SYSTEMIC RISK

Market functioning and resilience

Alexander Düring
Thijs Aaten
Frankfurt, October 21st 2014

‘RESILIENCE’ OF MARKETS

- Three main factors are impacting market resilience

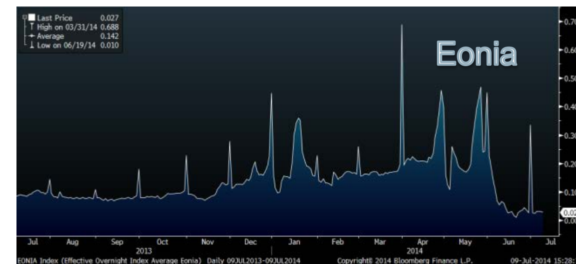
    1. Diversity of market participants
    2. Liquidity of markets
    3. Procyclical behavior

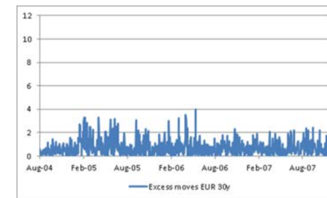
DIVERSITY OF MARKET PARTICIPANTS

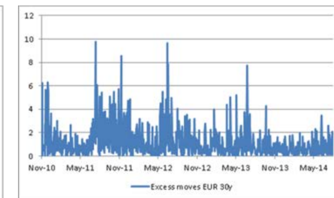
- Market makers (Banks)
  - Positions adjust as flows make securities rich/cheap. Reduced balance sheet capacity. Vol sensitivity in risk measures (VaR)
- Fast Money
  - Prop desks largely gone. Hedge funds and Asset Managers are constrained by lack of exit possibilities.
- Buy & Hold or fundamental long-term investors
  - Constrained by counterparty and leverage availability. Regulated entities in this segment are behaving more procyclically.
- Government money
  - Last resort – when government intervention needed, the damage is already done.

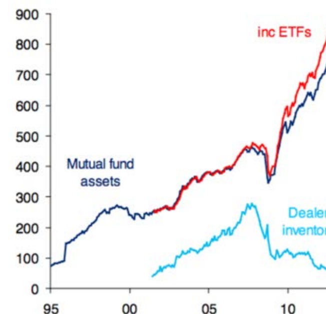
LIQUIDITY OF MARKETS

- Liquidity of (bond) markets impacted negatively by regulation
  - RWA
  - Leverage ratio
  - LCR / NSFR









apg

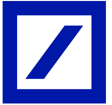
PRO CYCLICAL BEHAVIOR

- Clearing and margining
  - High quality assets – clearing members' discretion to increase margins
- Pension & Insurance regulation
  - Regulatory framework is risk based and as a consequence pro-cyclical ?
- Underestimation of liquidity requirements
- 'Search for Yield' and the role of QE

CONCLUSION & ITEMS FOR DISCUSSION

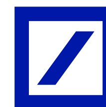
- Bond markets are less resilient to shocks - caused by a diverse set of factors that are related and reinforcing
    - Reduced diversity of market participants
    - Reduced liquidity
    - Pro cyclical behavior – mandatory and voluntarily
- Does the group agree with this conclusion ?
- Do insurers suffer from a similar problem as (Dutch) pension funds ?
- Do insurers and pension funds have to change their asset mix when volatility increases ?
- Did Solvency II add to pro-cyclicality of markets ?
- Is this a temporary issue or structural ?
- Do the participants of the BMCG see possible solutions ?

