

30 June 2015

ECB Bond Market Contact Group

Market Outlook

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Interest Rate Strategy

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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures

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This presentation was approved for distribution on 29 June 2015; the disclosures in Appendix A1 are current as of the same date.

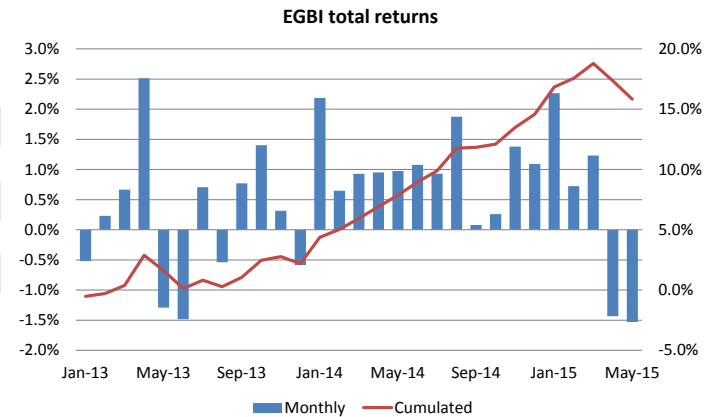
The Recent Sell-Off

EGBI Performance

Last time we had two consecutive months with negative returns was May/June-2013

EGBI Return and Risk Parameters - Issuer Countries										
Date	EMU	Austria	Belgium	Finland	France	Germany	Ireland	Italy	Holland	Spain
2009	4.3%	4.5%	5.0%	5.1%	2.9%	1.9%	3.3%	7.9%	3.8%	3.6%
2010	1.0%	6.5%	1.9%	5.6%	5.1%	6.0%	-15.1%	-0.8%	6.0%	-4.3%
2011	3.3%	5.8%	3.9%	6.6%	4.5%	9.2%	10.9%	-5.9%	8.5%	7.0%
2012	10.1%	10.1%	15.2%	6.9%	9.5%	4.4%	25.5%	19.0%	5.8%	5.5%
2013	2.2%	-1.0%	-0.5%	-1.8%	-0.5%	-2.3%	10.7%	7.0%	-2.1%	10.5%
2014	12.4%	11.9%	13.2%	9.7%	11.4%	9.8%	13.0%	14.3%	10.8%	15.4%
2015 YTD	-1.4%	-2.3%	-2.1%	-2.0%	-2.0%	-1.9%	-1.5%	0.0%	-2.0%	-1.5%
May-15	-1.5%	-1.2%	-1.5%	-1.0%	-1.2%	-1.1%	-1.3%	-2.1%	-1.2%	-2.0%
Outstanding (EUR bn)	5598	222	359	82	1332	1066	109	1341	357	730
Index yield (%)	0.74	0.39	0.58	0.33	0.49	0.25	0.66	1.35	0.34	1.25
Index volatility (%)	5.7	5.9	6.5	5.0	6.0	5.8	5.3	7.7	5.8	7.2
Yield/vol ratio	0.13	0.07	0.09	0.07	0.08	0.04	0.13	0.17	0.06	0.17
Index duration	7.2	7.6	8.1	6.9	7.6	7.3	6.4	6.8	7.4	6.5

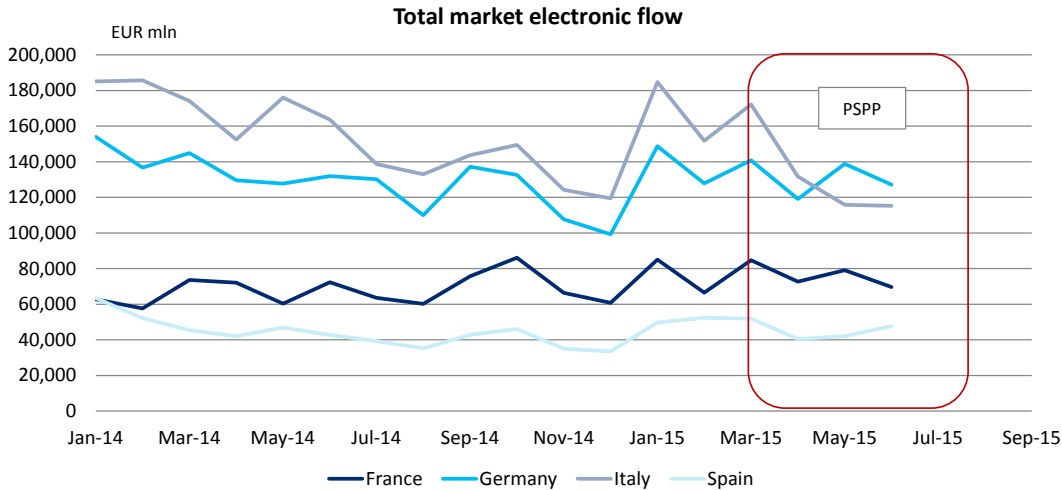
EGBI Return and Risk Parameters - Curve							
Date	EMU	1-3y	3-5y	5-7y	7-10y	10-15y	10+
2015 YTD	-1.4%	0.3%	0.0%	-0.8%	-2.2%	-2.7%	-3.4%
May-15	-1.5%	0.0%	-0.1%	-0.7%	-1.5%	-2.7%	-3.9%
Outstanding (EUR bn)	5598	1145	1078	759	989	654	1066
Index yield (%)	0.74	-0.06	0.25	0.58	0.95	1.40	1.58
Index volatility (%)	5.7	0.4	1.6	3.3	6.1	9.2	13.3
Yield/vol ratio	0.13	-0.15	0.16	0.18	0.15	0.15	0.12
Index duration	7.2	1.9	3.8	5.5	7.5	9.9	13.8



Source: Citi

Liquidity Monitor (1)

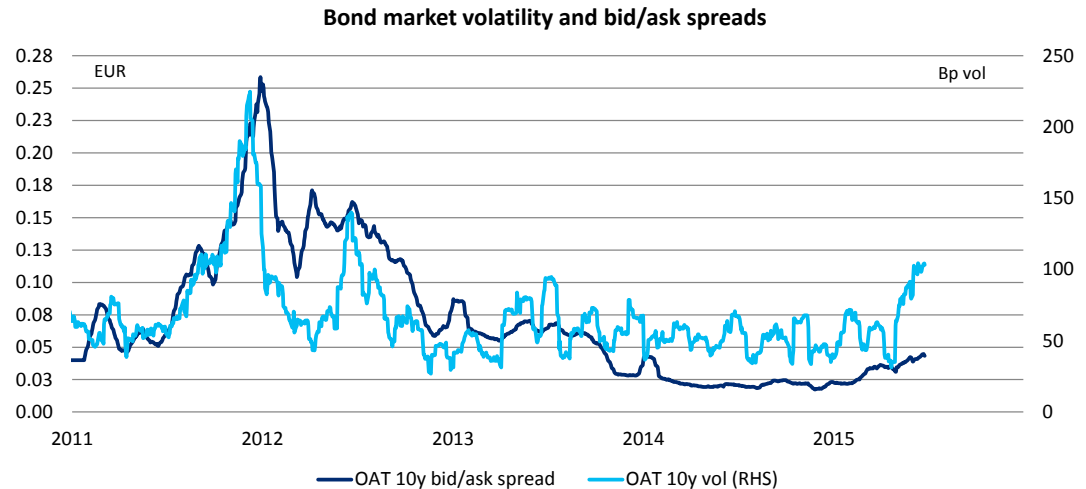
Electronic volumes are holding up, but...



Q2 volumes on electronic platforms are -17% vs Q1...

...and the “perception” is:

