

FIXED INCOME LIQUIDITY

A look back at our historical trading data

TSF FIXED INCOME TRADING
A Global Trading Platform

European Government Bonds
European Credit Investment Grade

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FIXED INCOME LIQUIDITY : A LOOK BACK AT OUR HISTORICAL TRADING DATA

Since 2007, Fixed Income Liquidity is certainly one of the most discussed topics for US and Euro bonds as increasing regulation and shrinking balance-sheet capacity in banking sector raised concerns about secondary-market efficiency.

The liquidity on the fixed income market is generally defined by the market participants as the ability to trade a security with moderate price & cost impact, within a reasonable period of time using various metrics.

Fixed Income liquidity started to decline in 2007 with the Subprime crisis which turned into a banking crisis following Lehman's default to end up into a European Sovereign Crisis. The introduction of a new regulatory framework led banks to deleveraging and reallocation of capital to more profitable activities impairing their capacity in trading and offering liquidity to clients.

Unlike the US market where TRACE enables market participants to analyze transactions, there are not yet such official audit trails in Europe, for € £ , which could provide tangible evidence of a deterioration of the secondary market fixed income liquidity and potentially challenge our perception of difficulties in market-making activity.

However, ESMA and IOSCO published, end of August 2016, distinct reports on Corporate Fixed Income liquidity which both concluded that the secondary market liquidity had not notably deteriorated, confirming our hands on experience on trading desk.

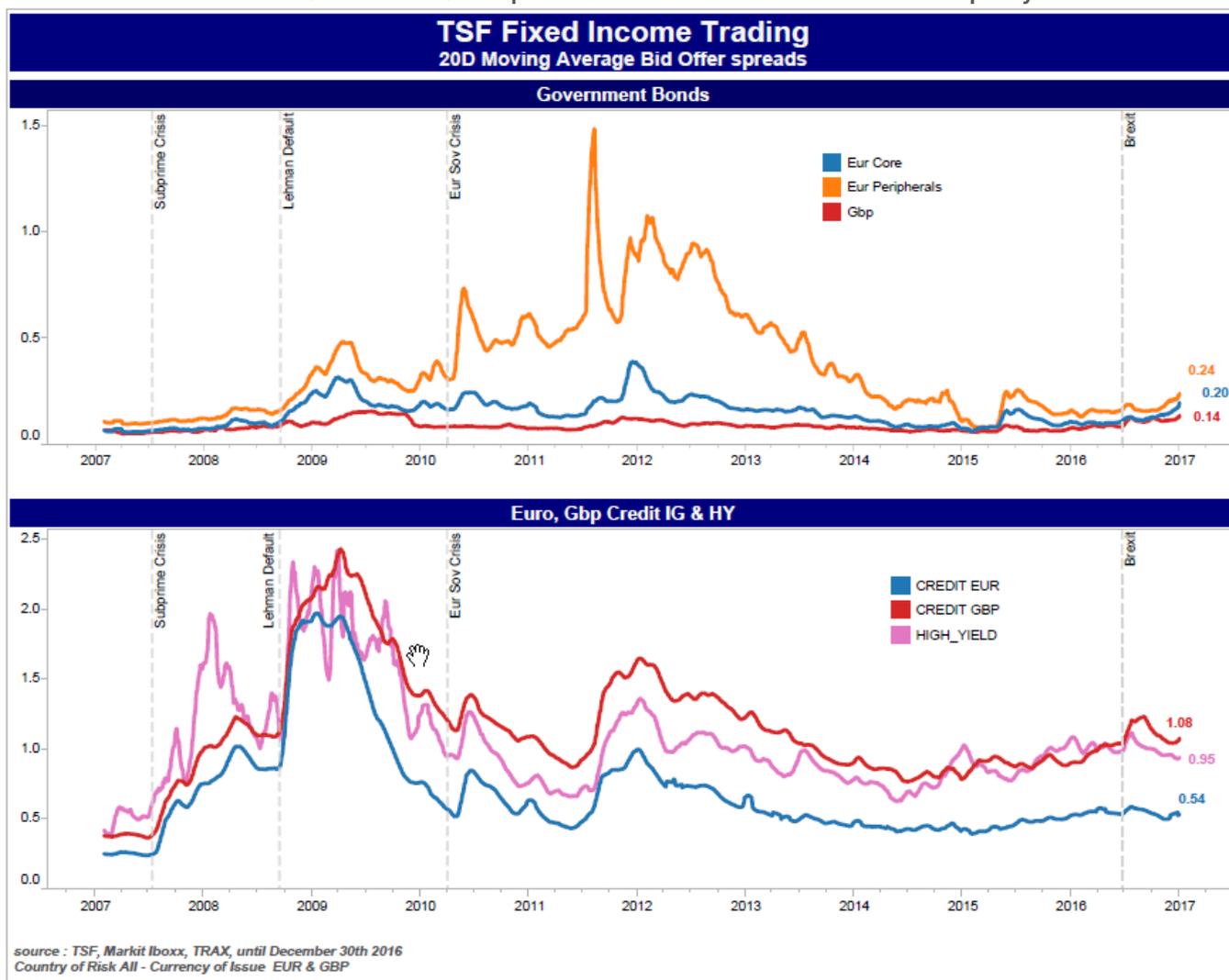
The main objective of this document based on our execution desk **historical trading data** on the fixed income secondary market is to provide a glimpse at our Fixed Income liquidity access since 2007; However, it should be considered that our historical analysis do not give any guarantee of future trading activities and do not contain sufficient information to support investment decision.

