Liquidity of the Green Bond Market

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The green bond market has undergone rapid expansion over the last five years. These instruments, of a specific type, were once the domain of a handful of experts, but are attracting increasing attention and are now part of many investors' portfolios. However, given the still small size of the market compared to the bond market as a whole, investors remain cautious regarding certain features of green bonds. The ability to create a diversified portfolio, whether in terms of geography, sector or issuer types, has long been a key focus of the analysis. The liquidity of the market is now, more than ever, a subject of attention.

For this second edition of our annual analysis of the liquidity of the green bond market, we updated our data at the end of September 2017 for universe comparisons and on 22 January 2018 for green bond/conventional bond comparisons.

1. Bond market liquidity

The liquidity of bond markets as a whole has deteriorated in recent years, partly due to regulatory constraints on banks. The bond market requires the intervention of financial intermediaries between buyers and sellers, a role traditionally played by banks. Stronger capital constraints have led some banks to withdraw from the market. This means that traditional financial intermediaries play less of a market-making role. Buyer/seller ranges have widened.

However, despite this trend, intermediation tables for management companies allow managers to trade in securities under relatively good conditions depending on the types of bonds.

Within bond markets, the green bond market has continued to expand strongly since our previous study (Liquidity of the Green Bond Market, November 2016). At the end of 2017, according to CBI (Climate Bond Initiative) statistics, the amount under asset management was close to $350 billion, with increasing diversification:

- ✓ in terms of issuers (supranational, but also sovereign and municipal, banks and corporate bonds)
- ✓ in terms of seniority (subordinated green bonds have been issued)
- ✓ in terms of maturities (maturities up to 2047 for bullet debts).

2. Market liquidity analysis

Mirova and Natixis Asset Management Finance (NAMFI), Natixis AM's intermediation structure, have conducted a liquidity analysis of the green bond market compared to conventional bonds.

Study methodology:

Eligible securities: Green bonds that fit the analysis method developed by Mirova[1], more restrictive than that generally accepted by the market.

Universe of selected transactions: green bond and conventional bond transactions carried out by NAMFI for portfolios managed by NAM and Mirova.

This selection method allowed us to obtain a sufficient number of points to carry out our analysis.

Transactions: for each transaction, NAMFI interviewed at least 3 counterparties and dealt with the counterparty offering the best price.

Formula used:

PE: executed price / MC: average of the proposed prices.

if relative ask spread = ((PE-MC)/PE)*100

if relative bid spread = (MC-PE)/PE)*100

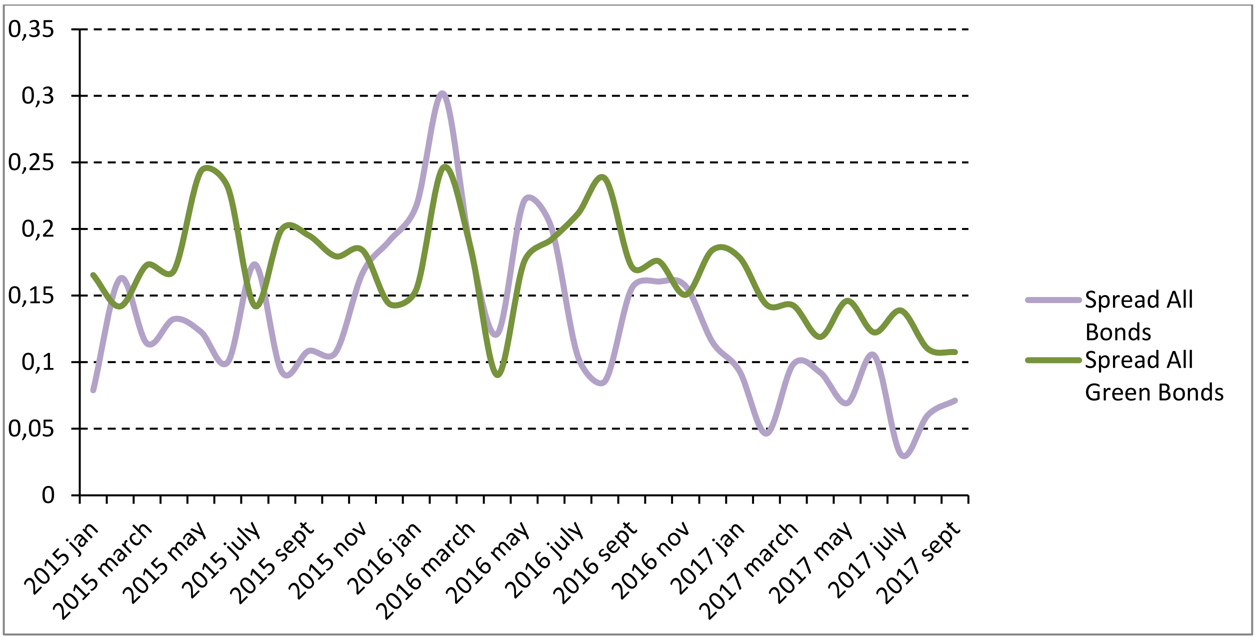
The study compares the relative spread between the prices actually executed and the average of the other buoyant prices offered by the counterparties surveyed for the transaction requested.

