

Impact of low or negative interest rate environment - Banks

ECB Bond Market Contact Group, 7th April 2016

Zoeb Sachee

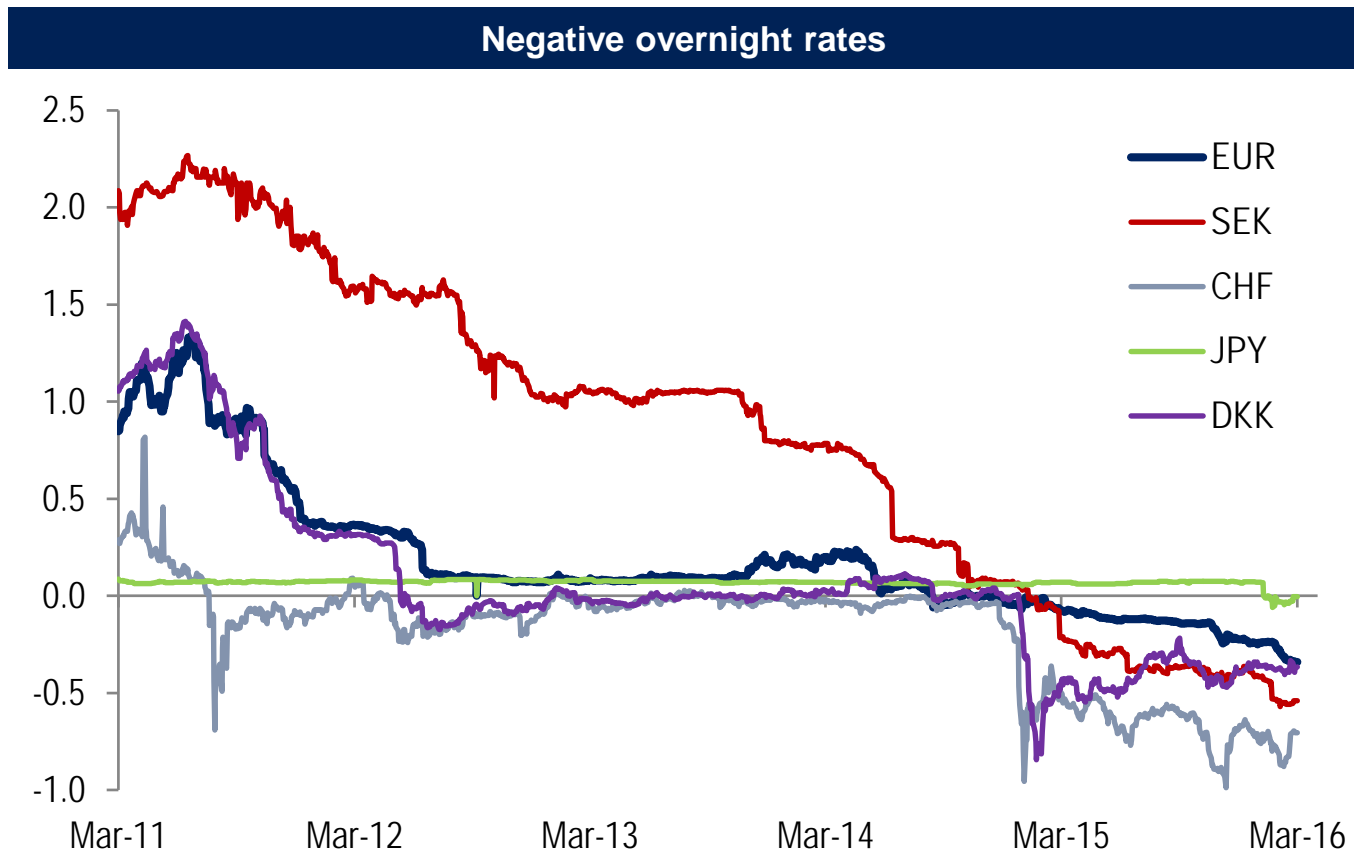
Head of Euro Government and SSA Trading

zoeb.sachee@citi.com

+44 20 7986 9340

Negative policy rates driving negative yields

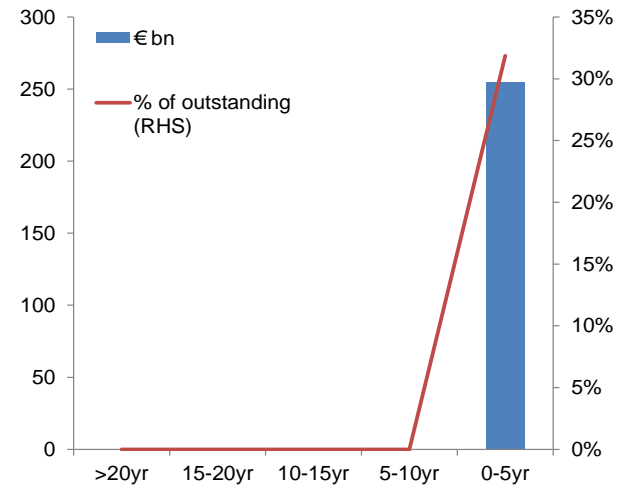
- Negative policy rates are combining with subdued inflation, a mixed global recovery and lower for longer themes.



Negative yields in the bond universe

- In Germany, 64% of the WGBI benchmark trades negative. Even in Italy, 15% of the benchmarks trades negative.
- Similarly for covered bonds universe, 43% of Euro benchmark trades negative, 20% of the Spanish universe trades negative.
- 7% of the IG Corp universe trades negative with the bulk trading at 0-2%