A. Looking at bid offer spreads to gauge liquidity.

Lacking TRACE metrics, EUR market has looked, as an alternative yardstick, at bid-offer spreads to have a proxy measure of liquidity; for example, a **significant widening of bid offer spreads would highlight a risk aversion from market-makers and therefore a more challenging access to liquidity for institutional investors.**

Chart 1 hereunder depicts 20 days moving average bid-offer spreads since 2007 for various fixed-income sectors. We thought it would be interesting to contrast EUR-GBP Government bonds sector, supposed to offer the most efficient market depth, breadth and tight pricing, with EUR-GBP credit Investment Grade & High Yield where liquidity conditions seem to worry market participants.

Chart 1 : Bid Offer spread is an alternative to have a sense of liquidity



Even if graphs show, especially for Govt bonds, that bid-offer spreads have come back to normal levels, and thus could augur of a better liquidity, we cannot ignore that there are still **concerns around the Fixed Income liquidity** for market segments such as **Euro & Gbp Credit Investment Grade and High Yield**. Reasons include ECB Quantitative Easing, Financial regulations and changes in market structures.

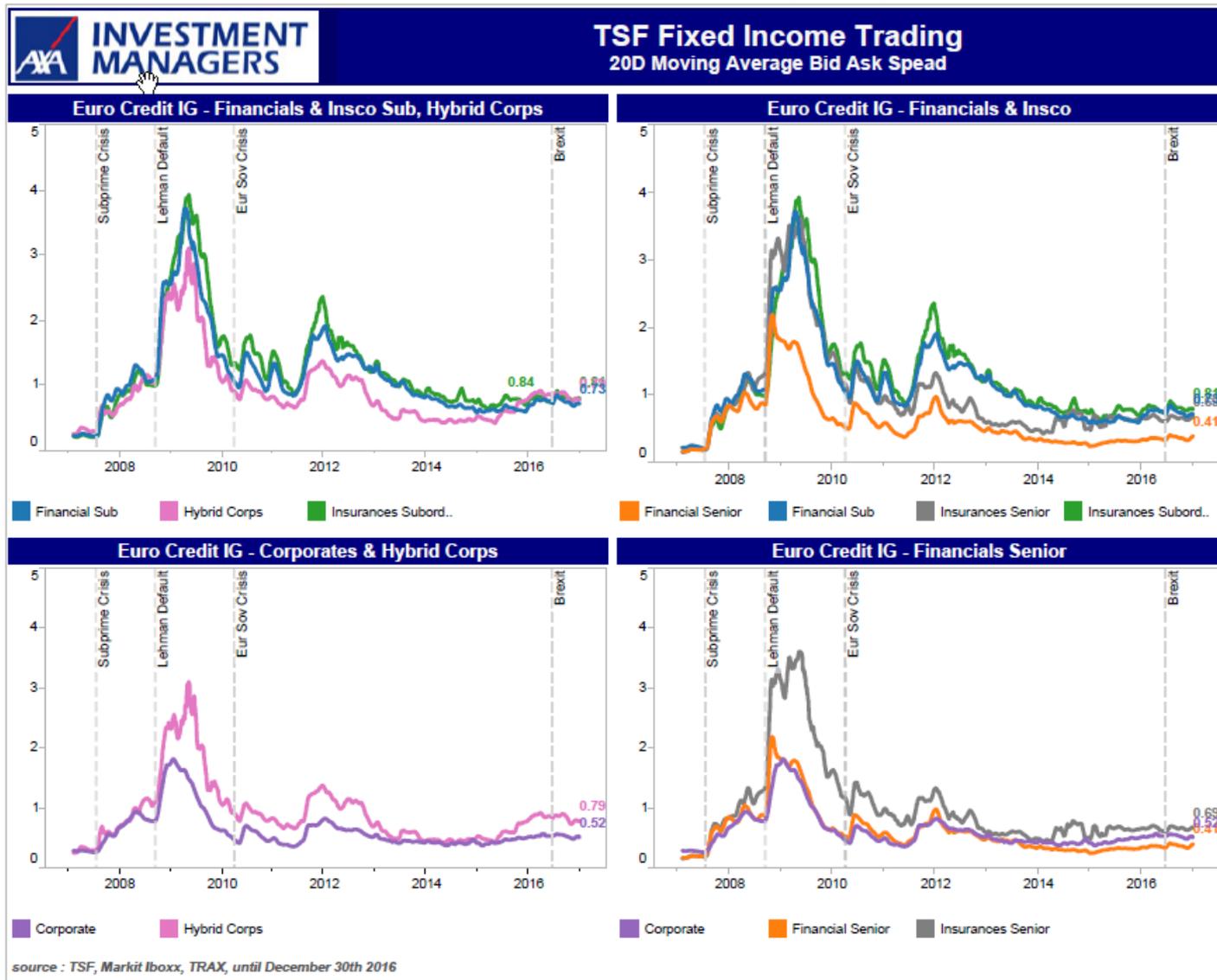
TSF FIXED INCOME TRADING

A GLOBAL TRADING PLATFORM TRACKING LIQUIDITY

Chart 2 gives some granularity on various EUR Credit Investment Grade sectors. Looking at historical bid offer spreads evolution, one could

interpret those as hints about a more challenging liquidity.