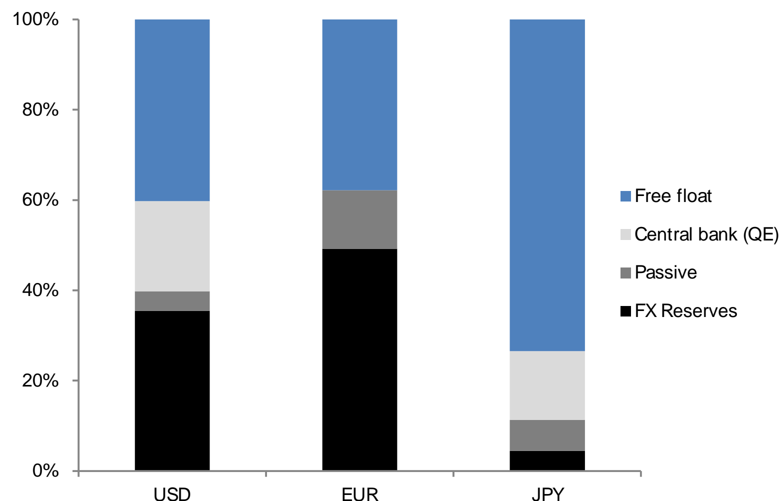
apg



The Bund Conundrum

There is no such thing as a free market

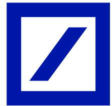


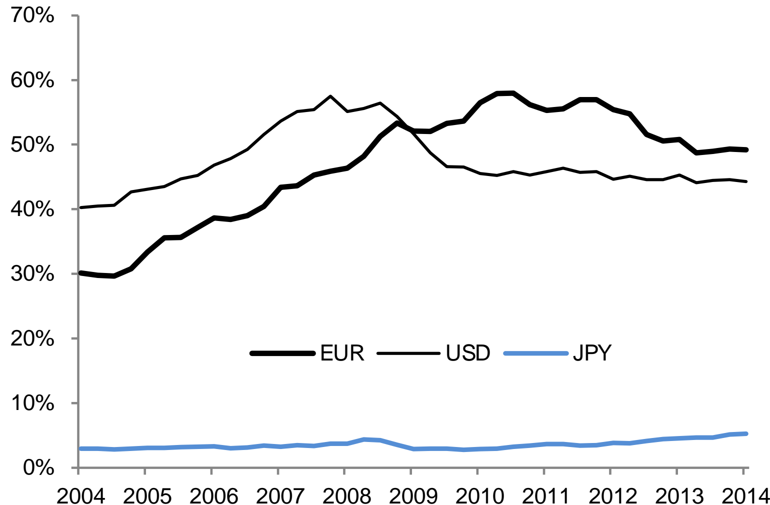


- Assets held by price-insensitive investors (central banks and passive trackers) are so large that the free float of high-quality bonds is much smaller than the outstanding amount (around 38%)
- This makes it impossible for investors to hold 'the market portfolio' in high-quality USD and EUR bonds
- Unlike the US and Japan, the ECB is (still?) passive in this process
- Main driver of squeeze on AAA EUR is FX reserve holdings and a large proportion of passive investments

Source: IMF (COFER), Eurex, BrokerTec, BoJ, FRB, DBIQ, GPIF, PFA, DB calculations

Deficits are a slow remedy

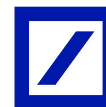




- High public deficits alleviate the short squeeze, for EUR disinvestment has also been helpful
- The problem is bond indices: there is no free-float adjustment in how these are constructed (unlike equity)
- In EUR, the asymmetry in participation between core and non-core market leads to a distortion in cross-country spreads
- Investors are structurally short core and long non-core

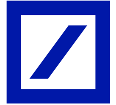
Source: IMF (COFER), DBIQ, DB calculations

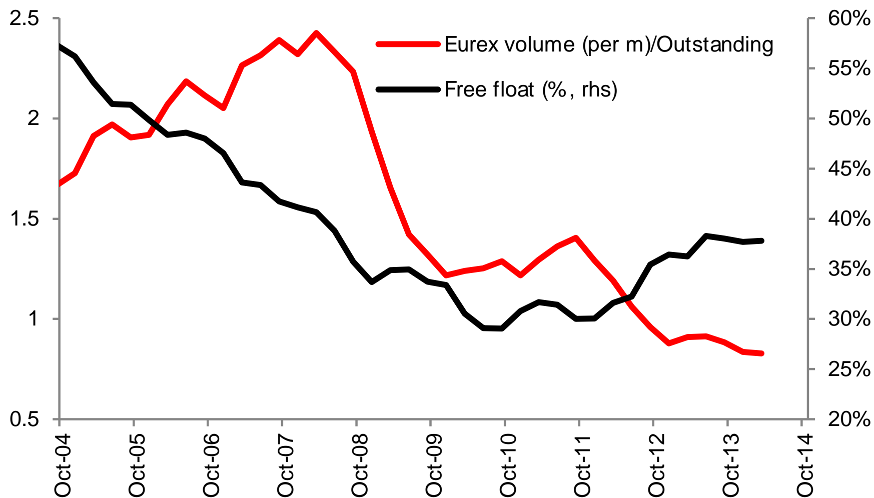
Index methodology is creating problems



- In equity indices, it is quite common to reflect immobile long-term holdings in listed shares through free-float adjustments
- For fixed income indices, that is not possible because no holding data is publicly available
- This means, however, that investors trying to follow a benchmark chase an asset allocation that may not be available in the market
- As investors become aware of the shortage in some market segments, liquidity drops even more as relative value trading declines
- In effect, bond markets are not prepared for systematic distortions in supply
- Whether regulatory drivers for collateral (clearing, LCR) is hard to delineate from the COFER data analysis because the target market segment is the same (high credit rating, low duration)