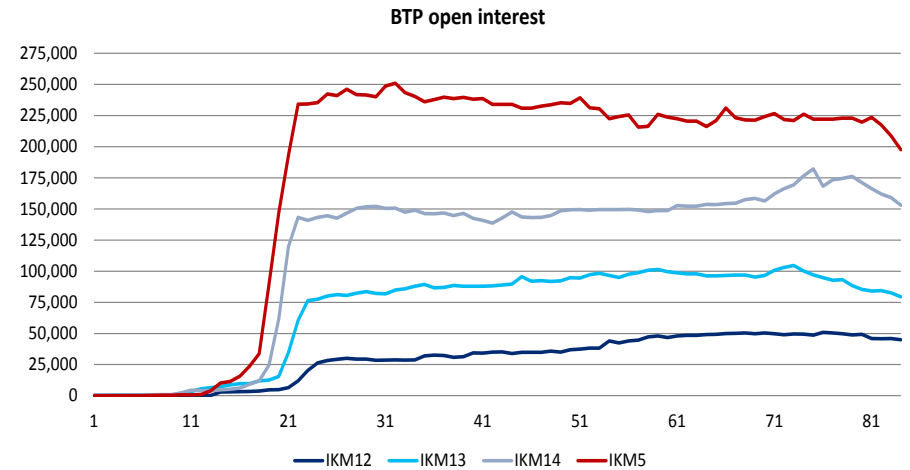
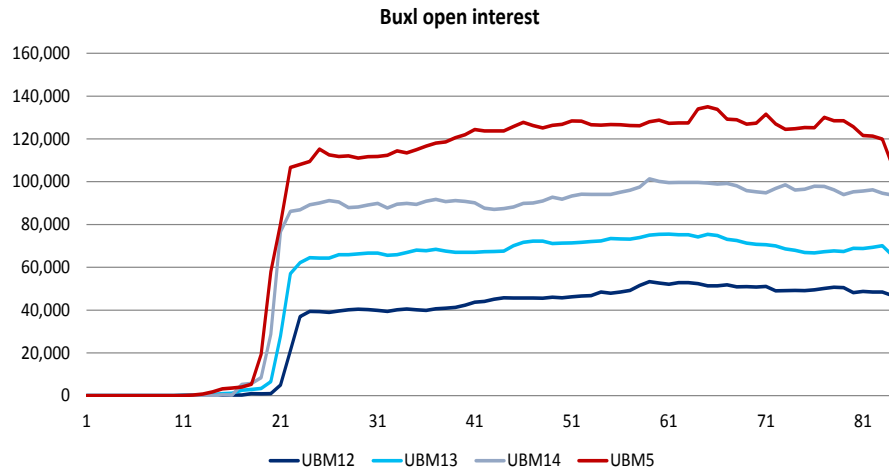
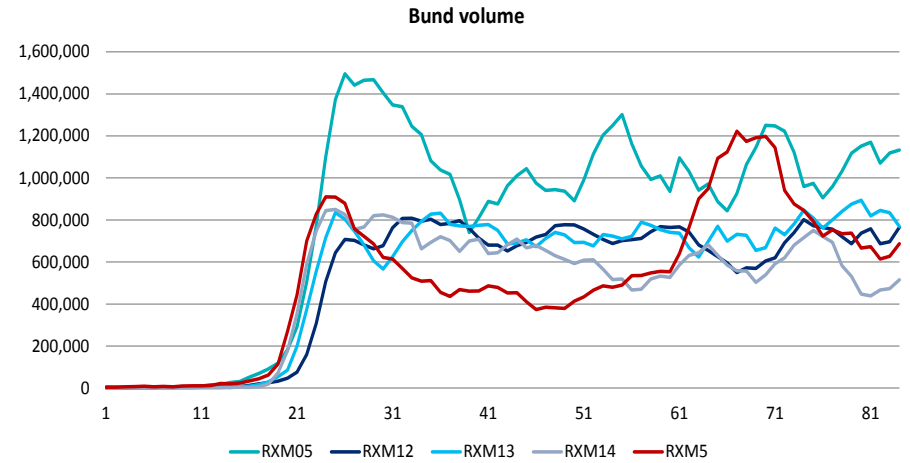
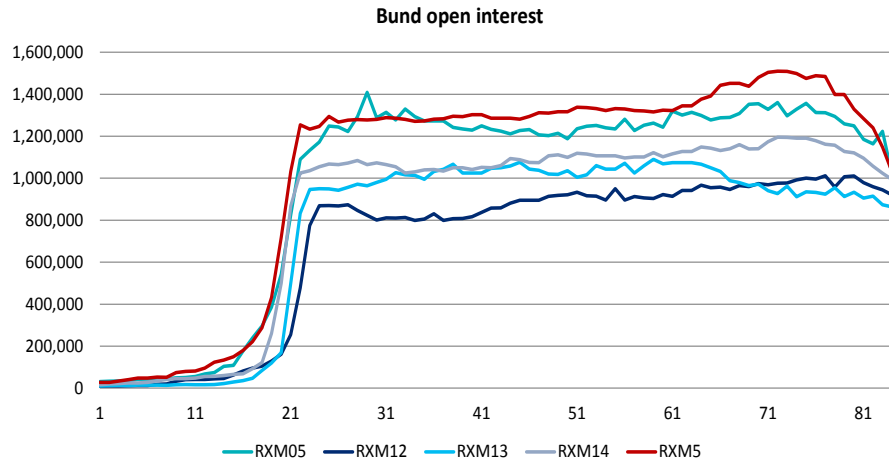
- 1) Flows keep slowing down;
- 2) Volatility has surged;
- 3) Bid/ask spreads have not yet reflected the increase in EGB market risk;
- 4) End users split tickets across dealers.



Source: Tradeweb, Bloomberg, Bondvision, Citi

Liquidity Monitor (2)

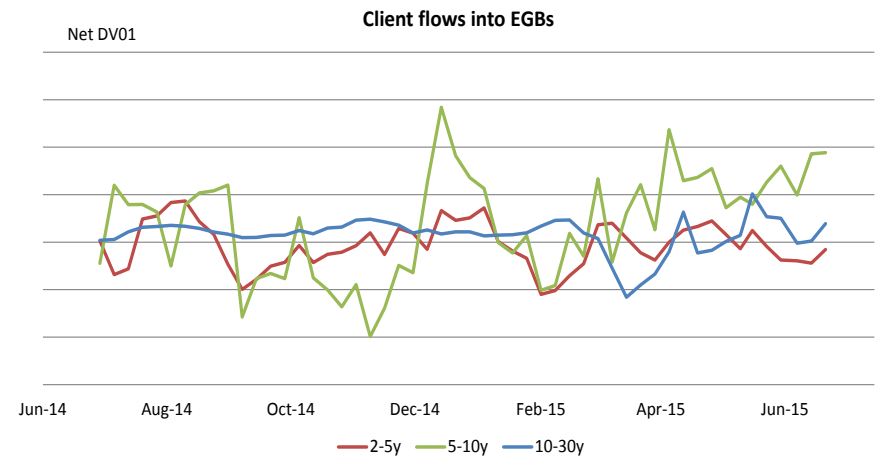
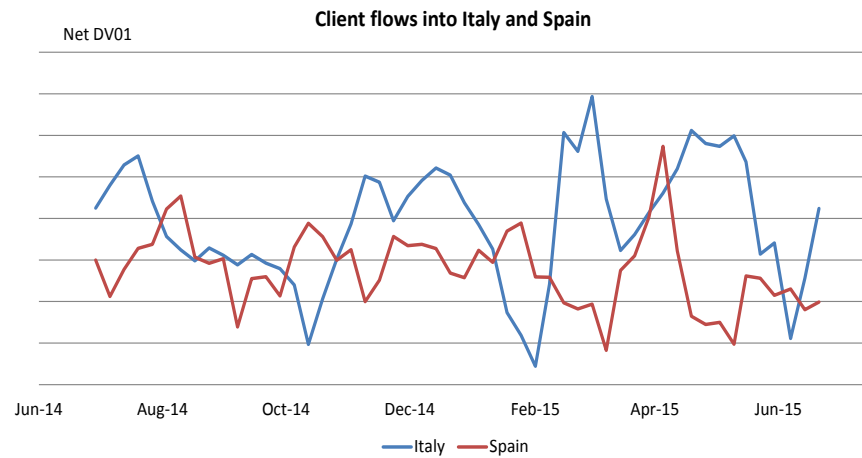
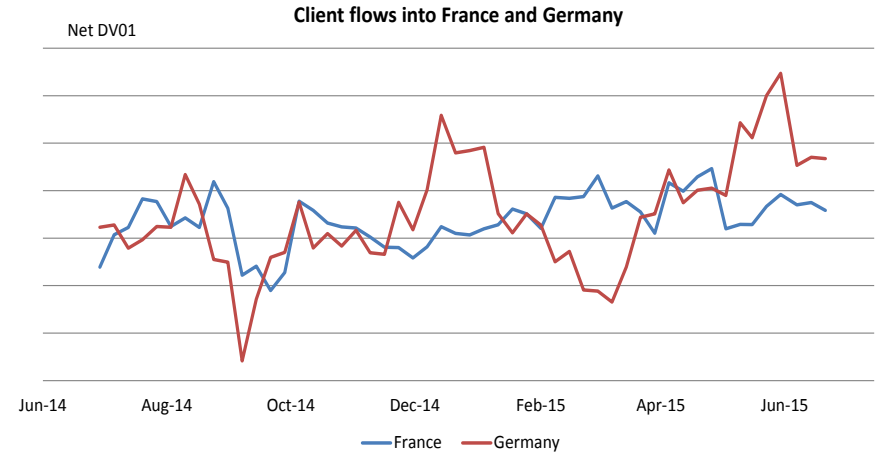
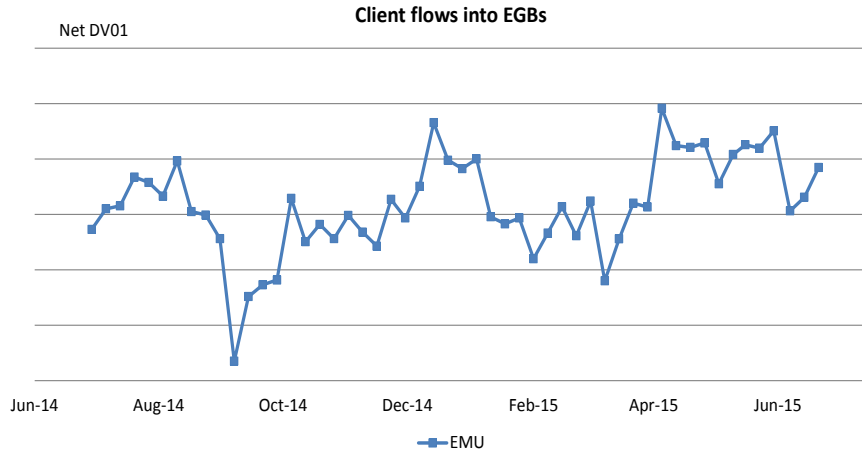
Futures liquidity has picked-up significantly in the sell-off



Source: Citi

EGB Flow Monitor (1)

From our trading desks



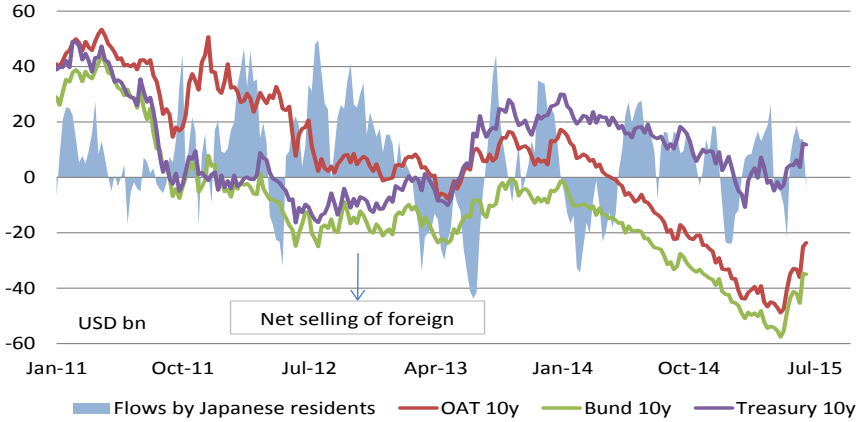
Citi Euro Rates (2015), [“Will Foreign Investors Sell to the ECB?”](#)
 Citi Euro Rates (2015), [“ECB: QE, Redemptions and Market Risk”](#)