Chart 2 : Euro Credit Investment Grade bid offer spreads by sectors.



B. Leveraging on our trading data : the Full Execution Ratio

The “Full Execution” ratio tracks the percentage of orders (Charts 3 & 4, right-hand scale) executed the same day it was received in our Order Management System. We observed that **the closest to 100%, the better the liquidity was**, showing evidence that our traders could source satisfactory bids or offers to match our investment needs.

A second analytical dimension added on graphs hereunder is “order size” evolution which shows for

both Government and Credit sectors a general downward trend. However, the trend seems now on the upside again for EUR Credit as investors looking for yield allocate more money on this asset class compared to the now very expensive EUR government space due to ECB’s Public Sector Purchase Program.

Chart 3 : Consistent Full exec ratio on Eur Government bonds for years which fluctuated between 93 to 100% (cf light red diamonds) during the European Sovereign crisis, and on top since Q3 2013. The lowest ratios in Aug & Sept 2016 were due to some orders left by Fund managers with specific targets which cannot be met on the day they were sent.

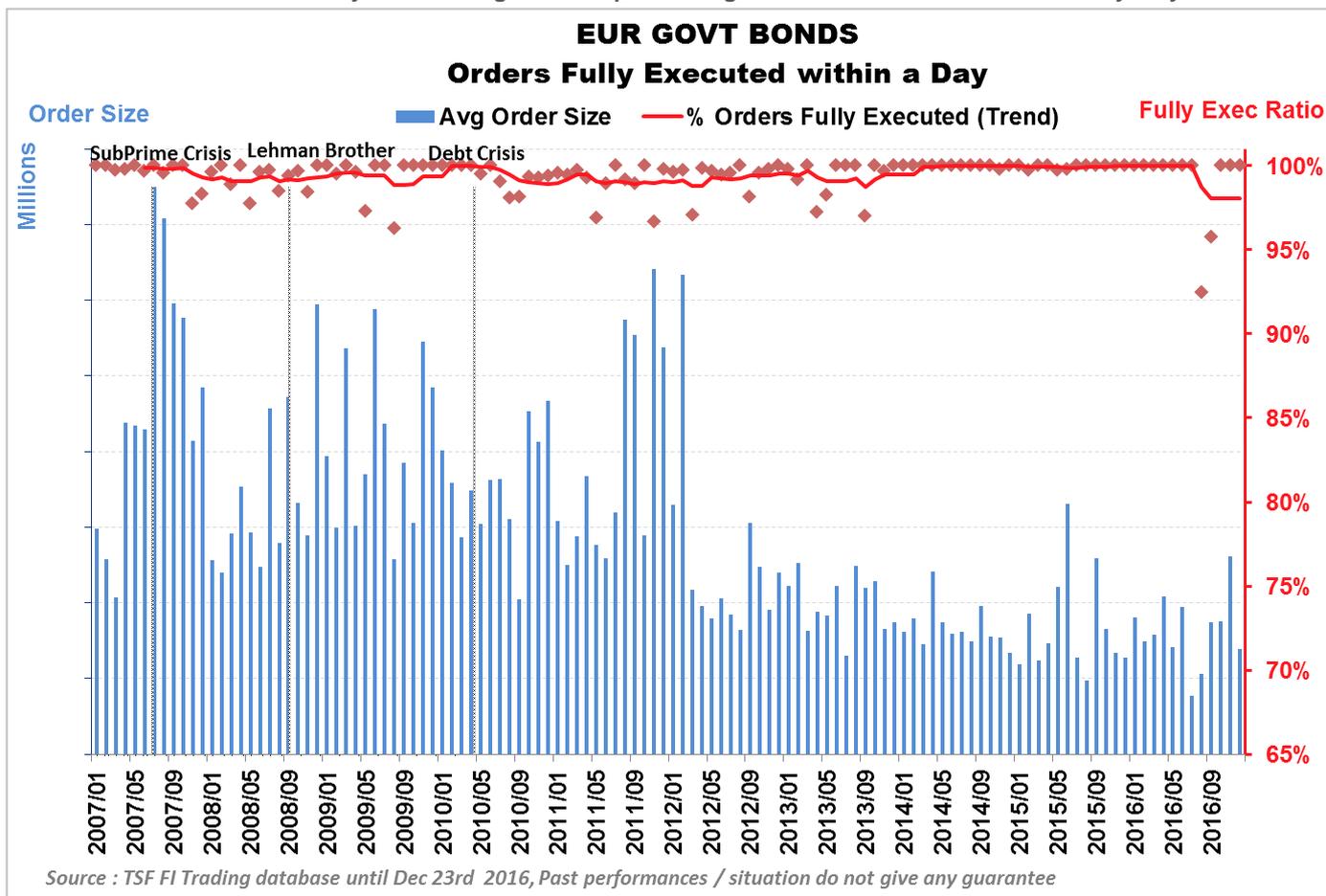
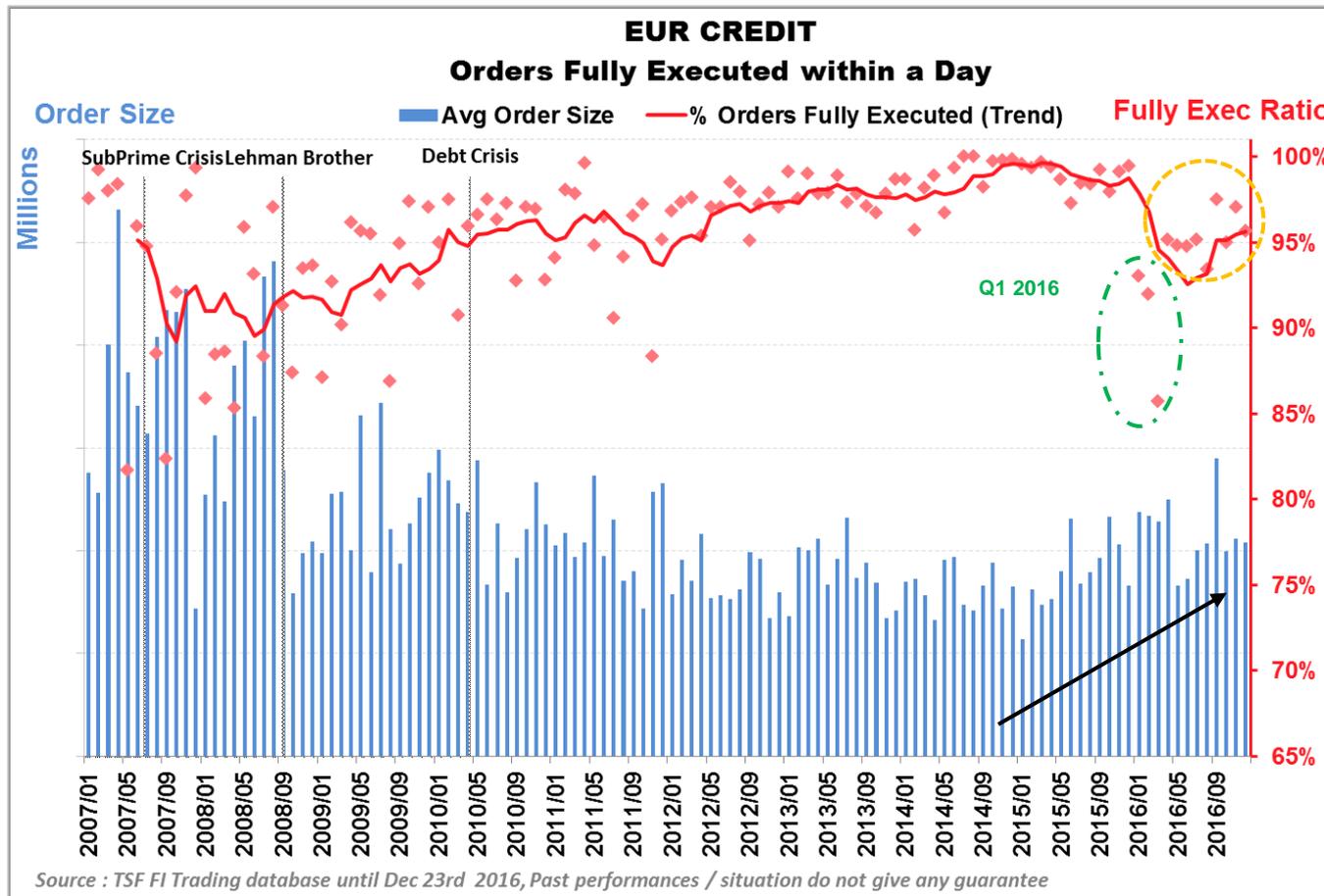