Some other factors also seem to be at work

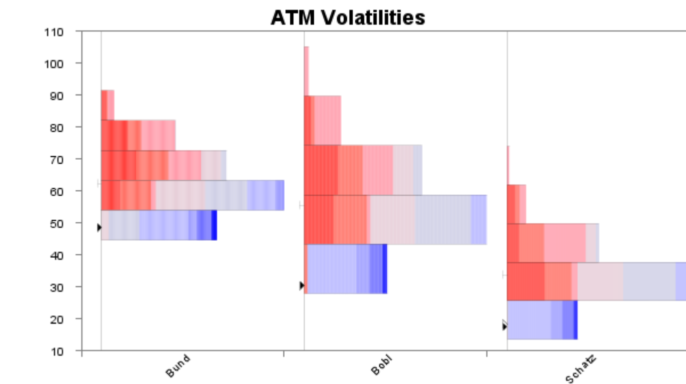


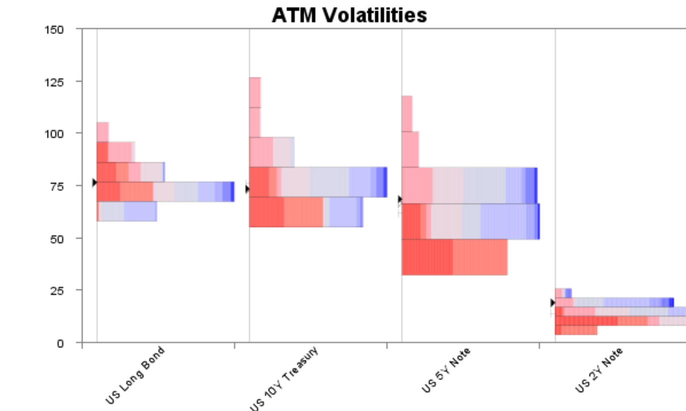


- Eurex volumes relative to outstanding AAA debt are at lower point than post Lehman
- That said, retreat of reserves from EUR should have freed up some liquidity
- It is likely that adoption of Basel III in 2011 and crisis-related losses added to the loss of liquidity
- Impossible to quantify is the positive feedback effect between liquidity and volumes

Source: IMF (COFER), Eurex, DBIQ, DB calculations

Food stamps for yield-starved investors: Option overlays

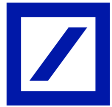


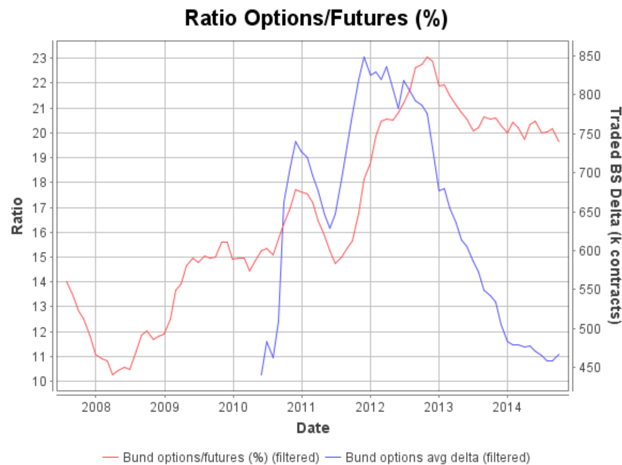


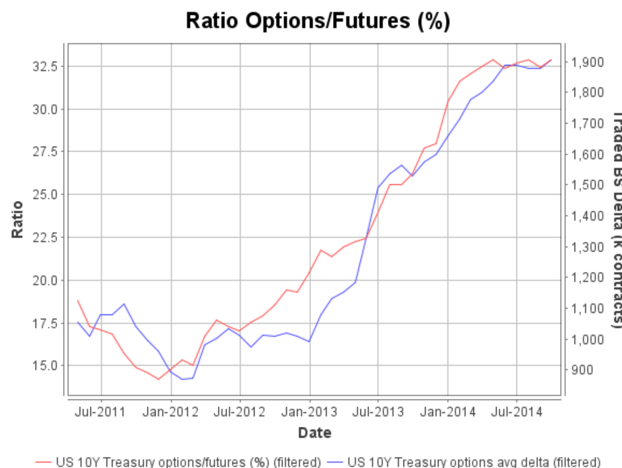
Source: Eurex, CBOT, price date 10 October