Source: Citi

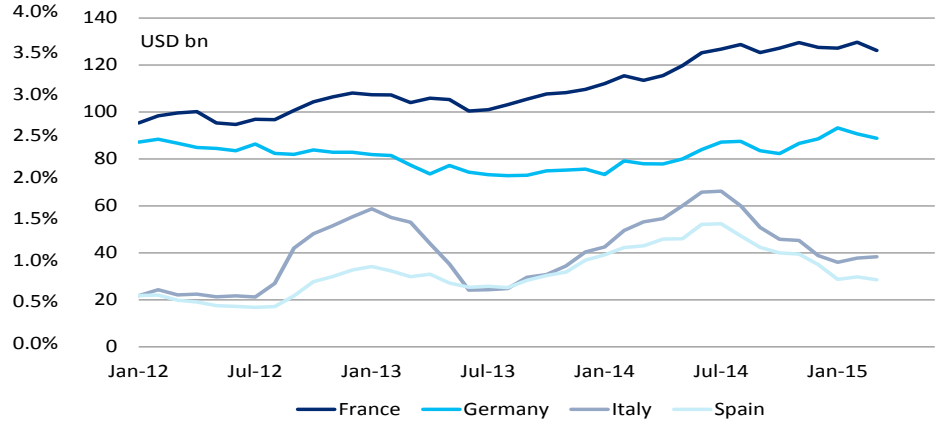
EGB Flow Monitor (2)

External sources

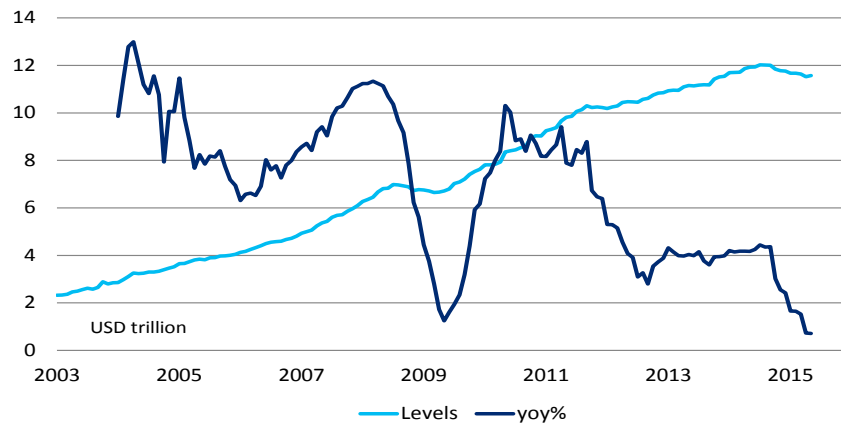
Japan: International transactions in securities



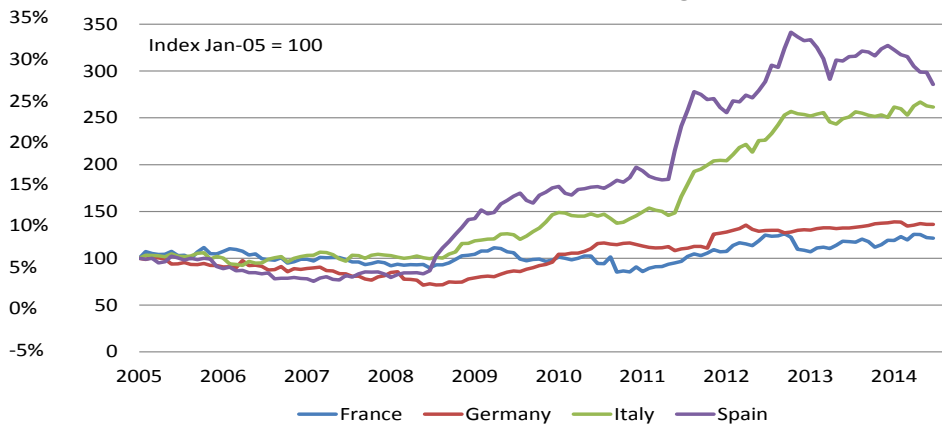
EGB holdings by US investors



International reserve assets (ex Gold)



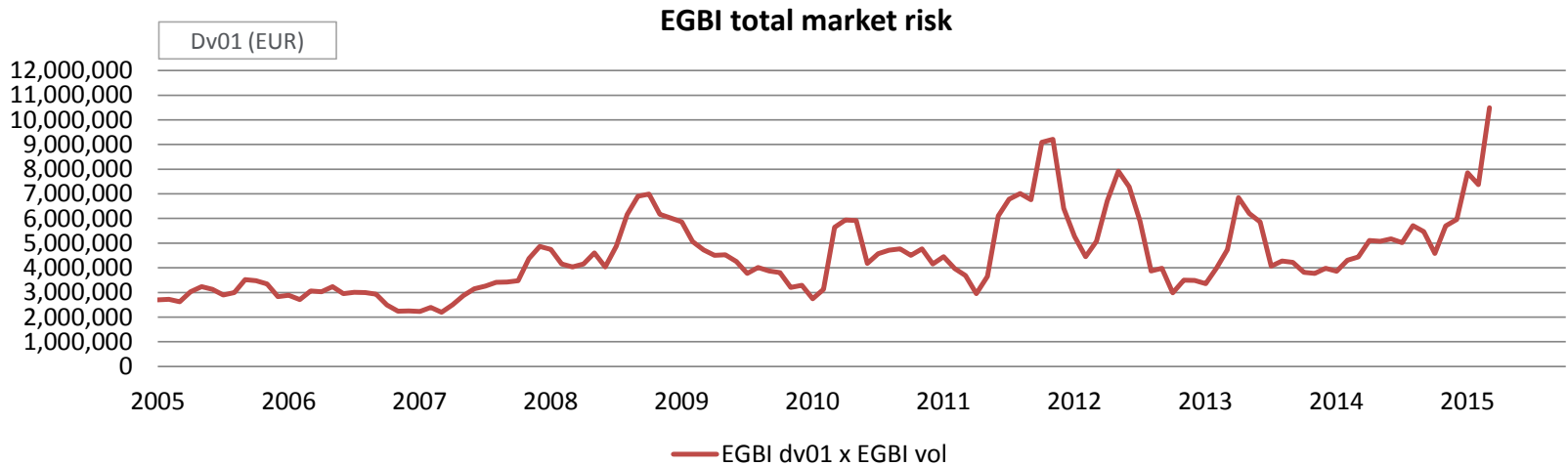
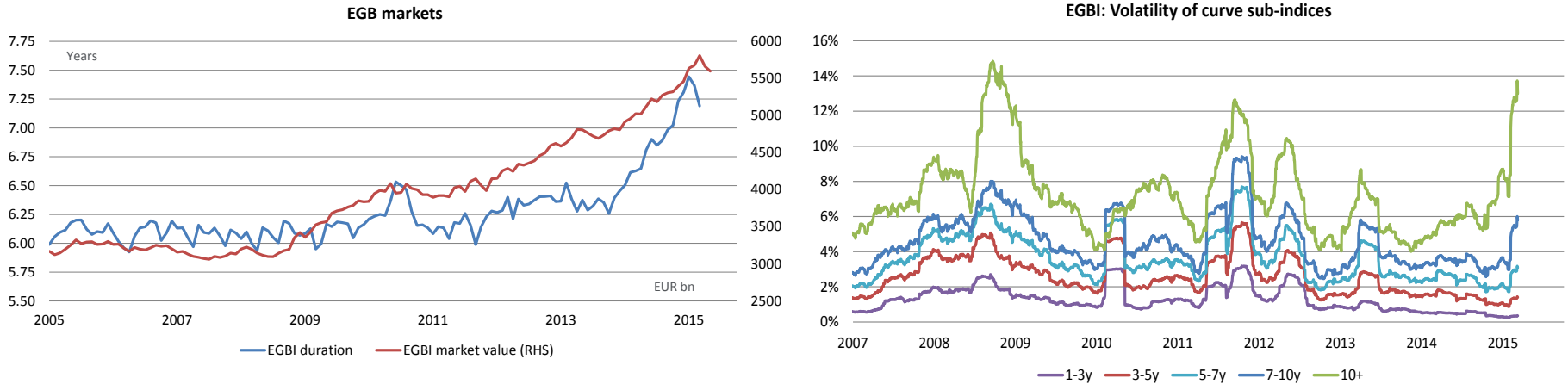
Banks: Domestic EGB holdings



Source: MOF, US Treasury, IMF, ECB, Citi

Explosion in Bond Market Risk

Higher market duration x Increased market size x Increased market vol → Risk explosion



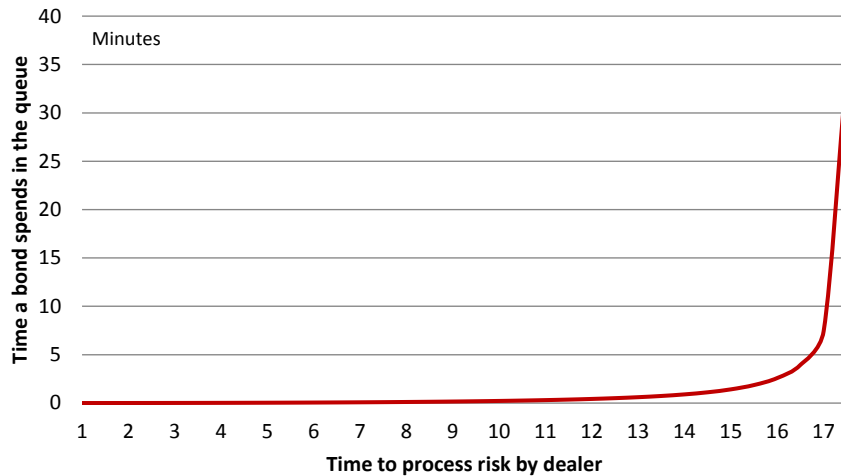
Citi Euro Rates (2015), [“On the Properties of a VaR-Shock”](#)