Chart 4 : Choppier on the Eur Credit Investment Grade, following the Subprime crisis and Lehman default, but we had observed a more stable full exec ratio since mid 2012, in the range between 95% and 99% (cf light red diamonds), except for Q1 2016 due to both concerns about China’s slowdown and ECB Credit Sector Purchase Program announcement in March.



C. Trade not executed in one day : monitoring the number of days required to get the remaining size done.

Complementary to the “Full Execution” ratio, we have monitored the number of trades not executed in one day along with the average number of days necessary to fully execute the remaining size. As an example, the idea was to focus on the remaining 14% of trades if the “Full Execution” ratio shows a value of 86% as in March 2016 (chart 4).

As shown on chart 5, the 2 analytical dimensions were respectively “number of trades not fully executed” and “Average days to fully execute”.

We observed that **the lower the 2 indicators were, the better the liquidity was.**

However, high values do not mean that liquidity disappeared, but rather means that we had to adapt our trading strategies and acknowledge the fact that several days were necessary in order to complete full size.

Chart 5 : EUR Govt bonds Indicators increased during the European Sovereign Crisis for particular countries but since Q4 2013, the situation improved a lot and we are not currently facing specific and major issue, except in Aug & Sept 2016 where some orders were left by Fund managers with specific targets which cannot be met on the day they were sent.