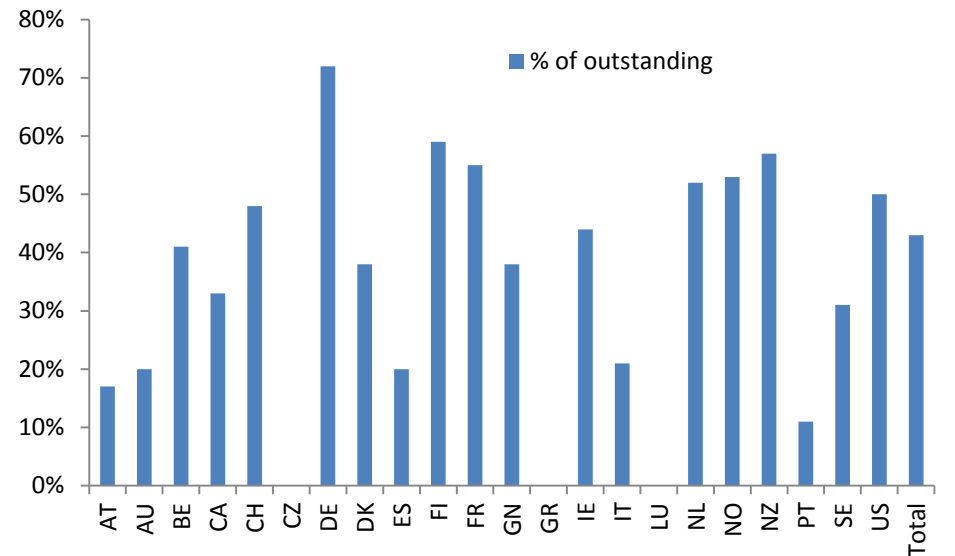
IG corp. bonds trading w. neg. yield



Citi World Govt Bond Index (WGBI) -

Country	Market Value (USD bn)	% trading negative	Years to Maturity																	
			1	2	3	4	5	6	7	8	9	10								
Switzerland	45	100%																		
Japan	4,739	57%																		
Germany	1,165	64%																		
Denmark	103	43%																		
Netherlands	382	57%																		
Finland	98	56%																		
Austria	241	47%																		
France	1,534	47%																		
Belgium	413	40%																		
Sweden	77	44%																		
Ireland	129	42%																		
Italy	1,507	15%																		
Spain	847	11%																		
US	6,712	0%																		
UK	1,227	0%																		
Australia	281	0%																		
Norway	45	0%																		
Canada	318	0%																		
Total	19,862	26%	<table border="1"> <thead> <tr> <th>Key</th> <th>Negative Yield</th> <th>Positive Yield</th> </tr> </thead> <tbody> <tr> <td></td> <td>5,164</td> <td>14,698</td> </tr> </tbody> </table>										Key	Negative Yield	Positive Yield		5,164	14,698		
Key	Negative Yield	Positive Yield																		
	5,164	14,698																		

Covered bonds trading w. neg. yield

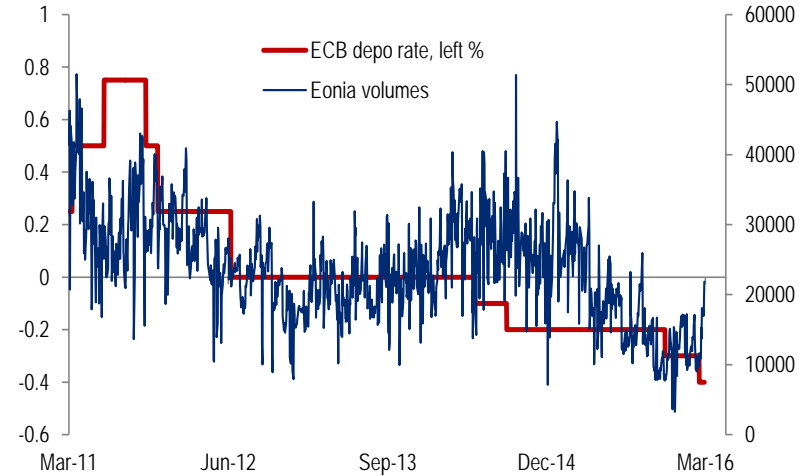


Source: Citi,

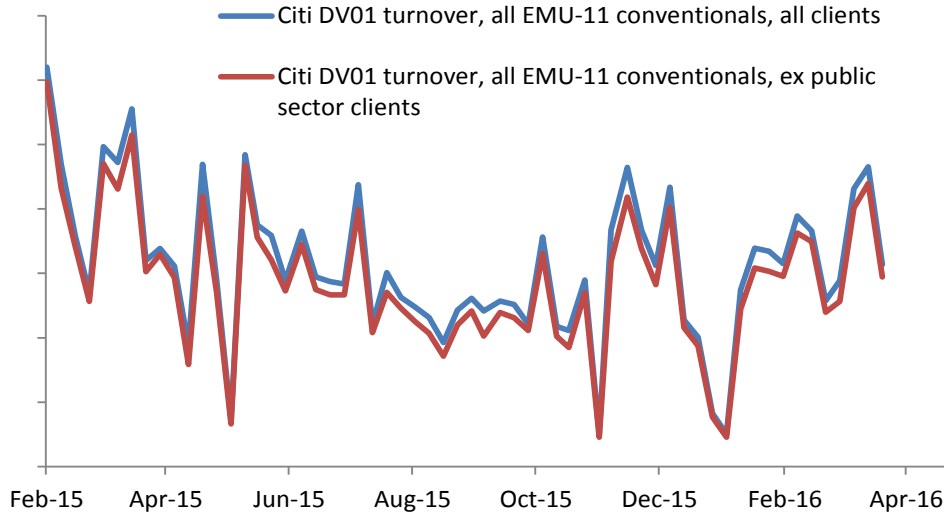
Market liquidity and negative rates

- Negative policy rates have seen money market volumes fall but not collapse. Repo market liquidity impacted but market functioning is normal.
- We find little correlation with EMU-11 bond trading volumes. But investor base less active, more concentrated.
- SSA has become 2-tier market
- Variation in Bund Futures liquidity is a regular phenomenon but seems to have little to do with negative rates.