Source: Citi

Queuing Theory: Applications to Bond Markets

Don't need bond sellers to create a bond market sell-off

Bond market queue model

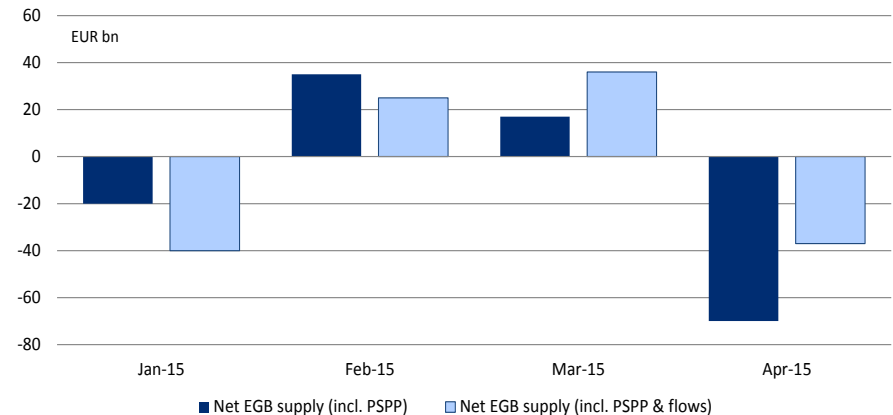


Net EGB supply (incl. PSPP)					Net EGB supply (incl. PSPP & flows)				
	France	Germany	Italy	Spain		France	Germany	Italy	Spain
Jan-15	8	-15	-3	-10	Jan-15	-4	-24	-16	4
Feb-15	19	-5	5	16	Feb-15	15	-5	-6	21
Mar-15	13	-13	19	-2	Mar-15	22	-9	24	-1
Apr-15	-25	-13	-12	-20	Apr-15	-17	-1	-11	-8
May-15	8	1	12	5	May-15				
Jun-15	12	-12	-22	7	Jun-15				
Jul-15	-29	-25	-35	-22	Jul-15				
Aug-15	-8	3	-13	2	Aug-15				
Sep-15	12	-8	12	7	Sep-15				
Total to April	15	-46	9	-16	Total to April	16	-39	-9	16

For a given steady-arrival of new issues (~17bn/week) and risk-processing time by dealers, we can compute the time a bond spends in queue waiting to be processed:

$$W = \frac{1}{\mu - \lambda} - \frac{1}{\mu}$$

Modified net EGB supply



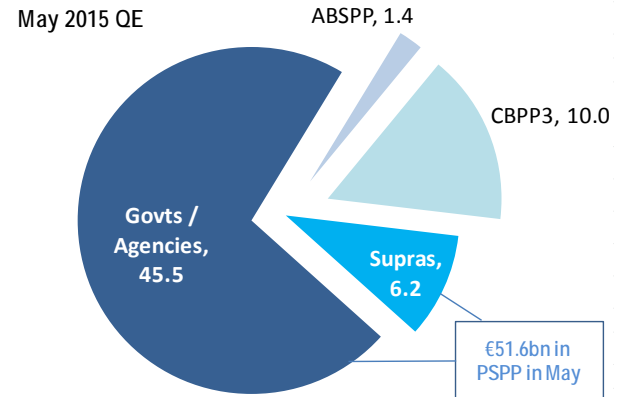
Citi Euro Rates (2015), [“Flow Equilibrium and Congestion”](#)

Source: ECB, IMF, MOF, US Treasury, Citi

Tracking the PSPP

Enough bonds (for now), signs of “dv01-based QE”

	Govts / Agencies	Supras	Total PSPP	ABSPP	CBPP3	TOTAL QE
Mar-15	41.7	5.7	47.4	1.2	12.4	60.9
Apr-15	42.0	5.7	47.7	1.2	11.5	60.3
May-15	45.5	6.2	51.6	1.4	10.0	63.1
May Δ (€bn)	3.5	0.4	3.9	0.3	-1.4	2.8
May Δ (%)	8%	7%	8%	23%	-12%	5%
TOTAL	129.1	17.6	146.7	7.2	85.1	239.0



HOLDINGS (€bn)

	Germany	France	Italy	Spain	Netherlands	Belgium	Austria	Portugal	Finland	Ireland	Other sovs	Supras	Total PSPP
Mar-15	11.1	8.8	7.6	5.4	2.5	1.5	1.2	1.1	0.8	0.7	1.0	5.7	47.4
Apr-15	11.1	8.6	7.6	5.5	2.5	1.5	1.2	1.1	0.8	0.7	1.3	5.7	47.7
May-15	12.1	9.5	8.2	5.9	2.7	1.7	1.3	1.2	0.8	0.8	1.3	6.2	51.6
May Δ (€bn)	1.00	0.86	0.64	0.44	0.14	0.13	0.11	0.09	0.06	0.04	-0.01	0.43	3.92
May Δ (%)	9%	10%	8%	8%	5%	8%	9%	8%	7%	6%	-1%	7%	8%
Total	34.4	26.9	23.4	16.8	7.7	4.7	3.7	3.3	2.4	2.2	3.5	17.6	146.7
Capital Key	26%	21%	18%	13%	6%	4%	3%	3%	2%	2%			

MATURITIES (yrs)

	Germany	France	Italy	Spain	Netherlands	Belgium	Austria	Portugal	Finland	Ireland	Supras	PSPP
Mar-15	8.1	8.2	9.1	11.7	6.7	8.8	7.8	11.0	7.3	9.4	7.3	8.6
Apr-15	7.9	7.8	8.4	9.7	7.0	9.1	8.0	10.8	7.2	9.1	8.1	8.3
May-15	7.1	7.8	8.7	9.7	6.9	9.1	7.8	10.8	7.2	9.6	7.8	8.1
May change	-0.8	0.0	0.3	0.0	-0.1	0.0	-0.2	0.1	0.0	0.5	-0.3	-0.2

Citi Euro Rates (2015), “QE Front-Loading in May – The Details”

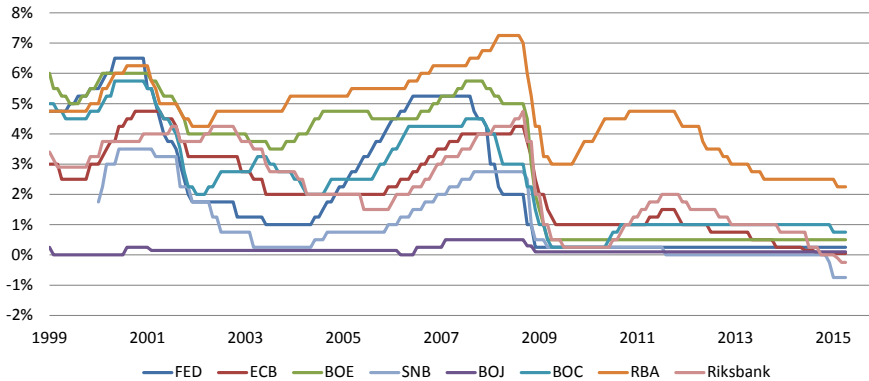
Source: ECB, Citi

The Outlook

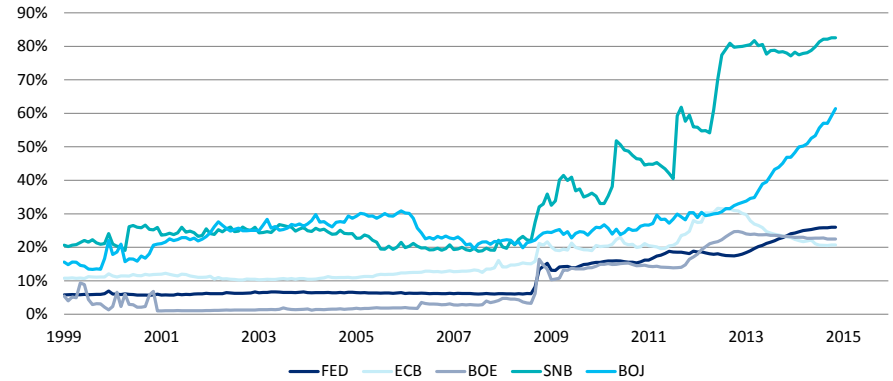
The Future of Monetary Policy

The global game of FX interventions

Central banks: Nominal policy rates



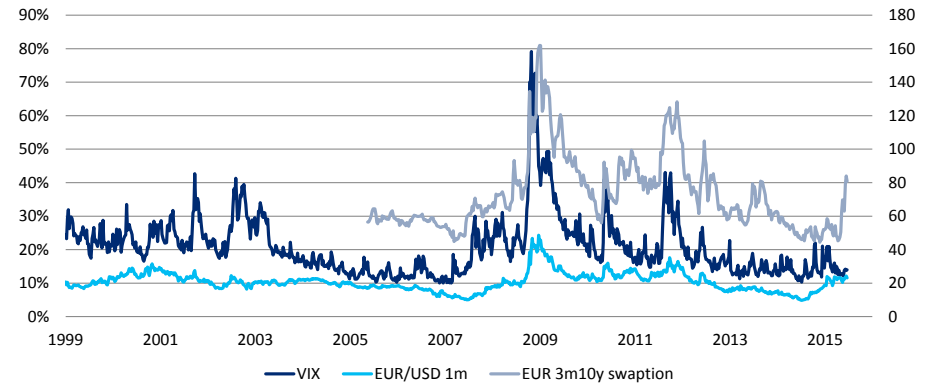
Central banks: Total assets (%GDP)



Policy surprises:
 Standard (rates)
 Non-standard (balance sheet)

→ increased market uncertainty
 → positive effect on term- and inflation-premia

Global asset price volatility



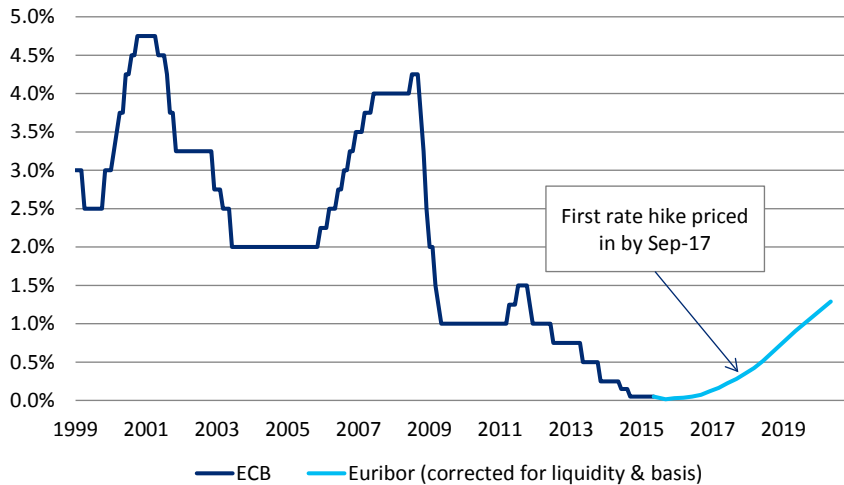
Citi Global Rates (2015), [“The Complexity of QE”](#)

