- The inflows in Europe continued through all of 2015 and subsequently turned negative in 2016. On a net basis, Europe still has small net inflows of around 2.5% of the net asset value of all major fund classes since 2015.
- Valuations are at highs for technical reasons (lower interest rates), but flows do not indicate a bubble.

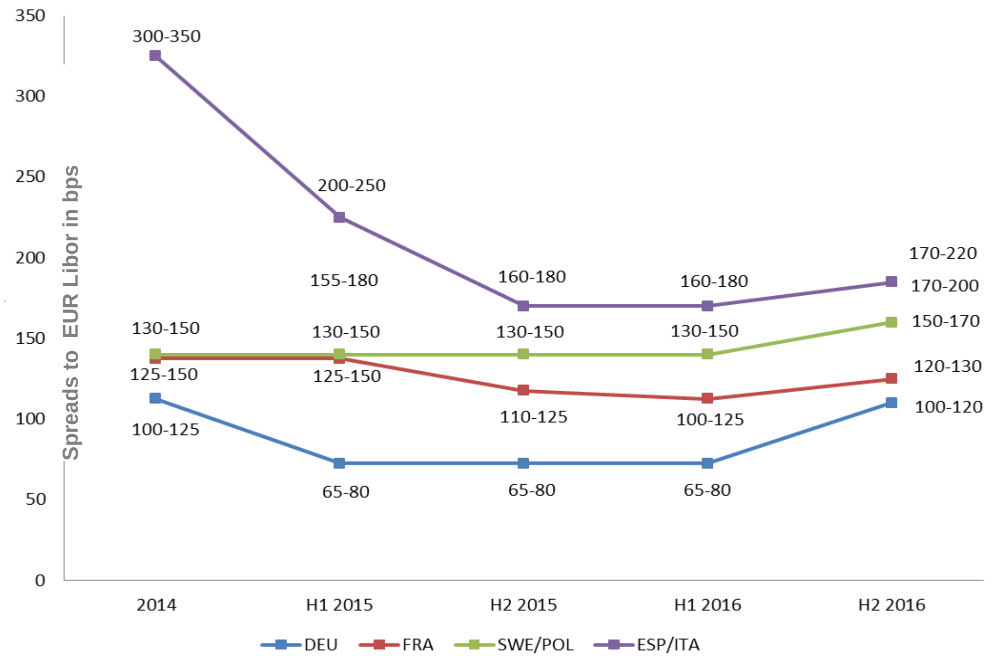
Real estate: valuations at historic high and risk-taking increased

Prime Office Real Estate Yields* (France)



Source: PMA, *Net Operating Income (NOI) Yields

Commercial Real Estate Loan Spreads (LTV 55-60%)



Source: Allianz Real Estate, Internal estimates

- Prime property yields are at historical lows. Search for yield pushes real estate valuations ever higher, supported by even more extreme bond yields. Investors are moving into non-core assets and less standardized transactions.
- Margins are compressed in Real Estate Debt, too. In Spain/Italy, margins continue to be substantially tighter today than in 2014.
- Trend in Germany and France has somewhat reversed in late 2016 but terms deteriorated as competition put significant pressure on negotiating power of lenders, especially in commercial real estate loan market.

What are implications of reinvestment / extension or tapering?

After ECB QE, net issuance will be negative almost everywhere in 2017

As has been the case for the past two years German supply after redemptions and QE will be heavily negative

J.P. Morgan forecast of 2017 gross conventional issuance, net of redemptions and net of redemptions and ECB purchases of conventionals on a cash basis; €bn

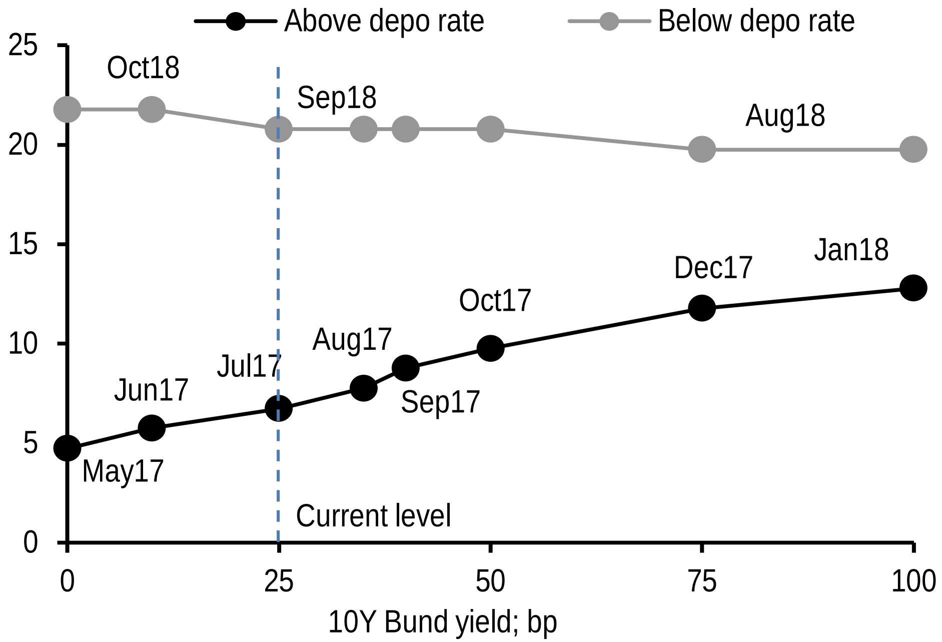
	Gross	Net of redemptions	Net of redemptions and ECB QE
Germany	152	10	-126
France	185	84	-36
Italy	175	71	-39
Spain	115	31	-47
Netherlands	33	-2	-37
Belgium	36	8	-14
Austria	21	3	-14
Finland	14	3	-9
Ireland	11	5	-1
Greece	2	0	-2
Portugal	18	11	4
Total	762	223	-320
Core	441	106	-235
Periphery	321	118	-85