Eonia volumes should move lower again

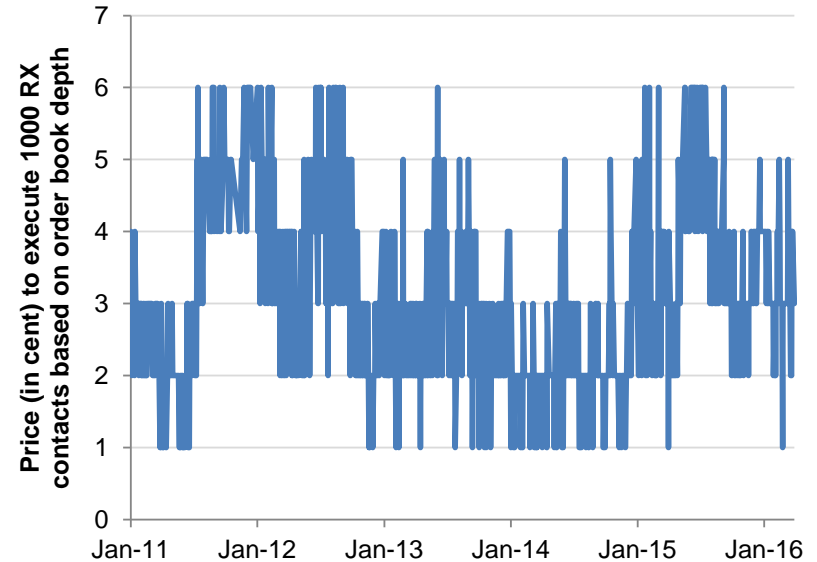


Bond market turnover not correlated to -Ve rates



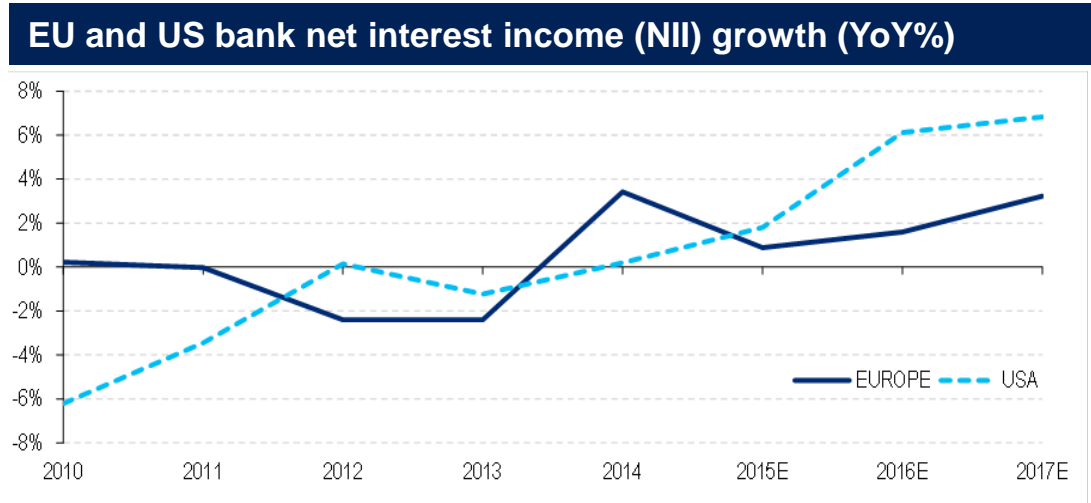
Source: Citi, Bloomberg, Eurex

Bund future contract liquidity

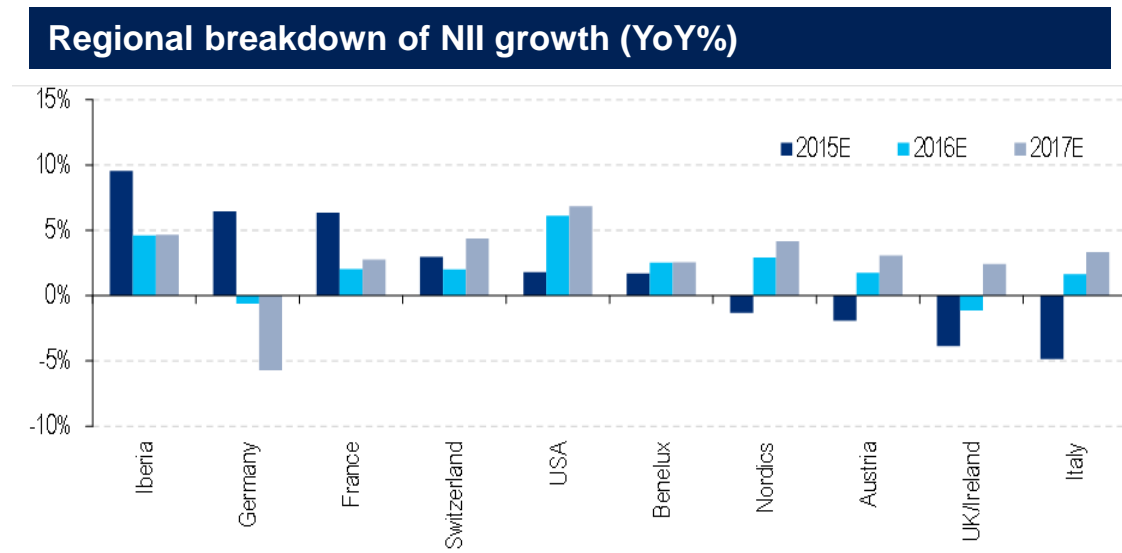


Bank profitability: the starting point & market expectations

- Since 2010, EU banks have grown Net Interest Income (NII) above 2% only once (in 2014).
- Consensus forecasts are for an increase in EU bank NII growth rates from +1ppt in 2015 to +2ppt in 2016 and almost +4% in 2017. These forecasts look optimistic to Citi bank equity researchers.



- Among Euro countries, Italy has the weakest forecast 2015 NII growth (-5% yoy). Consensus forecasts for a rebound in 2016-17 (+7 to +9ppt vs 2015 growth rate) look optimistic
- Citi expect Italian banks' NII to decrease by c2% in 2016 YoY due to further margin compression, limited loan growth and lower reinvestment yields, partly offset by lower funding costs.



Bank profits and the importance of NII

Why is the market so focused on NII growth?

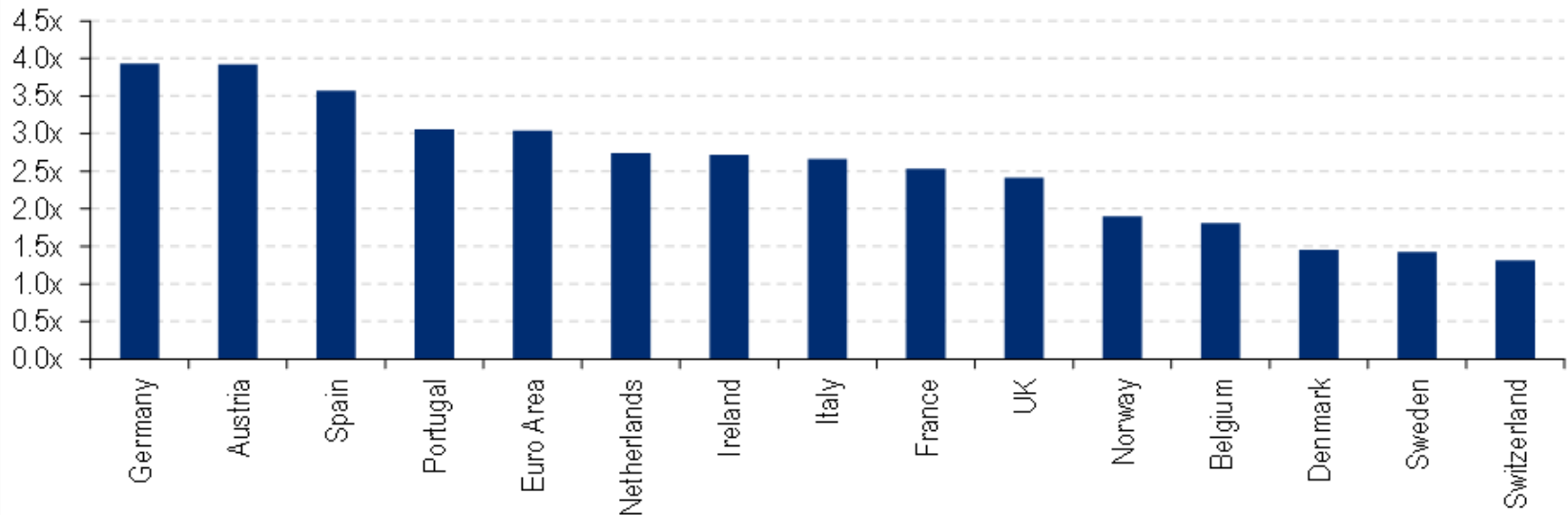
1. For the typical Euro area bank NII represents **55%-60%** of profits.
2. Gearing. For a typical Euro area bank $\rightarrow 1\% \Delta \text{NII} \rightarrow 3\% \Delta \text{Profits}$

• Germany and Austria appear most exposed to this metric, with 2017E NII/profits of c4x, followed by Spain at 3.5x.