Source: Citi

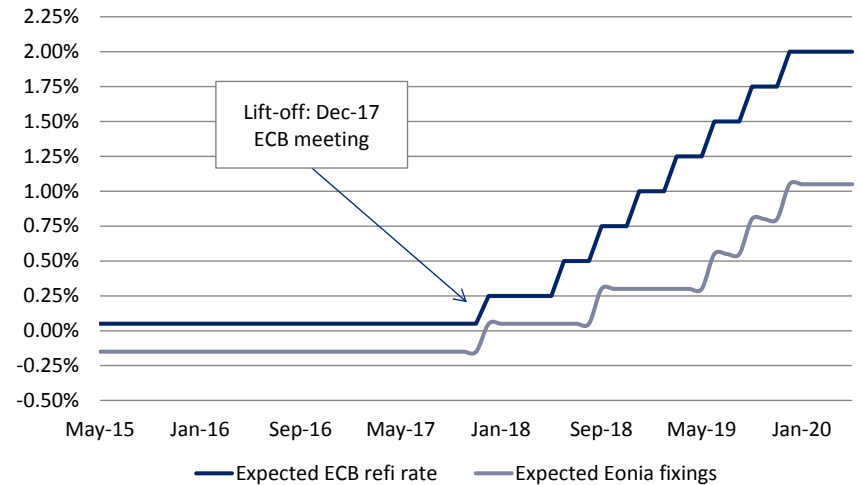
ECB Expectations

Variables: Lift-off date, excess liquidity conditions, policy corridor

ECB market expectations



Expected ECB policy rates (Citi) under excess liquidity



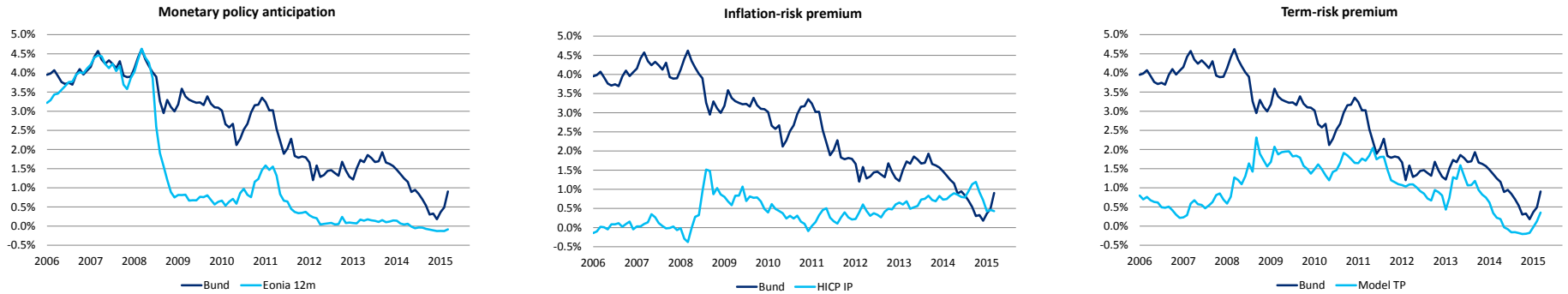
	Spot Eonia	Fwd-1y Eonia (implied from spot)		Exp. fixings (Citi)	Fwd-1y Eonia (implied from fixing scenario)	
1y	-0.12			-0.15		
2y	-0.10	1y1y	-0.07	-0.15	1y1y	-0.15
3y	-0.02	2y1y	0.15	-0.07	2y1y	0.10
4y	0.11	3y1y	0.50	0.22	3y1y	1.07
5y	0.26	4y1y	0.86	0.86	4y1y	3.45

Citi Euro Rates (2015), [“Eonia: Between PSPP-Tapering and Liftoff”](#)

Source: ECB, Citi

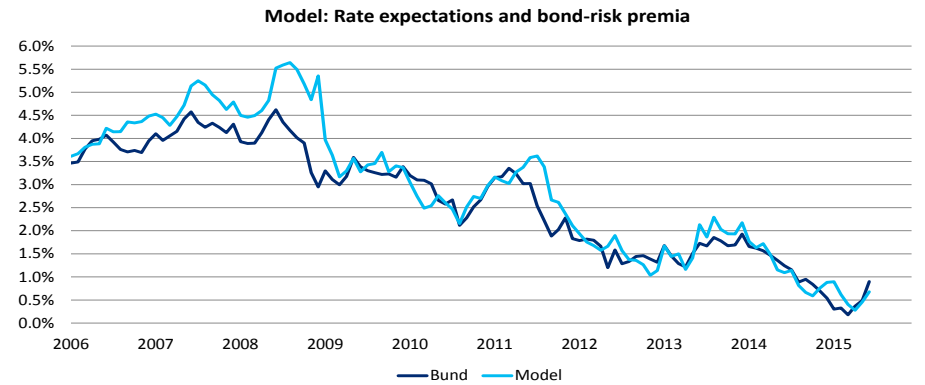
Bunds: Term & Inflation Premium

The combined effect of higher volatility, lower liquidity and improving cyclical fundamentals



$$y_t^{(n)} = \frac{1}{n} E_t \sum_{i=0}^{n-1} r_{t+i} + \frac{1}{n} E_t \sum_{i=1}^n \pi_{t+i} + rpy_t^{(n)}$$

Factors	Current market	Scenario 1: Reflation	Scenario 2: Deflation
Rate expectations	-0.14	0.00	-0.20
Inflation expectations	0.50	0.60	0.00
Term premium	0.38	0.95	0.00
Model yield	0.74	1.55	-0.20
German 10y yield	0.85		



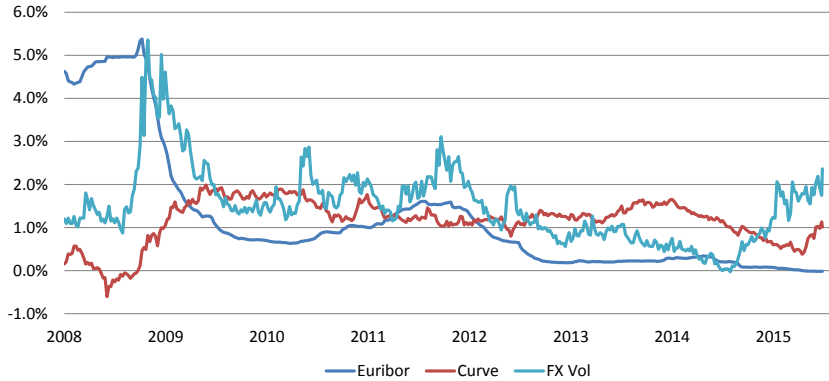
Citi Euro Rates (2015), [“On the Pricing of Government Debt: The Risk Structure of Interest Rates”](#)