- EUR implied volatility levels tend to be extremely low and not reflective of risks, USD 50% higher and more realistic
- Option selling in EUR now more focused on ATM (1:1 call spreads)
- CBOT options have reached 24% of futures volumes, unlikely that the liquidity risk is reflected in pricing
- Cf Jan/Feb rally in Bobl which was emphasised by short call overlays
- Last week's move probably also hurt overlay sellers

Underlying futures volumes do not support gamma scalping







Source: Eurex, CBOT

- Selling of options in overlay strategies is not a problem if there is enough liquidity in the underlying future to close delta risk quickly when required
- The problem is that options volumes are now larger compared to volumes in the underlying futures
- In times of stress, it is unlikely that delta risk can be fully controlled because underlying liquidity is not there
- A separate (but related) risk is that implied volatility is not offering a meaningful premium over realised so overlays do not make money systematically

Issues for discussion II

- Nominal AAA yields are probably distorted downwards
- Purchases of government bonds would distort core markets yields more than periphery
- Potential remedy: include government guaranteed debt
- Corollary: Break-even inflation is possibly distorted downwards and not a good indicator for inflation expectations
- Indeed, massive purchases of nominal bonds could even lower breakeven inflation
- Should ECB buy inflation-linked bonds as part of QE? If so, at what breakeven level?

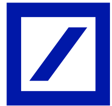
Appendix 1
Important Disclosures
Additional Information Available upon Request

Disclosure Checklist

Company	Ticker	Price	Disclosure

1. Within the past year, Deutsche Bank and/or its affiliate(s) has managed or co-managed a public or private offering for this company, for which it received fees.
2. Deutsche Bank and/or its affiliate(s) makes a market in securities issued by this company.
3. Deutsche Bank and/or its affiliate(s) acts as a corporate broker or sponsor to this company.
4. The research analyst(s) or an individual who assisted in the preparation of this report (or a member of his/her household) has a direct ownership position in securities issued by this company or derivatives thereof.
5. The research analyst (or, in the US, a member of his/her household) is an officer, director, or advisory board member of this company.
6. Deutsche Bank and/or its affiliate(s) owns one percent or more of any class of common equity securities of this company.
7. Deutsche Bank and/or its affiliate(s) has received compensation from this company for the provision of investment banking or financial advisory services within the past year.
8. Deutsche Bank and/or its affiliate(s) expects to receive or intends to seek compensation for investment banking services from this company in the next three months.
10. Deutsche Bank and/or its affiliate(s) holds more than five percent of the share capital of the company whose securities are subject of the research, calculated under computational methods required by German law (data as of the last trading day of the past month).
11. See footnote headed Special Disclosures for any other relevant disclosures.
14. Deutsche Bank and/or its affiliate(s) has received non-investment banking related compensation from this company within the past year.
15. This company has been a client of Deutsche Bank Securities Inc. within the past year, during which time it received non-investment banking securities-related services.
16. A draft of this report was previously shown to the issuer (for fact checking purposes) and changes were made to the report before publication.
17. Deutsche Bank and or/its affiliate(s) has a significant Non-Equity financial interest (this can include Bonds, Convertible Bonds, Credit Derivatives and Traded Loans) where the aggregate net exposure to the following issuer(s), or issuer(s) group, is more than 25m Euros.

For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at http://gm.db.com.



Regulatory Disclosures

1. Important Additional Conflict Disclosures

Aside from within this report, important conflict disclosures can also be found at https://gm.db.com/equities under the “Disclosures Lookup” and “Legal” tabs. Investors are strongly encouraged to review this information before investing.

2. Short-Term Trade Ideas

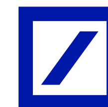
Deutsche Bank equity research analysts sometimes have shorter-term trade ideas (known as SOLAR ideas) that are consistent or inconsistent with Deutsche Bank’s existing longer term ratings. These trade ideas can be found at the SOLAR link at http://gm.db.com.