• Notice how other negative rate regions' banks are better protected. Switzerland, for instance, is at the other extreme, at only 1.5x NII/profits due to a high gearing to non-NII revenues. Sweden and Denmark have a similarly low NII/profit multiple reflecting low cost and loan loss ratio.

Gearing effect: $\text{NII} \div \text{Attributable Profit}$.

For the typical Euro area bank a 1ppt change in NII, all else equal, impact on net profits by c. 3ppt.

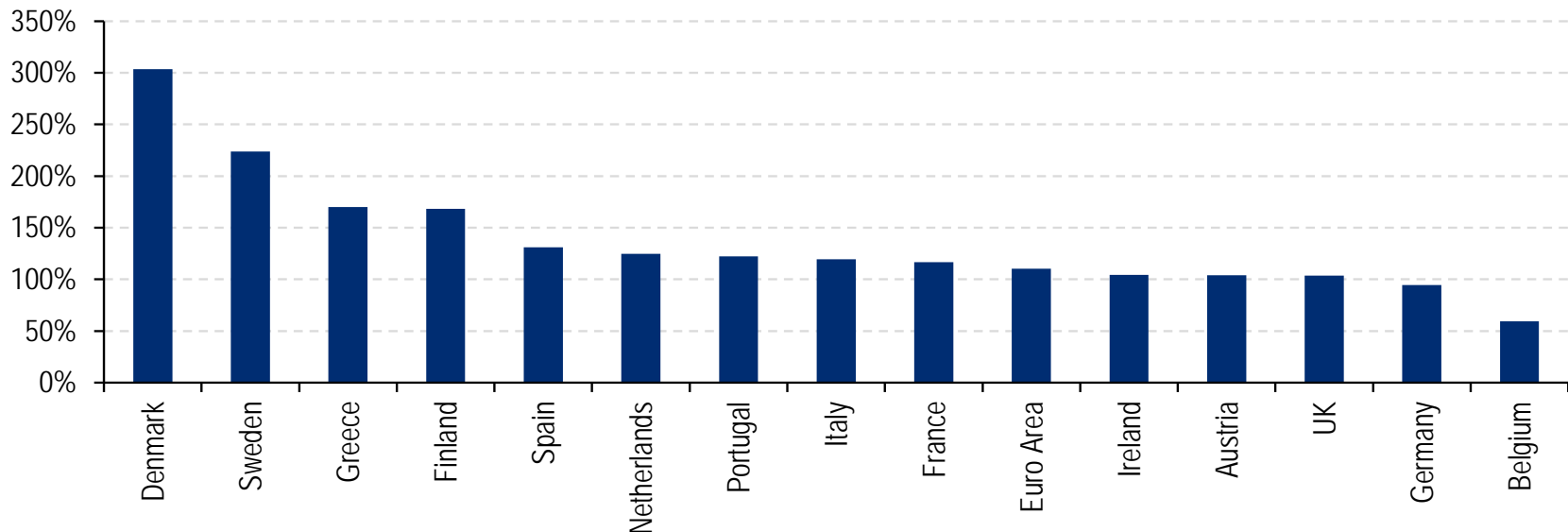


The NII challenge (1) Loan-deposit ratios

In a low rate environment, markets will be concerned about banks that are overly reliant on deposit income.

- Sensitivity to lower EUR rates is partly driven by gearing to low loan/deposit ratios.
- Non-wholesale deposits are hard to re-price to reflect negative rates.
- In addition, lower reinvestment yield on excess liquidity is a constraint for banks with low LDRs.
- Higher floor risk from negative rates is likely, particularly in the case of Belgium (60% LDR – well below EA average of 110%). Among EA countries, Spain and Netherlands have higher LDRs;
- Notice how the Nordics are the highest in Europe – providing greater protection from negative rates.

EU banks' domestic loan-deposit-ratio Higher LDR provides protection

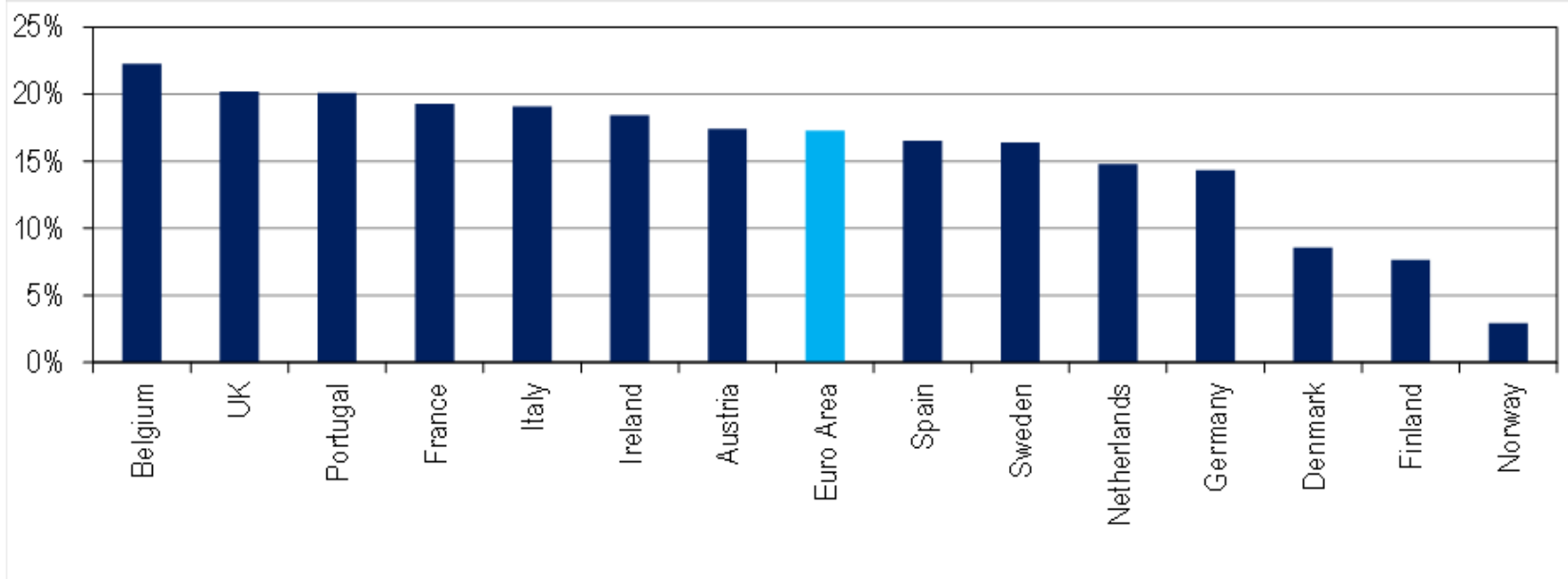


The NII challenge (2) Govt bond or central bank exposure

In a low rate environment, markets are concerned about gov't bond or central bank exposures.