Source: Citi

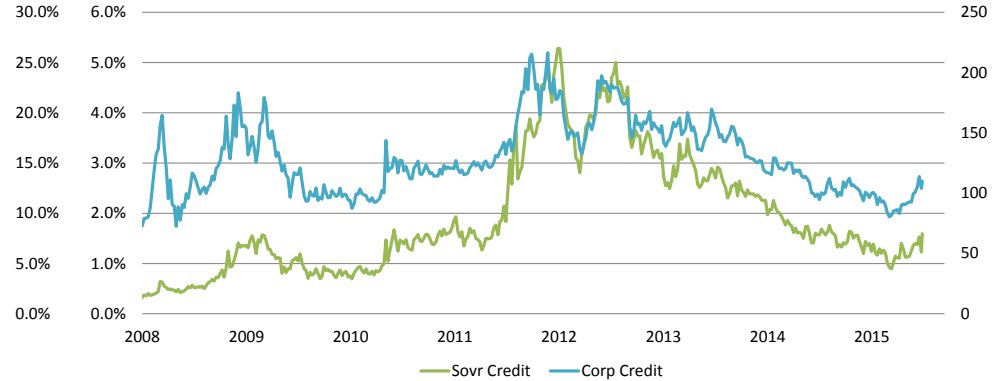
Bund: Swap Spread

Between market liquidity risk and credit risk

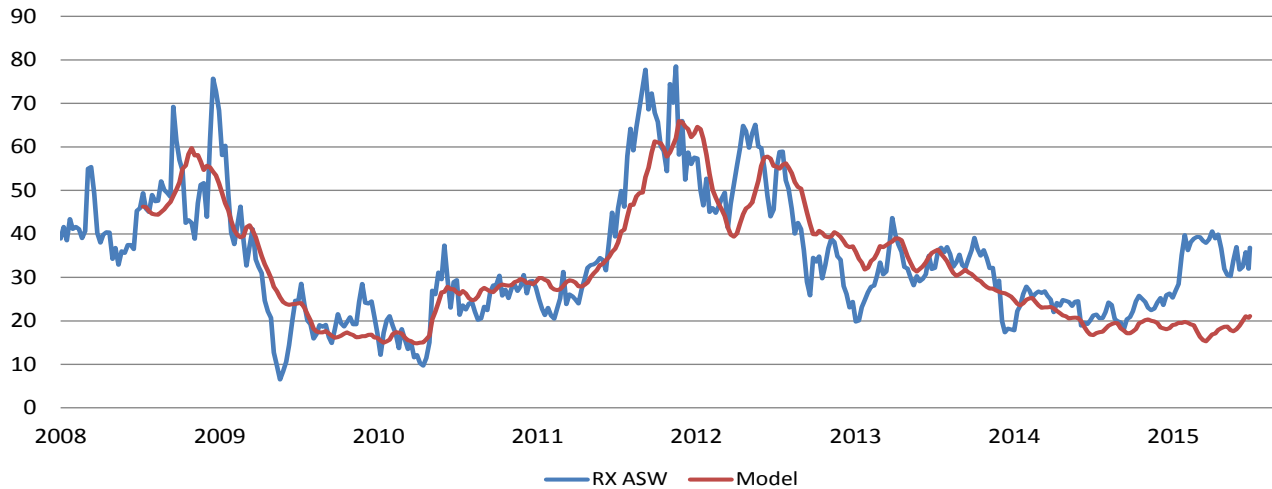
Swap spreads model: Liquidity variables



Swap spreads model: Credit risk variables



Bund swap spread model

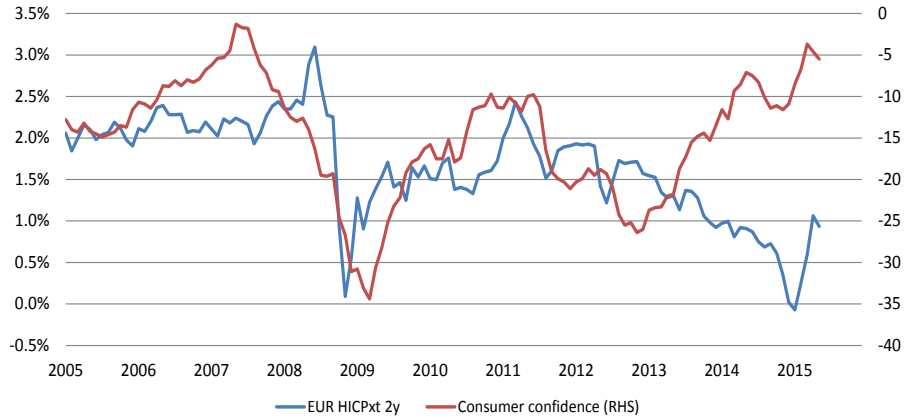


Source: Citi

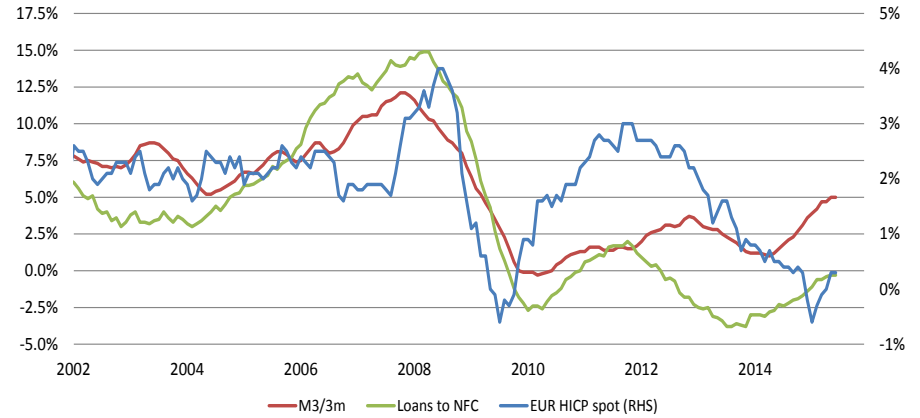
Signs of Inflation? Yes and No

Four charts to follow trends in Eurozone inflation

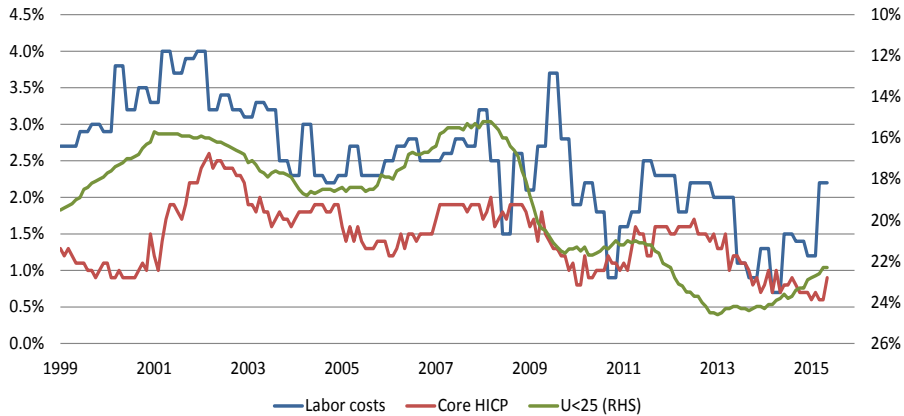
Business cycle expectations and inflation



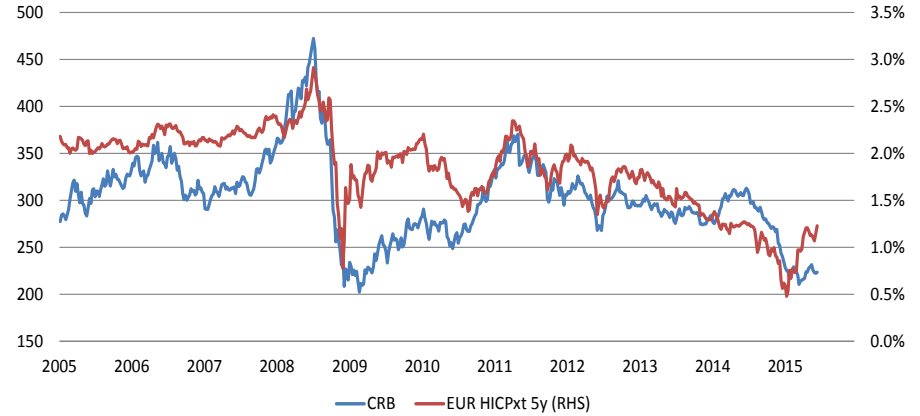
Monetary transmission and inflation



Labor market and core inflation



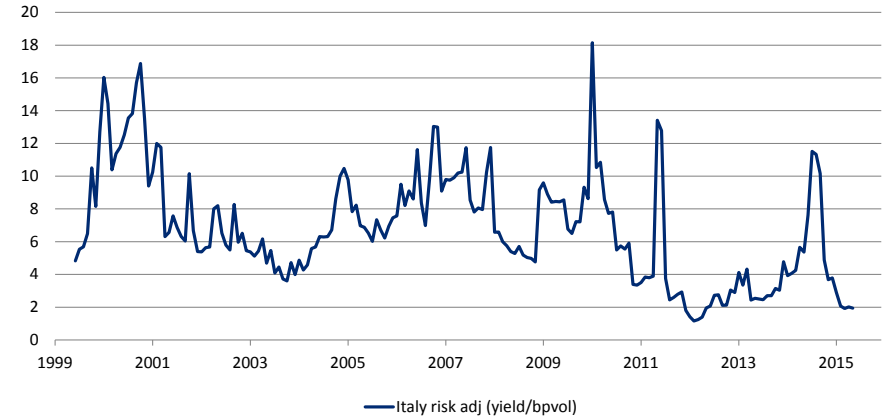
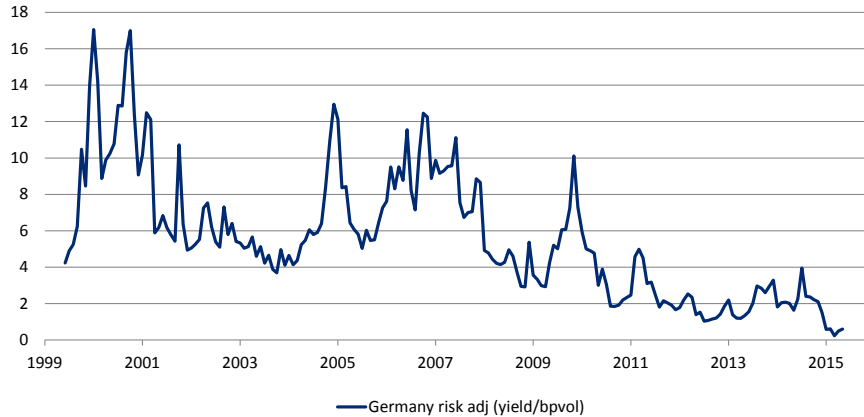
Commodities and EUR inflation



Source: Bloomberg, Citi

EGB Risk-Adjusted Yields

Yields are historically low also when adjusted for their realized volatility



EGBI Return and Risk Parameters - Yield/Vol Ratio by Curve Sector

Sector	Austria	Belgium	Finland	France	Germany	Ireland	Italy	Holland	Spain
1-3y	-0.37	-0.41	-0.54	-0.48	-0.70	-0.10	0.19	-0.59	0.16
3-5y	-0.01	0.00	0.01	0.03	-0.07	0.12	0.22	-0.02	0.22
5-7y	0.08	0.08	0.06	0.09	0.03	0.15	0.22	0.06	0.23
7-10y	0.09	0.10	0.08	0.10	0.05	0.15	0.19	0.08	0.18
>15y	0.06	0.09	0.06	0.08	0.06		0.14	0.06	0.13