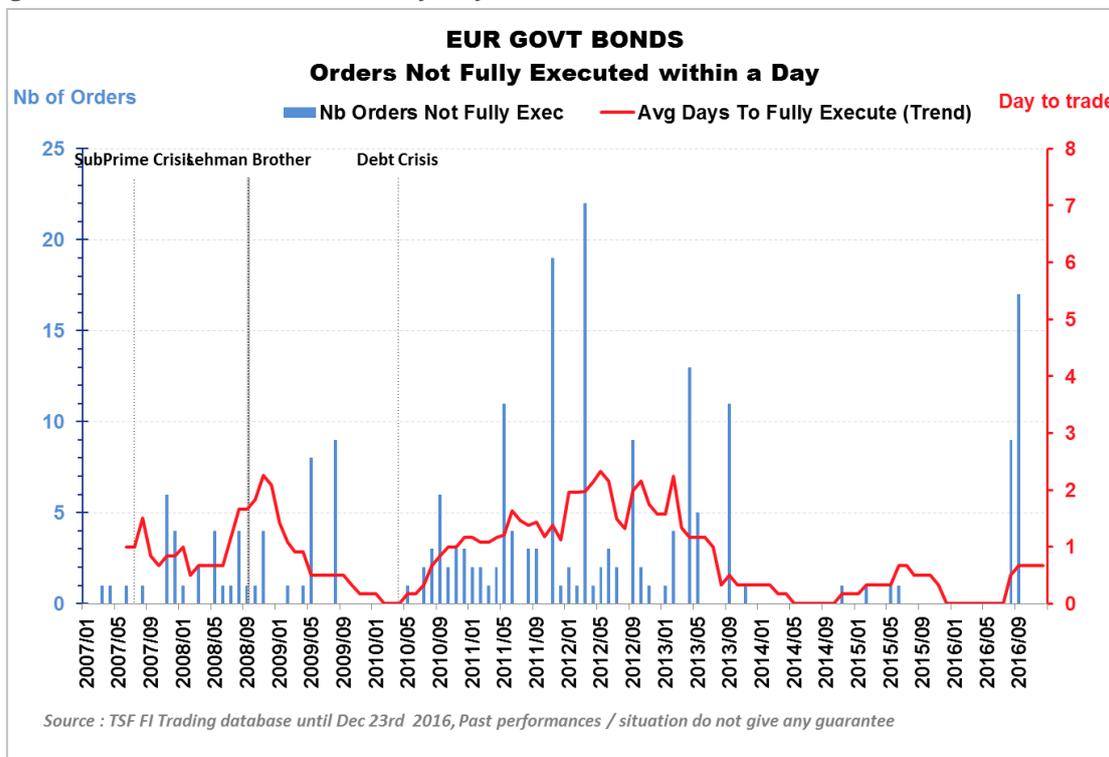
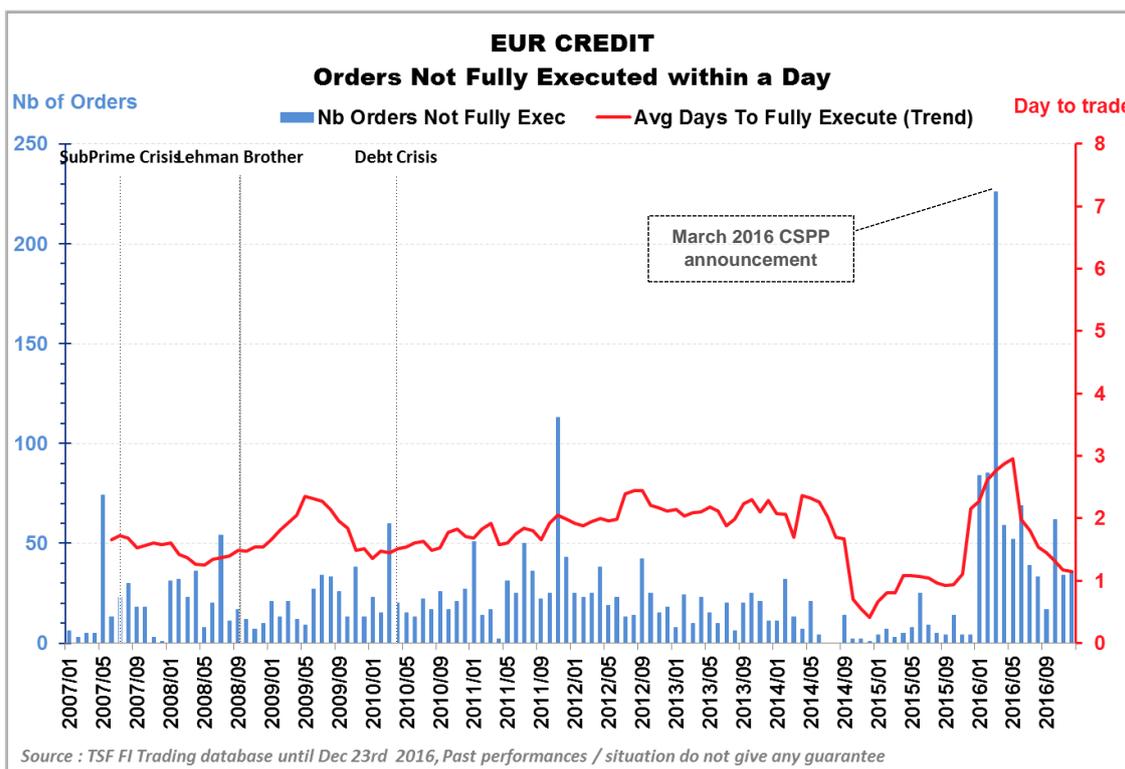