Note: *In this analysis we look at the cash value of ECB purchases. Given that most bonds trade well above par notional purchases will be smaller. The ECB will spend €80bn per month until March and €60bn between April and December*

ECB & scarcity after the December announcement: the Euro-system will be forced to buy bonds trading below the depo rate

We estimate that the scarcity measures announced by the ECB increase the capacity of purchases in Germany to as much as September 2018 if fully implemented

J.P. Morgan estimate of when issue limit will be reached in Germany under different 10Y yield scenarios, under the new PSPP framework of 1-31Y purchases with or without depo rate floor; # of months



* We shock the current 10Y Bund yield level and assume it to remain at that level going forward. For the rest of the German central, regional and agency universe we use the recent 3M beta to 10Y Bund to estimate the yield and price level under different 10Y Bund yield levels. Current beta for 2Y is around 45%, 5Y is around 63% and 30Y is around 130% for German central government debt.

- The new measures alleviate the scarcity problem for German bonds but force central banks in the smaller countries to further reduce the pace of purchases
- The rejection of the possibility to go beyond the 33% issue limit and the refusal to discuss changing the country allocation are important in limiting the scope for further extensions in 2018
- J.P. Morgan official forecast: net purchases will stop in the middle of 2018, announcement of proper tapering towards the end of 2017; with risks of less aggressive action

ECB & scarcity after the December announcement

At current market levels, Germany is the only country where purchases of depo rate are likely to require calibration
Estimate of action required for purchases to reach at least December 2017

	Below depo rate purchases required?	Reduced pace of purchases required?
Austria	No	No
Belgium	No	No
Finland	Yes	Yes
France	No	No
Germany	Yes (partial)	No
Ireland	Yes	Yes
Italy	No	No
Netherlands	Yes	No
Portugal	No	Yes
Spain	No	No

The Eurosystem will have to reduce further purchases of OTs in order to continue until December 2017
J.P. Morgan estimate of when the 33% issue limit is reached in Portugal under various PSPP purchase paces;

	Adjusted capital key	Recent pace	Optimal pace
% of adjusted capital key	100%	61%	39%
€bn purchases under €80bn pm APP	1.6	1.0	0.6
€bn purchases under €60bn pm APP	1.2	0.7	0.4
% at Mar17	33%	30%	29%
% at Dec17	>33%	>33%	33%
33% reached around	Mar-17	Jul-17	Dec-17

Re-investment of maturing APP securities: not a big deal?

The amounts reinvested will start to climb in 2018

J.P. Morgan estimate of amounts to be re-invested as APP bonds mature by type of instrument; before purchases of 1-2Y bonds in 2017; €bn

	2017	2018
Germany	3	17
France	3	11
Italy	3	17
Spain	3	13
Netherlands	1	3
Belgium	0	1
Austria	0	1
Finland	0	1
Ireland	0	1
Portugal	1	2
Others	1	2
Sovereign & Agencies	16	70
Supranationals	4	10
Total	19	80

- The reinvestment programme was originally announced in 2015, and is not important in our view:
  - It should have been expected as it is a common practice among central banks doing QE
  - Notional re-investment keeps stimulus constant; it is not new stimulus
  - 2018 numbers will increase if central banks buy many short-dated bonds in 2017

Discussion topics

1. ECB APP eligible assets and real estate suggest some element of a “bubble”. Equity market implication is less clear. Private markets see some rotation and deterioration of investor protection. Do BMCG members agree to the findings? Are there other signs of bubbles?
2. In case of ending ECB support, in which asset classes do BMCG members expect corrections and what order of magnitude?
3. Does the current discussion on FED balance sheet change the expectation for ECB actions?
4. What would in your view be the impact of the APP on liquidity and market functioning this year?

Disclosures (JP Morgan)

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