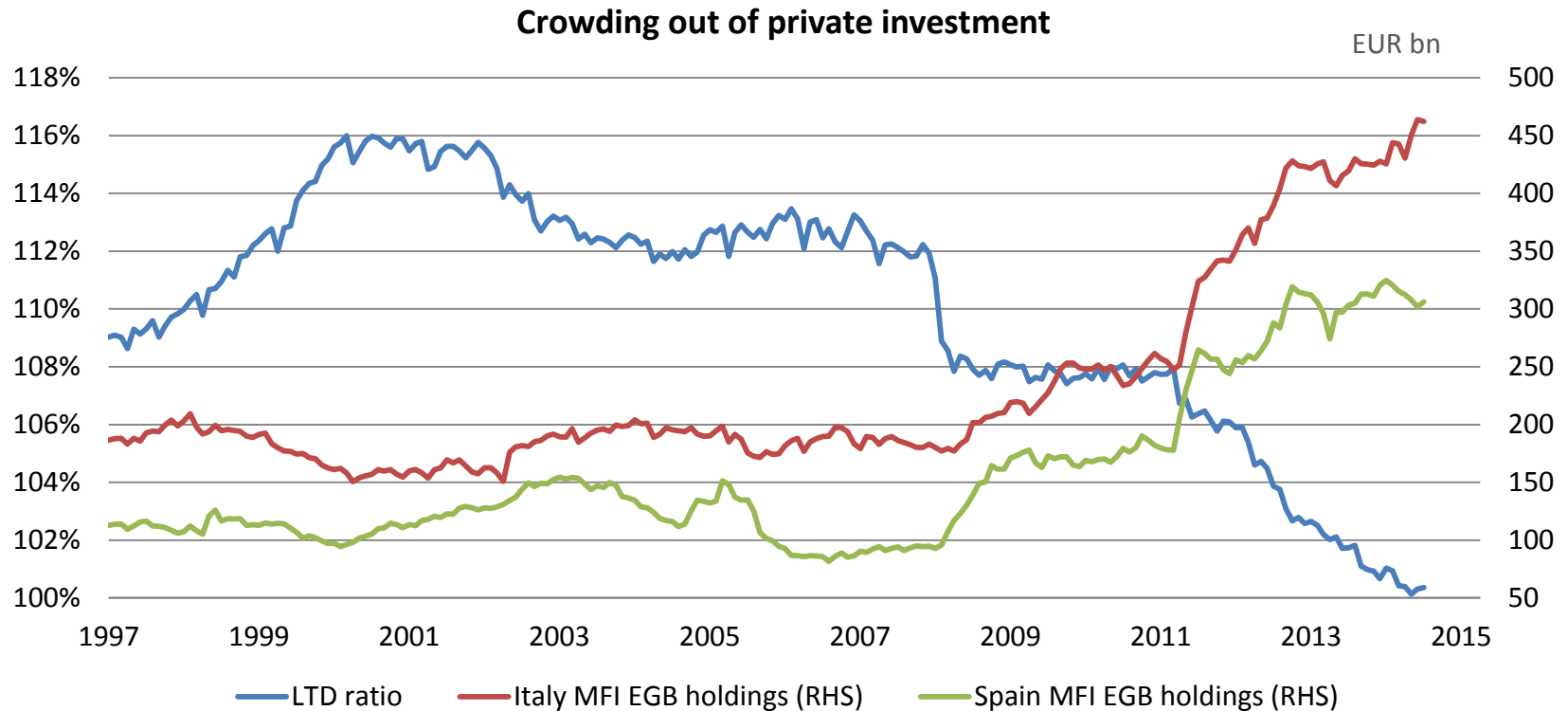
Front-end of non-core looks attractive in risk-adjusted terms, while investors need to extend into the long-end of core to expect positive risk-adjusted returns.

Citi Euro Rates (2015), [“Risk vs Return: Look at the Front-End”](#)

Source: Citi

The Transmission Conundrum

Financing governments or financing the business?



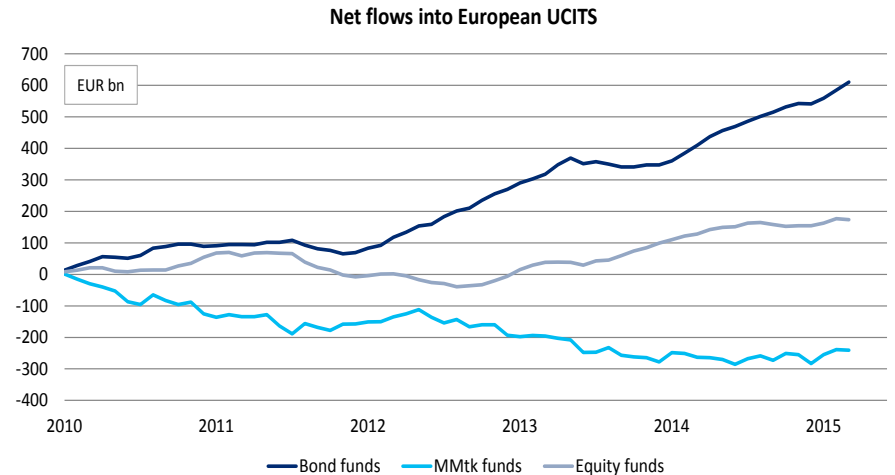
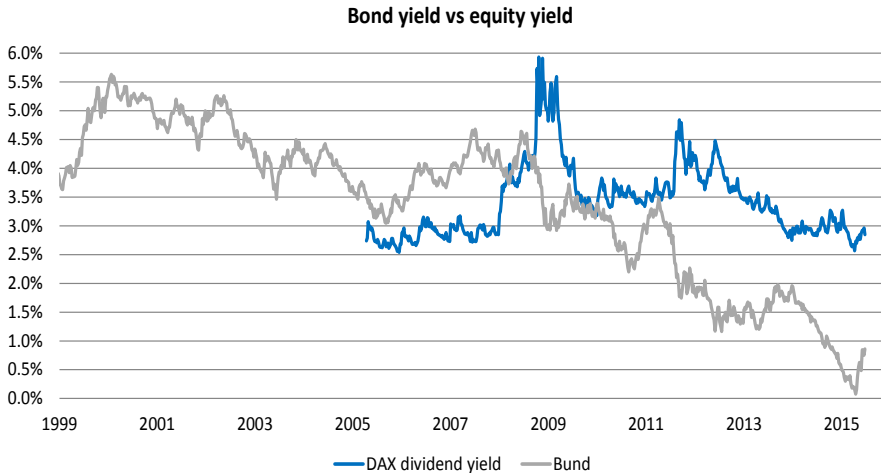
“It is cruel that such revolutions in private fortunes should be at the mercy of avaricious adventurers, who, instead of employing their capital, if any they have, in manufactures, commerce, and other useful pursuits, make it an instrument to burden all the interchanges of property with their swindling profits, profits which are the price of no useful industry of theirs” (Thomas Jefferson, 1814)

Hetzel (2015), [“The Real Bills Views of the Founders of the FED”](#)

Source: ECB, Citi

The Asset Allocation Conundrum

Regulation is the key to Draghi's "portfolio re-balancing"



???

Despite a structurally higher yield (relative to bonds), European equities have failed to attract enough domestic demand to shift existing asset allocations.

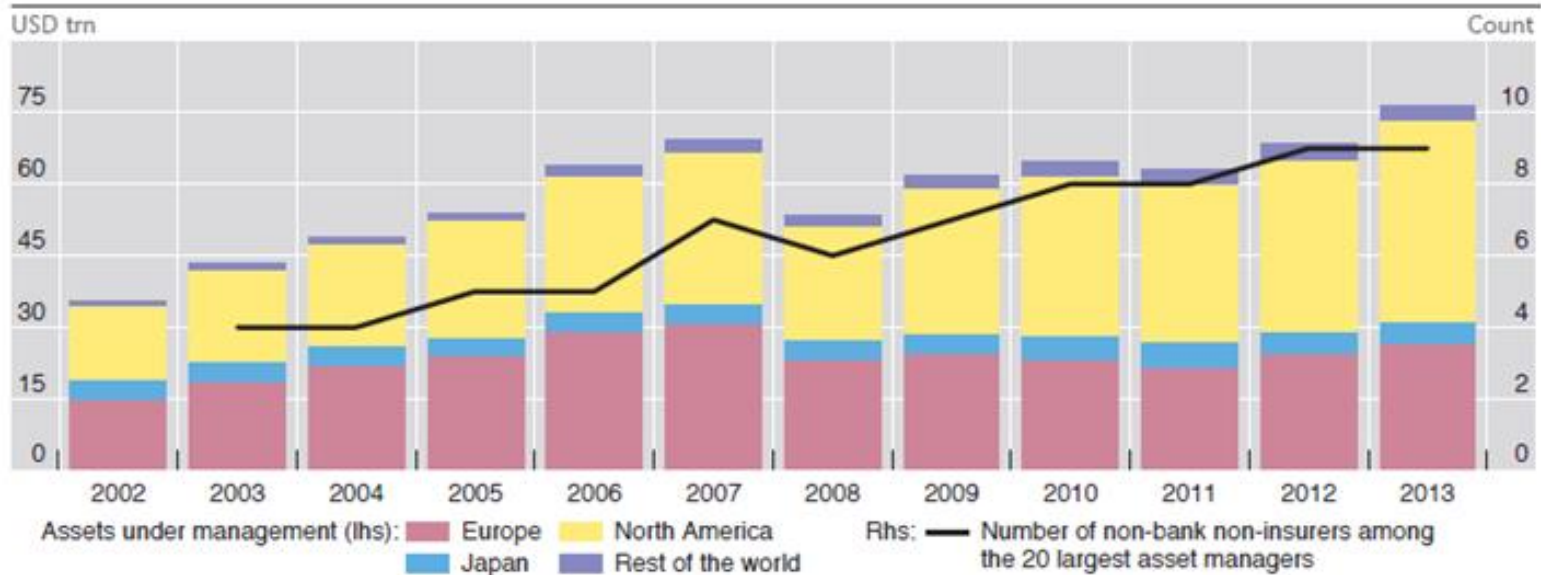
Strict regulation as well as risk-averse preferences seem to make European asset markets quite different from the US.

Citi Euro Rates (2015), [“Liability Hedging and Zero Interest Rates”](#)

Source: EFAMA, Citi

A Changing Industry

Different players & US concentration, but the (European) devil is in the details...



Sources: Towers Watson, *The World's 500 Largest Asset Managers*, 2014; BIS calculations.

“The sector’s composition has changed over time. By region, North American asset managers have increased their market share by 11 percentage points over the last decade. They now account for more than half of total AUM and approximately two thirds of the assets managed by the top 20 managers. By type, independent managers have been rapidly displacing bank- and insurer-owned managers at the top”.