We carried out a first analysis of all types of bonds, followed by a second one focusing on bonds issued by companies and banks. The number of green bonds issued by these types of issuers now makes it possible to obtain a sufficient number of points. Differences could arise in this second universe, in particular, because issuers are generally less well rated and the amounts smaller.

It should be noted that the average size of green bond issues is smaller than that of conventional bonds.

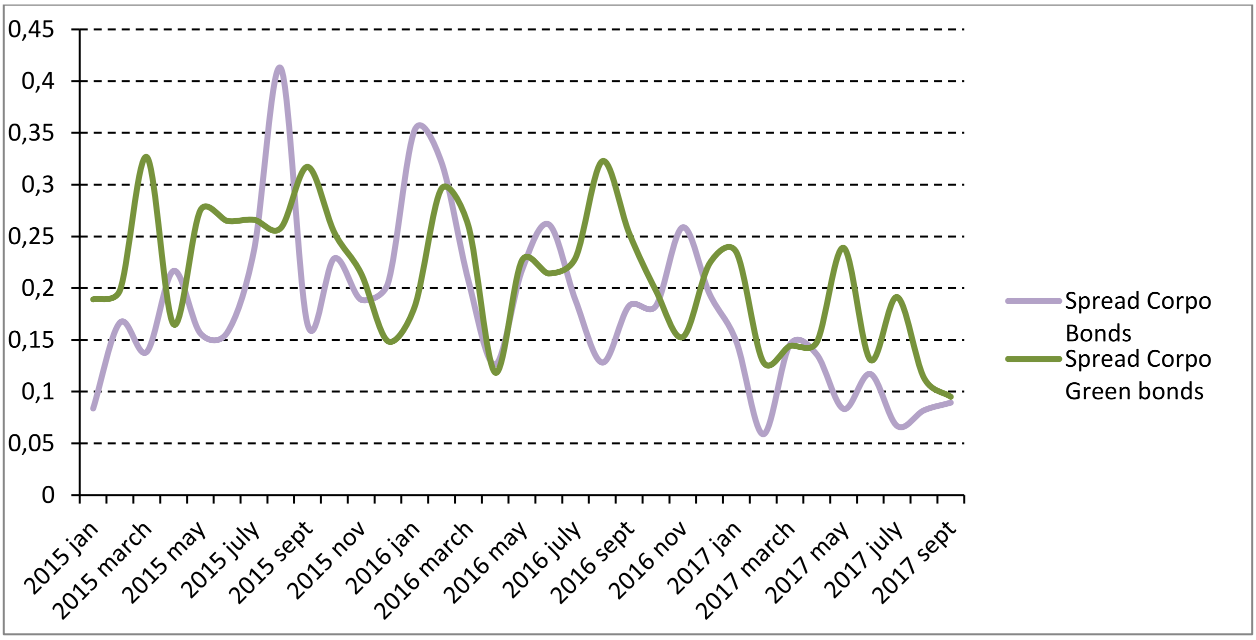
[1] "Green bonds, a direct link between financing and projects", November 2015.

1) Comparison of all types of bonds (sectors, credit sub-sectors, maturities) between green bonds and conventional bonds



Source Natixis NAMFI - September 2017

2) Comparison focused solely on bonds issued by companies and banks



Source Natixis NAMFI - September 2017

It can be seen that, for both the first and second universes, the price difference observed over the period is not very significant. This shows good liquidity in the green bond market, even in the corporate and banking universes.