Chart 6 : Eur credit Investment Grade orders not executed in one day appeared in mid-2007, but despite having reached a top in March 2016 following ECB CSPP announcement, the indicator is not showing evidence of dramatic illiquidity.



D. Drilling down into our data : the split ratios by market segment

As Fixed Income liquidity is a multi-dimensional concept, we decided to give more granularity to our trading datas to setup another metric: the **split ratio** which expresses the number of transactions needed to fully execute an order within a day.

Charts 7 and 8 show 2 split ratio curves: one for trades above 10Mio nominal, one for trades below 10Mio nominal. The split ratio has a minimum value of “1” ie one order in one execution, therefore **the closest to one the value was, the better the liquidity was**.

Conversely, an increasing split ratio could express liquidity issues, with stronger commitment needed from the trading team to achieve full execution. A wider split ratio doesn't mean that the liquidity disappeared, but rather means that we had to adjust our trading strategy to find it and that multi executions were necessary in order to complete full size.

In addition to split ratio, we added “maximum trade size” on the graphs where we can see that trend is on the upside since Q4 2015 for both EUR Government and Credit Investment grade sector.

Chart 7 : Consistant & Optimal split ratio on Eur Government bonds, whatever the size to execute with both curves superimposed most of the time.

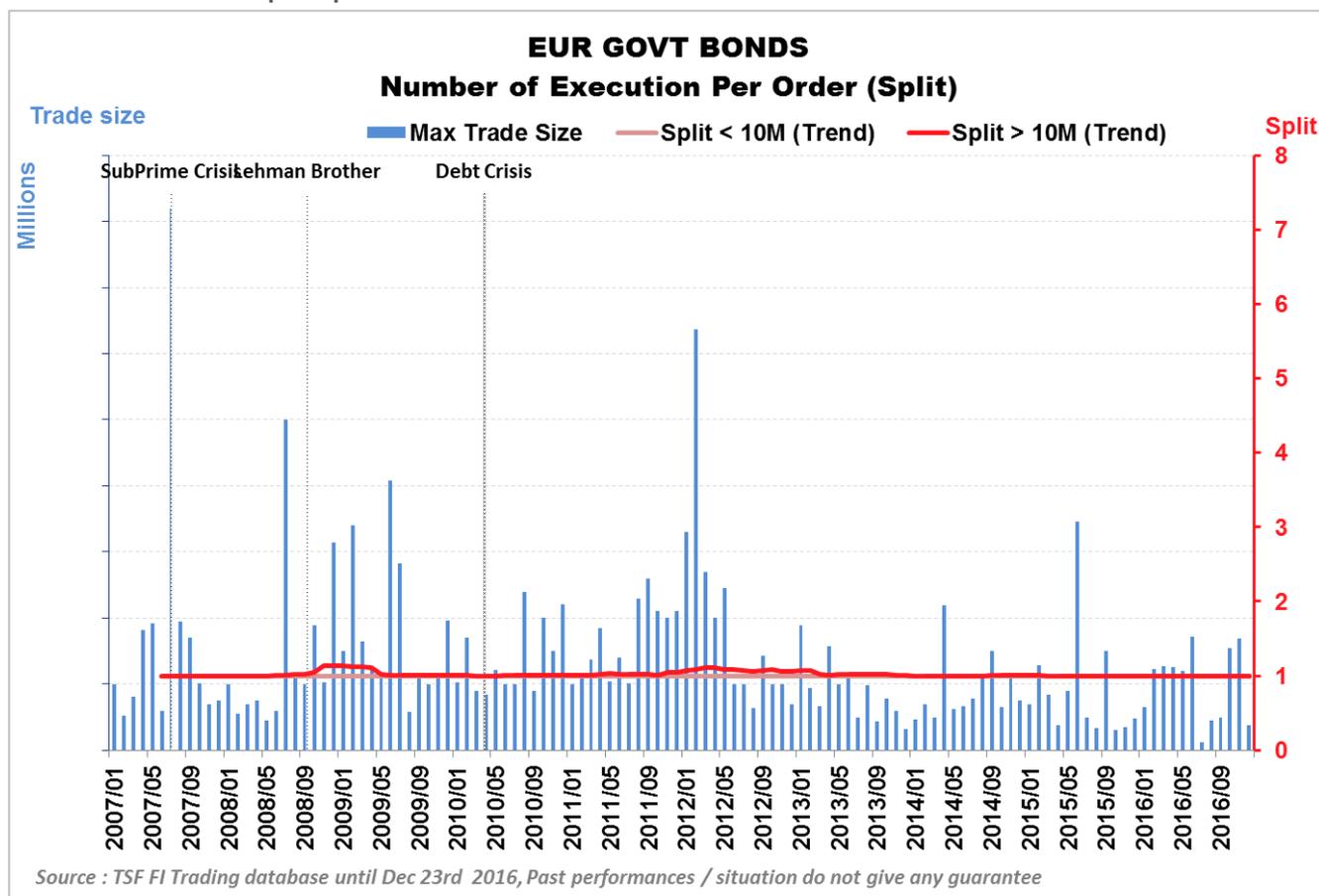
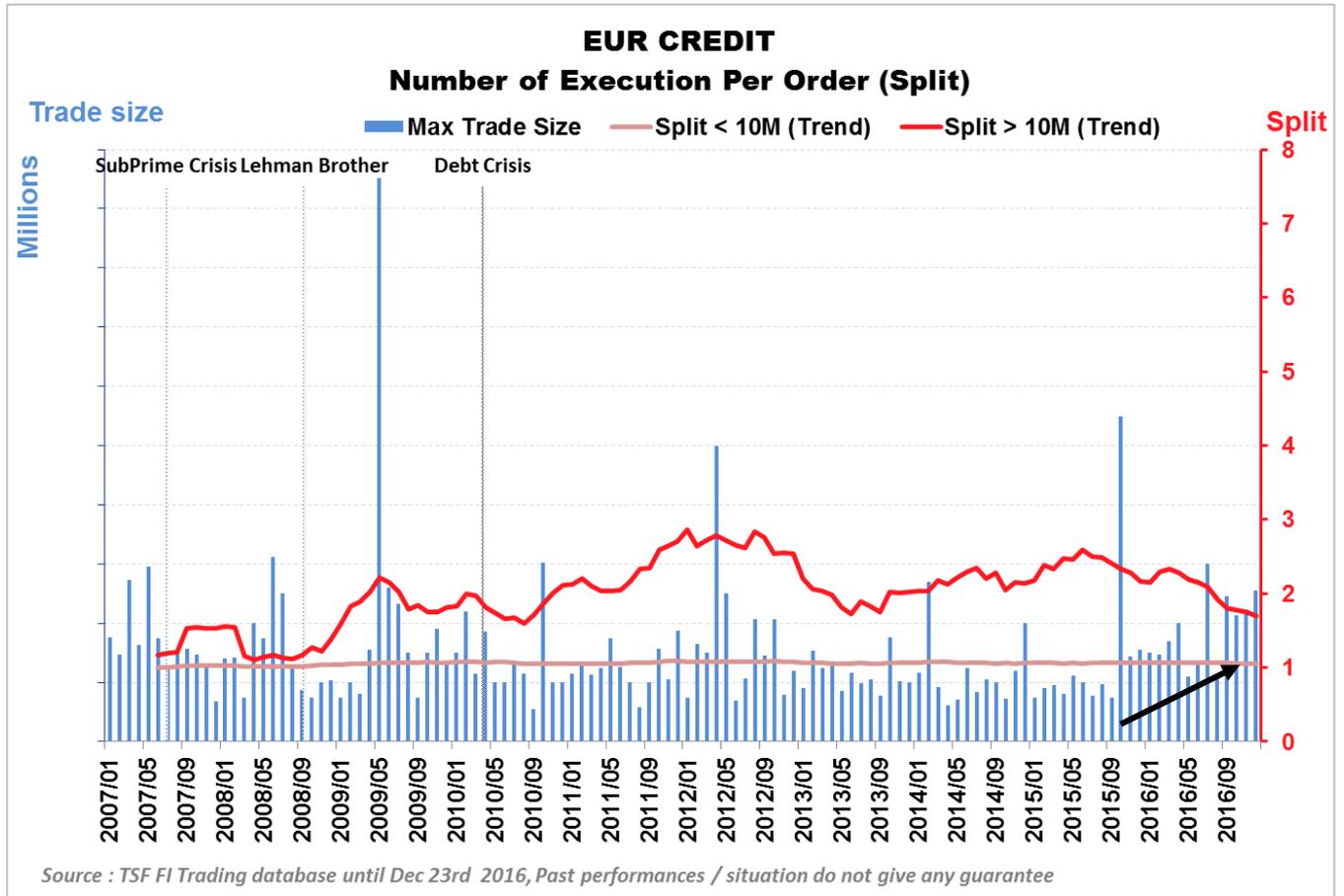


Chart 8 : Eur Credit Investment Grade split ratio for trades below 10Mio € exhibits stability like in EUR Government bonds. However, since the Lehman crisis, our data ,showed that split ratios fluctuated between 2 and 3 for orders above 10Mio €.