BIS (2015), [“85th Annual Report”](#)

Source: BIS, Citi

Discussion Points

Discussion Points

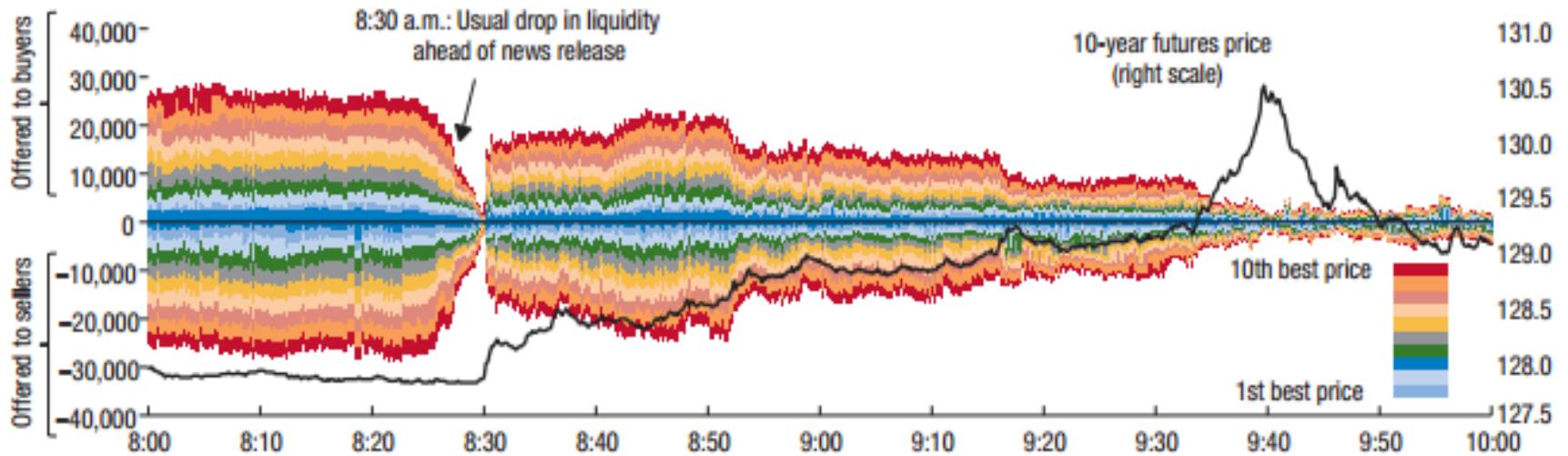
- 1. How has the uncertainty over Greece affected primary and secondary markets? Have you done any contingency planning?**
- 2. Will additional/new regulation support the steady flow of issuance?**
- 3. What can be done to prevent volatility of market liquidity? Circuit breakers, designated market makers for Bund futures...**
- 4. Asset re-allocation: From riskless to risky?**
- 5. Has the ECB a role in asset allocation?**
- 6. Reflation vs secular stagnation: Are we missing something?**

Source: Citi

Annex

Anatomy of a Flash Crash: 15 October 2014

Liquidity is becoming an issue even in benchmark markets



Sources: CME DataMine; and IMF staff estimates.

Note: Liquidity is measured by the number of contracts offered to buyers and sellers at the top 10 best price limits.

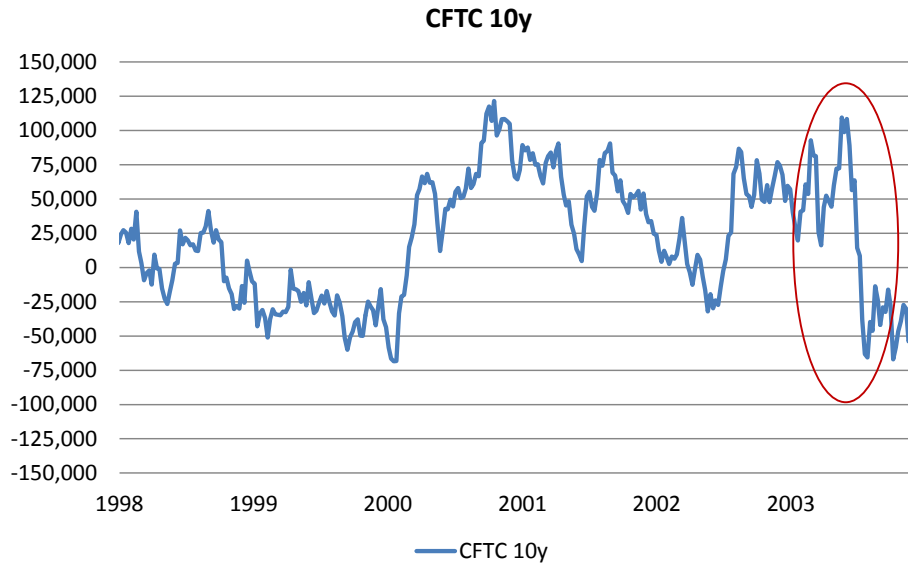
“Without the buoyant liquidity provided by the Federal Reserve, the liquidity-inhibiting impact of regulatory changes, industry consolidation and other secular factors will likely become more pronounced” (IMF Apr-15)

IMF (2015), [“Enhancing Policy Traction and Reducing Risks”](#)

Source: IMF, Citi Research

Anatomy of a Sell-Off: Treasuries in 2003

What happened and why did Tnotes sell off 150bp in two months?



FF priced 70% of a 50bp cut to 0.75% at the Jun-03 FOMC.

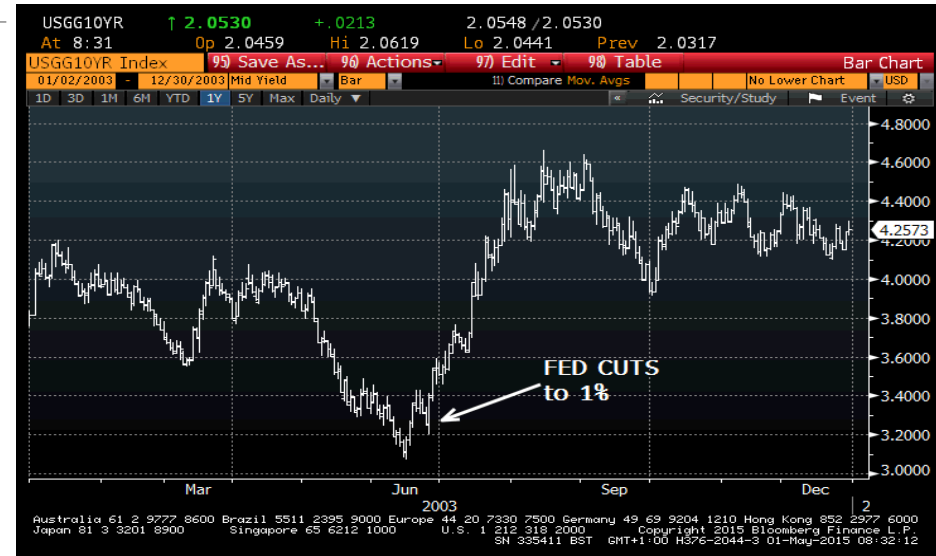
Market positioning was at – then – historical long in TY.

Risk of deflation mentioned by Bernanke in Nov-02 speech.

Tnotes sold off from 3.1% to 4.6% in just two months, moves amplified by mortgage prepayment hedging.

Market was complacent in Greenspan's ability to keep an accommodative stance for longer, thus supporting the USD carry trade.

Analogy to today's EGB?

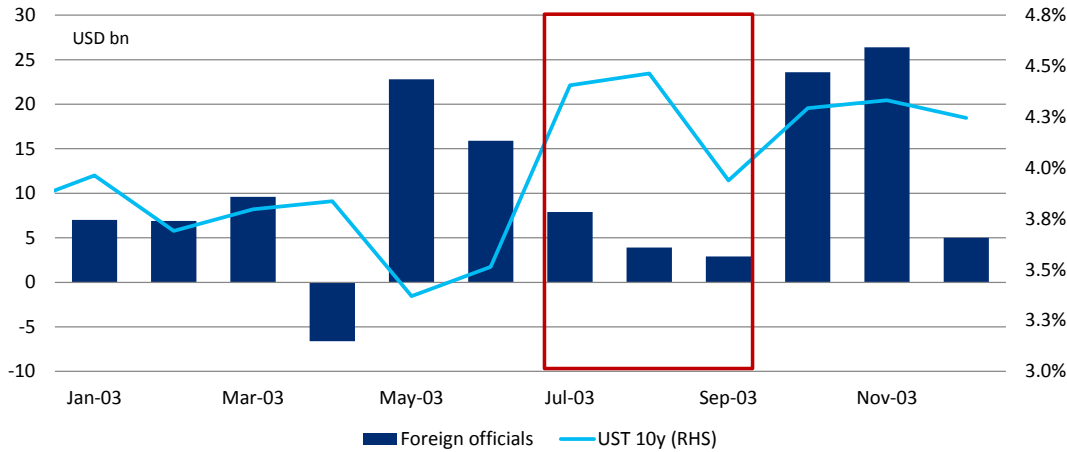


Source: Bloomberg, Citi Research

Anatomy of a Sell-Off: Central Banks' Flows

Buyers' strike rather than liquidation

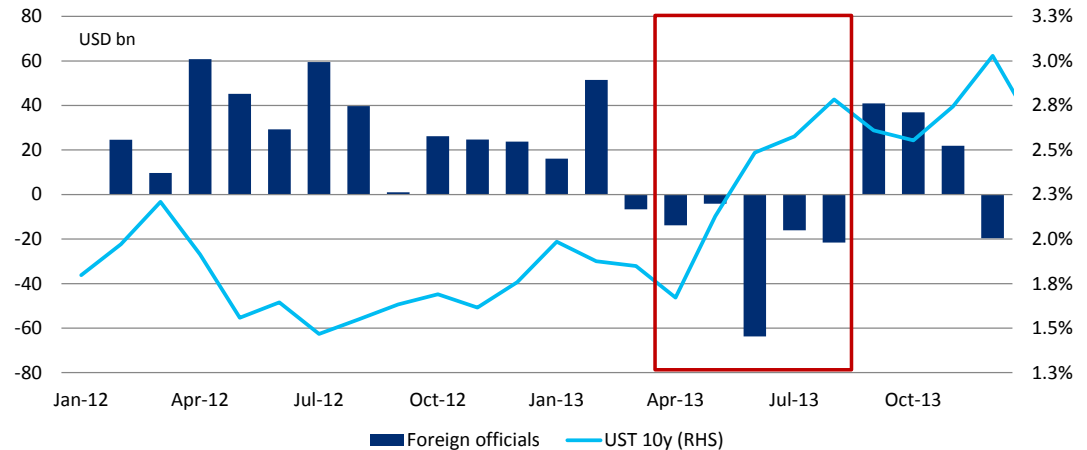
The effect of a buyers' strike: 2003



A slowdown in the pace of bond accumulation was sufficient to create a bottleneck in 2003...

...while outright sellers appeared in summer 2013 (but still net buyers over that year).

The effect of a buyers' strike: 2013



Source: Bloomberg, US Treasury, Citi Research

Appendix A-1

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