3. Liquidity of the secondary green bond market and arbitrage opportunities

Both green and conventional bonds are issued on the primary market with a yield level that is compared to the benchmark government bond with a very similar maturity, the credit risk being identical. The valuation of green bonds compared to conventional bonds is also a point of attention for Mirova's fixed income managers.

The graphs below are used to compare, for three issuers, for a green bond and a conventional bond with similar maturities, the yield spreads on the secondary market with the zero-coupon curve of the benchmark government bond. The analysis focuses on Engie, EDF and Apple stocks, selected for their long history and geographical diversity. The benchmark government bonds are German for the first two issuers and American for the third.

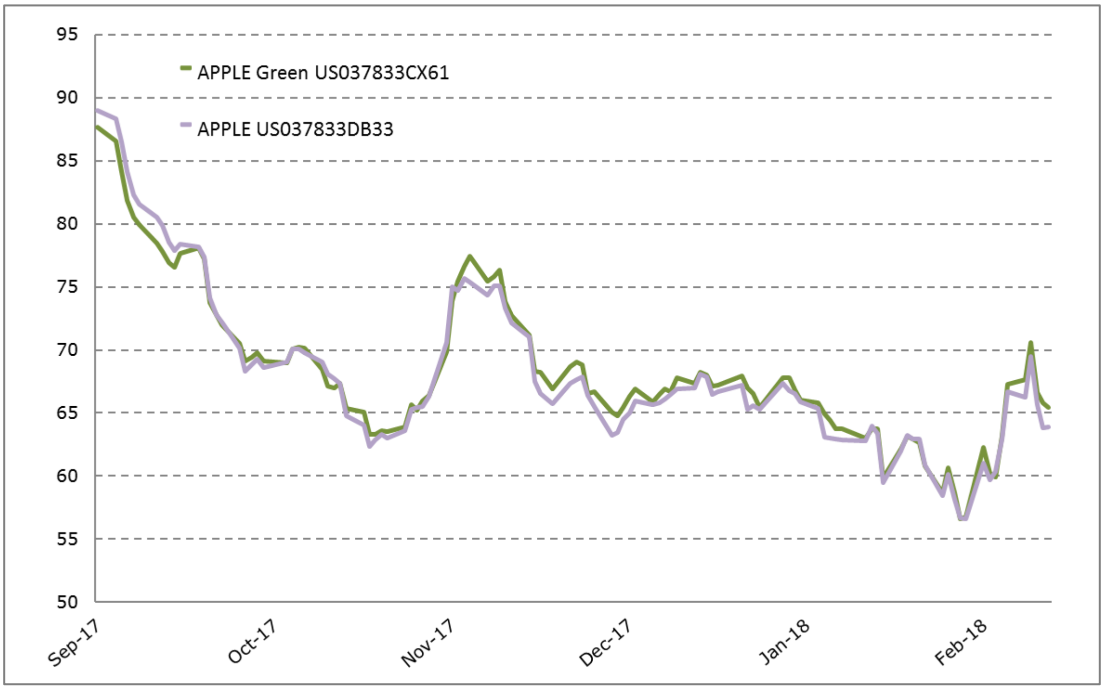
Comparison for the issuer ENGIE (amount in euros)

Source: Bloomberg - February 2018

Comparison for the issuer EDF (amount in euros)

Source: Bloomberg - February 2018

Comparison for the issuer Apple (amount in dollars)



Source: Bloomberg - February 2018

This analysis compares the valuation of green bonds with that of conventional bonds. If there is no clear trend, green bonds may in some cases be more attractive on the secondary market than conventional bonds. This reflects differences between supply and demand at a given point in time. This situation can be observed on the first graph (Engie). This offers arbitrage opportunities within the green bond universe.

The positioning of Mirova, which is among the pioneers and leaders in the active management of green bonds[2] as well as the support of NAM Finances, allows us to carry out our transactions on the green bond market without major difficulties in the current liquidity environment.

The liquidity of the green bond market appears to us to be satisfactory and allows us to actively build and manage portfolios.

[2] 2016 & 2017 Global Capital SRI Awards for C. Wigley, "Green/ SRI investments personality of the year/ 2016 Global Capital SRI Awards for Mirova, ”Best Asset Management Company”. References to a classification, award and/or rating are not an indicator of the future performance of the fund or manager. Methodology available on the website *www.globalcapital.com*

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