Conclusion

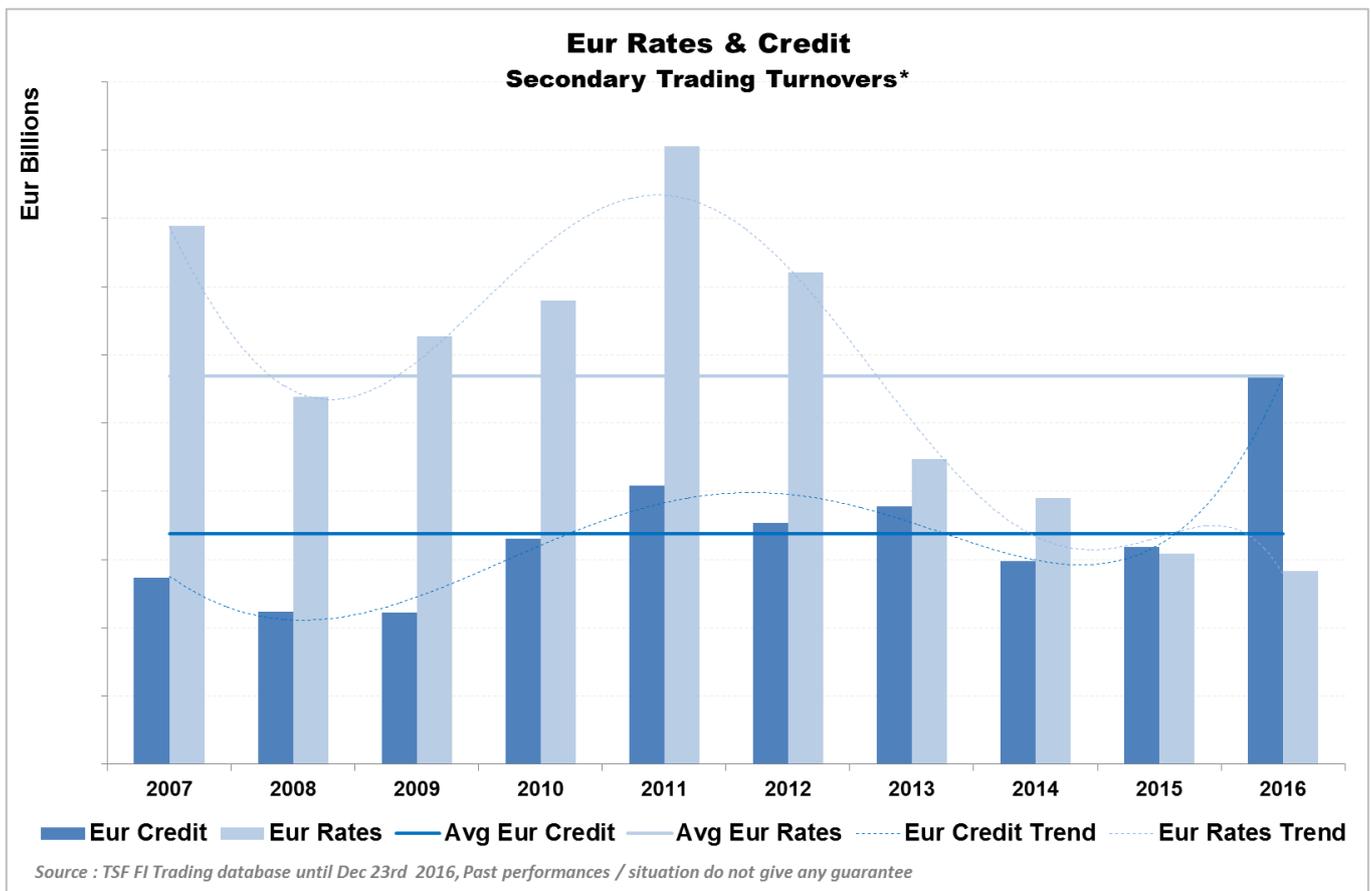
A retrospective analysis of our trading data has enabled us to produce this document with information that we believe factual on TSF Trading desk. It is undisputable that market structure has changed along with lower capacity of banks to warehouse bonds due to new regulatory framework and more stringent risk constraints; **however, our statistics come challenging the general perception of a major breakdown in corporate bond secondary market and attempt to shade a different light on the matter in line with latest reports, published end of August 2016, from ESMA and IOSCO.**

Thanks to timely adjustments made to face these new market circumstances, we have been able, most of the time, to execute our block trades despite concerns voiced by banks and investors alike, about more challenging liquidity conditions. This positive sentiment is strengthened by large EUR Credit secondary trading volume for 2016 managed by TSF desk as shown on chart hereunder.

A lot of effort have been put into technology using innovative proprietary tools to improve information flow with banks on bond pricing and specific axes discovery which helps our traders to promptly identify the potential source of liquidity from Eur Government to Credit bonds. The desk has also built a strong reputation among market-makers on the way it manages block trading inquiries and post execution communication. We believe all these elements contributed in building a partnership with counterparties which in turn dedicate balance-sheet capacity and provide liquidity to our activity.

Regarding brokers/counterparties selection, rigorous procedures have been implemented measuring key performance indicators including hit ratios, price slippage and other metrics.

Last but not least, along with reputation, technology and counterparties evaluation, adaptable trading strategies were key to nurture appropriate market access. We believe that all this will hold true for the coming years.



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2. ESMA, report on trends, risks and vulnerabilities N°2, 2016, Aug 30th 2016, page 62, “*EU Corporate bond market liquidity – recent evidence*”, <https://www.esma.europa.eu/press-news/esma-news/esma-sees-risk-outlook-deteriorate-eu-securities-markets>

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