- Sensitivity to lower EUR rates will also be driven by gearing to government debt and central bank exposure.
- Higher the exposure to sovereign debt/central bank deposits
→ higher the risk of lower NII from reduced re-investment yields.
- Belgium, Portugal, France and Italy appear most at risk on this metric, among EA countries.
- Notice that Nordics once again better insulated.

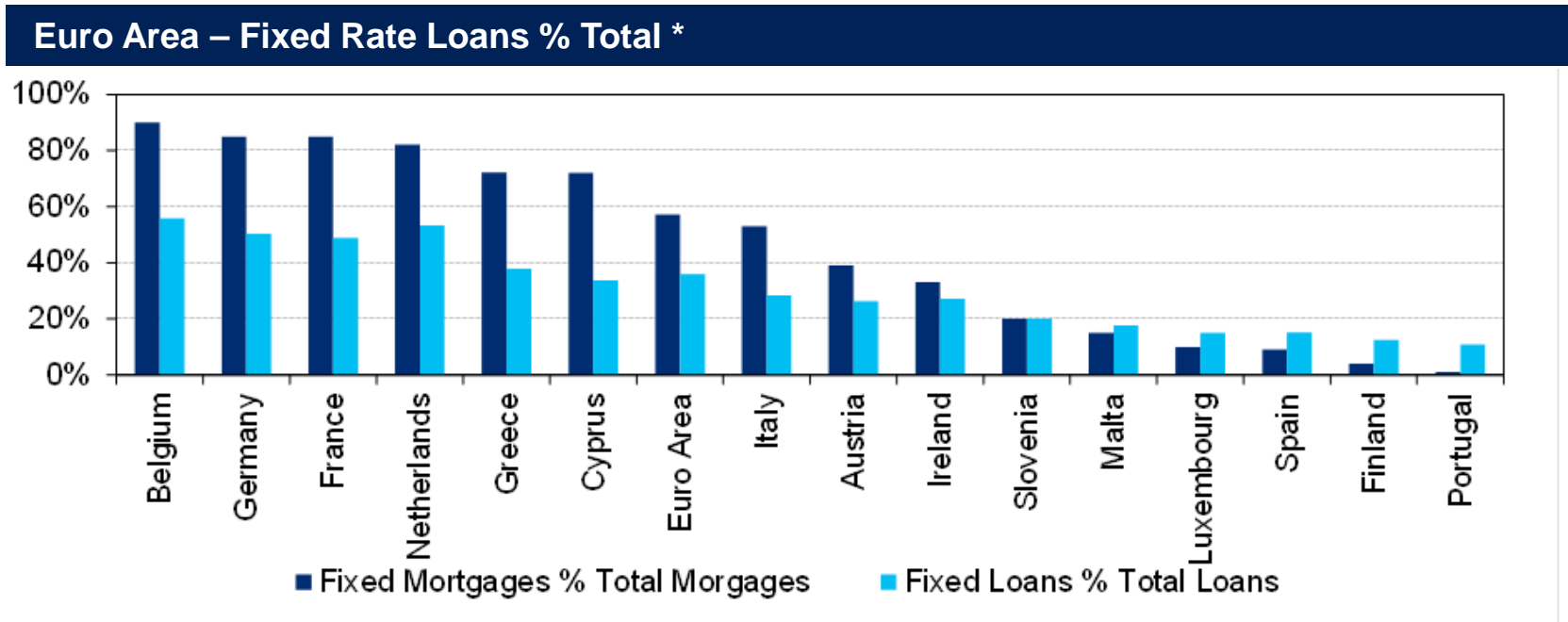
Central Government or Central Bank Exposure as % of Total Credit Exposure, 1H-15



The NII challenge (3) The loan mix challenge

The structure of the loan book influences

- ‘Only’ 1/3 of Euro Area lending is fixed-rate, with the remainder floating off 6M/12M Euribor (periphery) or longer-term rates (Germany, BeNe).
- As rates decline, interest income from floating-rate loans and securities will decline. Banks in Portugal, Finland, Spain, Ireland and Italy are most exposed.
- European mortgages are split between those that are predominantly fixed rate markets (BeNe, Germany, France) and those that are predominantly floating (Ireland, Iberia and Italy). Floating rate mortgages are typically Euribor-linked.



Source: ECB, European Mortgage Federation * Mortgage data sourced from ECB's Housing Survey (2009) and the EMF (1H15); total loan fixed/floating split is estimated assuming 20% of non-mortgage retail and 20% of corporate/SME loans are fixed across all countries.

How are banks responding to the business model challenge?

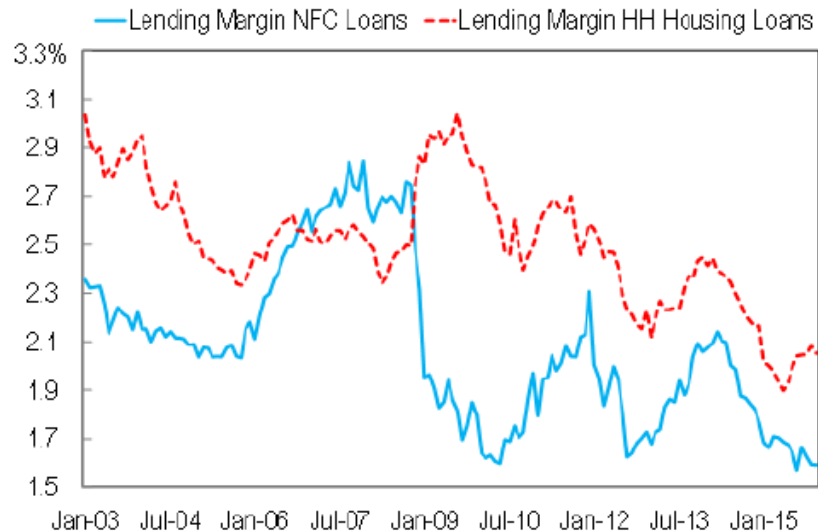
Academic studies lean towards a low rates as a problem for banks

- “A positive relationship between the interest rate structure and bank profitability” and “significant non-linearities”, in particular that “the impact of interest rates on bank profitability is particularly large when they are low”. (The influence of monetary policy on bank profitability (Borio, Gambacorta, Hofmann,) BIS Working Papers No 514, October 2015.)
- “**The effective lower bound is, however, likely to move up if interest rates remain, or are expected to remain, negative for a long time**”. (BIS Mar-16 quarterly.)