3. Country-Specific Disclosures

Australia & New Zealand: This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act and New Zealand Financial Advisors Act respectively.
Brazil: The views expressed above accurately reflect personal views of the authors about the subject company(ies) and its(their) securities, including in relation to Deutsche Bank. The compensation of the equity research analyst(s) is indirectly affected by revenues deriving from the business and financial transactions of Deutsche Bank. In cases where at least one Brazil based analyst (identified by a phone number starting with +55 country code) has taken part in the preparation of this research report, the Brazil based analyst whose name appears first assumes primary responsibility for its content from a Brazilian regulatory perspective and for its compliance with CVM Instruction # 483.
EU countries: Disclosures relating to our obligations under MiFiD can be found at http://www.globalmarkets.db.com/riskdisclosures.
Japan: Disclosures under the Financial Instruments and Exchange Law: Company name – Deutsche Securities Inc. Registration number – Registered as a financial instruments dealer by the Head of the Kanto Local Finance Bureau (Kinsho) No. 117. Member of associations: JSDA, Type II Financial Instruments Firms Association, The Financial Futures Association of Japan, Japan Investment Advisers Association. Commissions and risks involved in stock transactions – for stock transactions, we charge stock commissions and consumption tax by multiplying the transaction amount by the commission rate agreed with each customer. Stock transactions can lead to losses as a result of share price fluctuations and other factors. Transactions in foreign stocks can lead to additional losses stemming from foreign exchange fluctuations. "Moody's", "Standard & Poor's", and "Fitch" mentioned in this report are not registered credit rating agencies in Japan unless “Japan” or “Nippon” is specifically designated in the name of the entity.
Russia: This information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a license in the Russian Federation.

Risks to Fixed Income Positions

Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor that is long fixed rate instruments (thus receiving these cash flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or the liquidation of positions), and settlement issues related to local clearing houses are also important risk factors to be considered. The sensitivity of fixed income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. It is important to note that the index fixings may -- by construction -- lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. It is also important to acknowledge that funding in a currency that differs from the currency in which the coupons to be received are denominated carries FX risk. Naturally, options on swaps (swaptions) also bear the risks typical to options in addition to the risks related to rates movements.



Global Disclaimer

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank"). The information herein is believed to be reliable and has been obtained from public sources believed to be reliable. Deutsche Bank makes no representation as to the accuracy or completeness of such information.

Deutsche Bank may engage in securities transactions, on a proprietary basis or otherwise, in a manner **inconsistent** with the view taken in this research report. In addition, others within Deutsche Bank, including strategists and sales staff, may take a view that is **inconsistent** with that taken in this research report.

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a recipient thereof in the event that any opinion, forecast or estimate set forth herein, changes or subsequently becomes inaccurate. Prices and availability of financial instruments are subject to change without notice. This report is provided for informational purposes only. It is not an offer or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Target prices are inherently imprecise and a product of the analyst judgement.

As a result of Deutsche Bank's March 2010 acquisition of BHF-Bank AG, a security may be covered by more than one analyst within the Deutsche Bank group. Each of these analysts may use differing methodologies to value the security; as a result, the recommendations may differ and the price targets and estimates of each may vary widely.

In August 2009, Deutsche Bank instituted a new policy whereby analysts may choose not to set or maintain a target price of certain issuers under coverage with a Hold rating. In particular, this will typically occur for "Hold" rated stocks having a market cap smaller than most other companies in its sector or region. We believe that such policy will allow us to make best use of our resources. Please visit our website at http://gm.db.com to determine the target price of any stock.

The financial instruments discussed in this report may not be suitable for all investors and investors must make their own informed investment decisions. Stock transactions can lead to losses as a result of price fluctuations and other factors. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Deutsche Bank may with respect to securities covered by this report, sell to or buy from customers on a principal basis, and consider this report in deciding to trade on a proprietary basis.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this report is approved and/or communicated by Deutsche Bank AG Frankfurt authorized by the BaFin. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange and regulated by the Financial Services Authority for the conduct of investment business in the UK and authorized by the BaFin. This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. This report is distributed in Singapore by Deutsche Bank AG, Singapore Branch or Deutsche Securities Asia Limited, Singapore Branch, and recipients in Singapore of this report are to contact Deutsche Bank AG, Singapore Branch or Deutsche Securities Asia Limited, Singapore Branch in respect of any matters arising from, or in connection with, this report. Where this report is issued or promulgated in Singapore to a person who is not an accredited investor, expert investor or institutional investor (as defined in the applicable Singapore laws and regulations), Deutsche Bank AG, Singapore Branch or Deutsche Securities Asia Limited, Singapore Branch accepts legal responsibility to such person for the contents of this report. In Japan this report is approved and/or distributed by Deutsche Securities Inc. The information contained in this report does not constitute the provision of investment advice. In Australia, retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product. Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10). Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting.

Copyright © 2013 Deutsche Bank AG