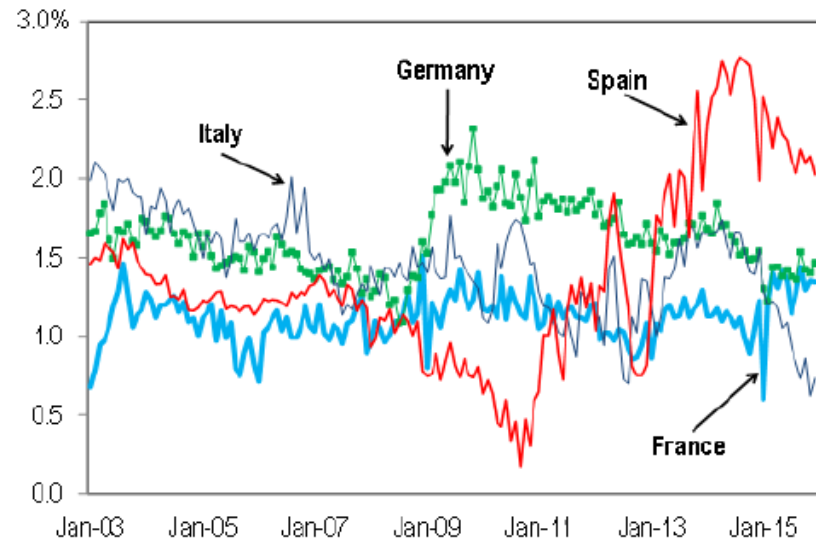
How banks are responding

- Switzerland: Introduce a lower bound on Libor based mortgages, higher mortgage rates
- Denmark: clarification of the tax treatment for negative mortgage bond coupons
- Sweden: raise lending margins
- Europe: **pass on negative deposit rates to ‘wholesale depositors’** but not to retail deposits – although **some banks are introducing account charges** to mitigate the impact. Some discussion of withdrawing central bank reserves

Euro area lending margins



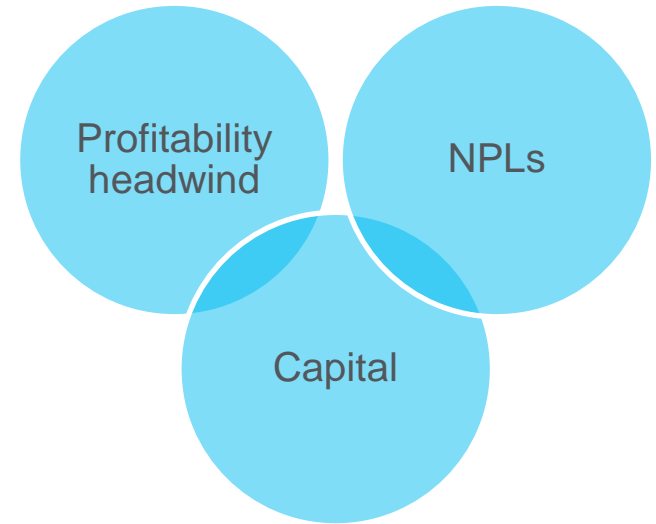
Selected country lending margins to NFCs



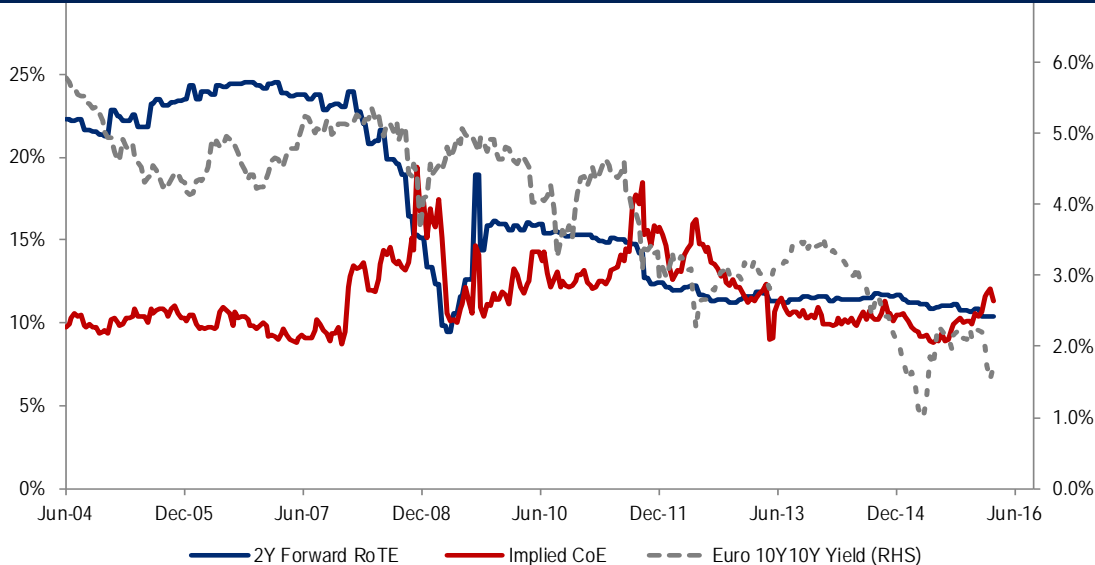
Where does this leave Euro area banks?

Profitability headwinds combine with capital and NPL concerns = more fragility

- It is concerning that Danish banks are seeing NII erosion (with a better economic backdrop compared to the Euro area).
- Swedish banks have been able maintain NII strength but here the backdrop is strong capital positions and GDP growth at 3%+.
- Profit erosion has been impacting bank equity prices.
- Our analysts calculate that the implied cost of equity is now above the return of equity.
- Typically that means deleveraging.



Bank Cost of Equity is now above Return on Equity
 → Deleveraging



Quarterly NII for Nordic bank (local FX)

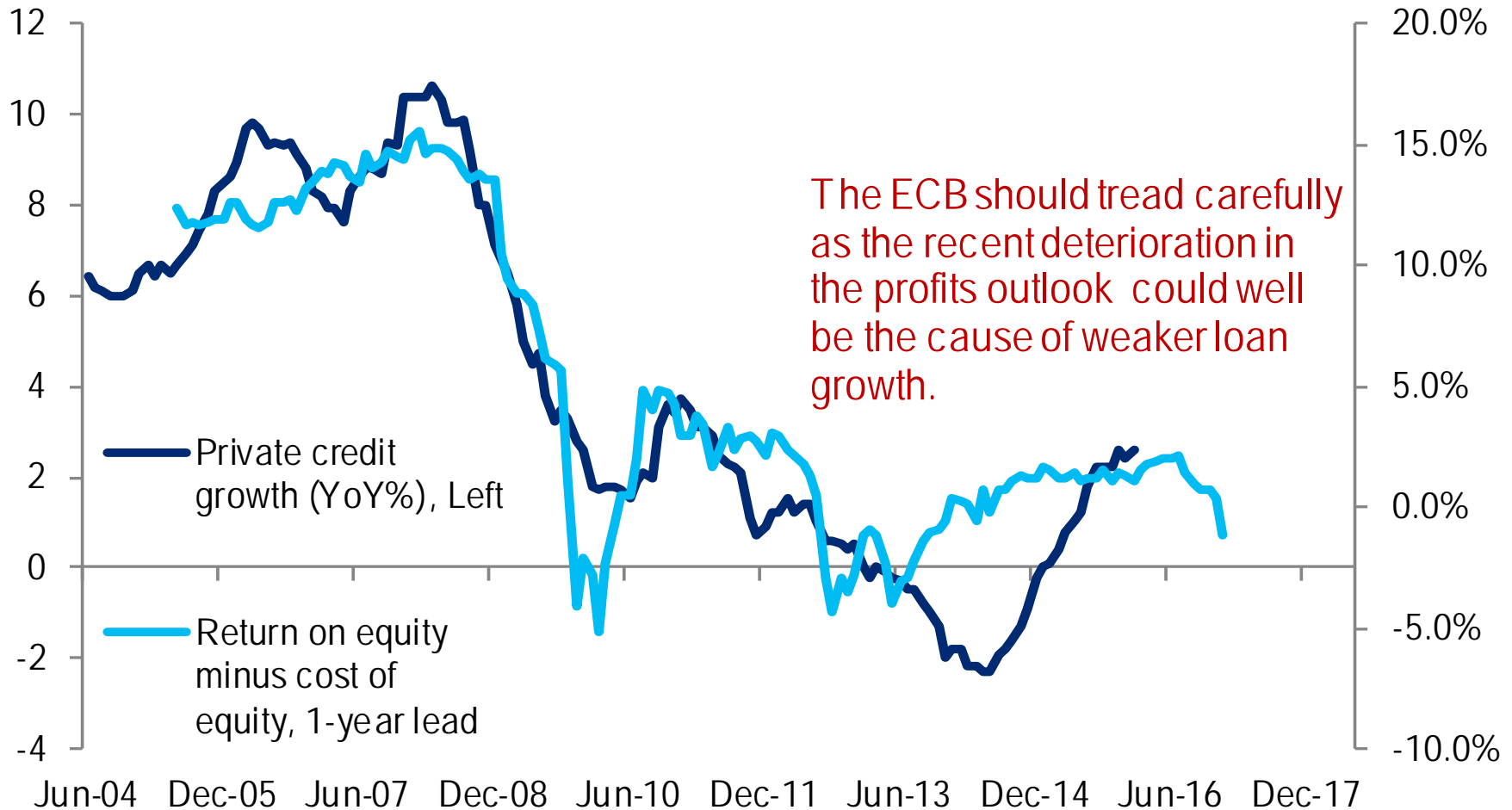
	4Q14	1Q15	2Q15	3Q15	4Q15	QoQ %	YoY %
Danske Bank	5,742	5,312	5,515	5,343	5,306	-0.7%	-7.6%
DNB	8,700	8,587	8,728	8,981	9,062	0.9%	4.2%
Nordea	1,356	1,290	1,310	1,272	1,241	-2.4%	-8.5%
SE Banken AB	5,010	4,946	4,632	4,683	4,677	-0.1%	-6.6%
SHB	6,883	6,916	7,019	6,834	6,971	2.0%	1.3%
Swedbank	5,809	5,719	5,704	5,811	5,759	-0.9%	-0.9%

Source: Company Reports; * Excluded SKr80m one-offs due to Swiss settlement; ^Danske NII excludes DKr77m one-offs.

The risk for the ECB..... is tighter conditions

The gap between banks' *Return on Equity* and *Cost of Equity* has been a leading indicator of credit growth.

→ Recent developments should concern the ECB Council.



Source: ECB, Citi Economics

DISCLAIMER: This communication has been prepared by individual sales and/or trading personnel of Citigroup Global Markets Limited (CGML) or its subsidiaries or affiliates (collectively Citi). In the United Kingdom, CGML is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority (together, the UK Regulator) and has its registered office at Citigroup Centre, Canada Square, London E14 5LB. This communication is directed at persons (i) who have been or can be classified by Citi as eligible counterparties or professional clients in line with the rules of the UK Regulator, (ii) who have professional experience in matters relating to investments falling within Article 19(1) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 and (iii) other persons to whom it may otherwise lawfully be communicated. No other person should act on the contents or access the products or transactions discussed in this communication. In particular, this communication is not intended for retail clients and Citi will not make such products or transactions available to retail clients. The information contained herein may relate to matters that are (i) not regulated by the UK Regulator and/or (ii) not subject to the protections of the United Kingdom's Financial Services and Markets Act 2000 and/or the United Kingdom's Financial Services Compensation Scheme. All material contained herein, including any proposed terms and conditions, is indicative and for discussion purposes only, is subject to change without notice, is strictly confidential, may not be reproduced and is intended for your use only. It does not include a number of terms and conditions that will be included in any actual transaction and final terms and conditions are subject to further discussion and negotiation nor does it purport to identify all risks (direct or indirect). This communication is not a commitment to deal in any product, offer financing or enter into any transaction described herein. Citi is not acting as your agent, fiduciary or investment adviser and is not managing your account. The provision of information in this communication is not based on your individual circumstances and should not be relied upon as an assessment of suitability for you of a particular product or transaction. It does not constitute investment advice and Citi makes no recommendation as to the suitability of any of the products or transactions mentioned. Even if Citi possesses information as to your objectives in relation to any transaction, series of transactions or trading strategy, this will not be deemed sufficient for any assessment of suitability for you of any transaction, series of transactions or trading strategy. Save in those jurisdictions where it is not permissible to make such a statement, we hereby inform you that this communication should not be considered as a solicitation or offer to sell or purchase any securities, deal in any product or enter into any transaction. You should make any trading or investment decisions in reliance on your own analysis and judgment and/or that of your independent advisors and not in reliance on Citi and any decision whether or not to adopt any strategy or engage in any transaction will not be Citi's responsibility. Citi does not provide investment, accounting, tax, financial or legal advice; such matters as well as the suitability of a potential transaction or product or investment should be discussed with your independent advisors. Prior to dealing in any product or entering into any transaction, you and the senior management in your organisation should determine, without reliance on Citi, (i) the economic risks or merits, as well as the legal, tax and accounting characteristics and consequences of dealing with any product or entering into the transaction (ii) that you are able to assume these risks, (iii) that such risks or any other relevant circumstance or consideration. Where you are acting as an adviser or agent, you should evaluate this communication in light of the circumstances applicable to your principal and the scope of your authority. The information in this communication, including any trade or strategy ideas, is provided by individual sales and/or trading personnel of Citi and not by Citi's research department and therefore the directives on the independence of research do not apply. Any view expressed in this communication may represent the current views and interpretations of the markets, products or events of such individual sales and/or trading personnel and may be different from other sales and/or trading personnel and may also differ from Citi's published research – the views in this communication may be more short term in nature and liable to change more quickly than the views of Citi research department which are generally more long term. On the occasions where information provided includes extracts or summary material derived from research reports published by Citi's research department, you are advised to obtain and review the original piece of research to see the research analyst's full analysis. Any prices used herein, unless otherwise specified, are indicative. Although all information has been obtained from, and is based upon sources believed to be reliable, it may be incomplete or condensed and its accuracy cannot be guaranteed. Citi makes no representation or warranty, expressed or implied, as to the accuracy of the information, the reasonableness of any assumptions used in calculating any illustrative performance information or the accuracy (mathematical or otherwise) or validity of such information. Any opinions attributed to Citi constitute Citi's judgment as of the date of the relevant material and are subject to change without notice. Provision of information may cease at any time without reason or notice being given. Commissions and other costs relating to any dealing in any products or entering into any transactions referred to in this communication may not have been taken into consideration.

Any scenario analysis or information generated from a model is for illustrative purposes only. Where the communication contains "forward-looking" information, such information may include, but is not limited to, projections, forecasts or estimates of cashflows, yields or return, scenario analyses and proposed or expected portfolio composition. Any forward-looking information is based upon certain assumptions about future events or conditions and is intended only to illustrate hypothetical results under those assumptions (not all of which are specified herein or can be ascertained at this time). It does not represent actual termination or unwind prices that may be available to you or the actual performance of any products and neither does it present all possible outcomes or describe all factors that may affect the value of any applicable investment, product or investment. Actual events or conditions are unlikely to be consistent with, and may differ significantly from, those assumed. Illustrative performance results may be based on mathematical models that calculate those results by using inputs that are based on assumptions about a variety of future conditions and events and not all relevant events or conditions may have been considered in developing such assumptions.

Accordingly, actual results may vary and the variations may be substantial. The products or transactions identified in any of the illustrative calculations presented herein may therefore not perform as described and actual performance may differ, and may differ substantially, from those illustrated in this communication. When evaluating any forward looking information you should understand the assumptions used and, together with your independent advisors, consider whether they are appropriate for your purposes. You should also note that the models used in any analysis may be proprietary, making the results difficult or impossible for any third party to reproduce. This communication is not intended to predict any future events. Past performance is not indicative of future performance. Citi shall have no liability to the user or to third parties, for the quality, accuracy, timeliness, continued availability or completeness of any data or calculations contained and/or referred to in this communication nor for any special, direct, indirect, incidental or consequential loss or damage which may be sustained because of the use of the information contained and/or referred to in this communication or otherwise arising in connection with the information contained and/or referred to in this communication, provided that this exclusion of liability shall not exclude or limit any liability under any law or regulation applicable to Citi that may not be excluded or restricted. The transactions and any products described herein may be subject to fluctuations of their market –to market price or value and such fluctuations may, depending on the type of product or security and the financial environment, be substantial. Where a product or transaction provides for payments linked to or derived from prices or yields of, without limitation, one or more securities, other instruments, indices, rates, assets or foreign currencies, such provisions may result in negative fluctuations in the value of and amounts payable with respect to such product prior to or at redemption. You should consider the implications of such fluctuations with your independent advisers. The products or transactions referred to in this communication may be subject to the risk of loss of some or all of your investment, for instance (and the examples set out below are not exhaustive), as a result of fluctuations in price or value of the product or transaction or a lack of liquidity in the market or the risk that your counterparty or any guarantor fails to perform its obligations or, if this the product or transaction is linked to the credit of one or more entities, any change to the creditworthiness of the credit of any of those entities. Citi (whether through the individual sales and/trading personnel involved in the preparation or issuance of this communication or otherwise) may from time to time have long or short principal positions and/or actively trade, for its own account and those of its customers, by making markets to its clients, in products identical to or economically related to the products or transactions referred to in this communication. Citi may also undertake hedging transactions related to the initiation or termination of a product or transaction, that may adversely affect the market price, rate, index or other market factor(s) underlying the product or transaction and consequently its value. Citi may have an investment banking or other commercial relationship with and access to information from the issuer(s) of securities, products, or other interests underlying a product or transaction. Citi may also have potential conflicts of interest due to the present or future relationships between Citi and any asset underlying the product or transaction, any collateral manager, any reference obligations or any reference entity. Citi may submit prices, rates, estimates or values to data sources that publish indices or benchmarks which may be referenced in products or transactions discussed in this communication. Such submissions may have an impact on the level of the relevant index or benchmark and consequently on the value of the products or transactions. Citi will make such submissions without regard to your interests under a particular product or transaction. Citi has adopted policies and procedures designed to mitigate potential conflicts of interest arising from such submissions and our other business activities. In light of the different roles performed by Citi you should be aware of such potential conflicts of interest. Any decision to purchase any product or enter into any transaction referred to in this communication should be based upon the information contained in any associated offering document if one is available (including any risk factors or investment considerations mentioned therein) and/or the terms of any agreement. Any securities which are the subject of this communication have not been and will not be registered under the United States Securities Act of 1933 as amended (the Securities Act) or any United States securities law, and may not be offered or sold within the United States or to, or for the account or benefit of, any US person, except pursuant to an exemption from, or in a product or transaction, not subject to, the registration requirements of the Securities Act. This communication is not intended for distribution to, or to be used by, any person or entity in any jurisdiction or country which distribution or use would be contrary to law or regulation. This communication contains data compilations, writings and information that are confidential and proprietary to Citi and protected under copyright and other intellectual property laws, and may not be reproduced, distributed or otherwise transmitted by you to any other person for any purpose unless Citi's prior written consent have been obtained. In any instance where distribution of this communication is subject to the rules of the US Commodity Futures Trading Commission ("CFTC"), this communication constitutes an invitation to consider entering into a derivatives transaction under U.S. CFTC Regulations § § 1.71 and 23.605, where applicable, but is not a binding offer to buy/sell any financial instrument. IRS Circular 230 Disclosure: Citigroup Inc. and its affiliates do not provide tax or legal advice. Any discussion of tax matters in these materials (i) is not intended or written to be used, and cannot be used or relied upon, by you for the purpose of avoiding any tax penalties and (ii) may have been written in connection with the "promotion or marketing" of a transaction (if relevant) contemplated in these materials. Accordingly, you should seek advice based your particular circumstances from an independent tax advisor. Although CGML is affiliated with Citibank, N.A. (together with Citibank N.A.'s subsidiaries and branches worldwide, Citibank), you should be aware that none of the products mentioned in this communication (unless expressly stated otherwise) are (i) insured by the Federal Deposit Insurance Corporation or any other governmental authority, or (ii) deposits or other obligations of, or guaranteed by, Citibank or any other insured depository institution. © 2016 Citigroup Global Markets Limited. Citi, Citi and Arc Design are trademarks and service marks of Citigroup Inc. or its affiliates and are used and registered throughout the world.