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Investing in sustainability

Greenium
An ally, and source of opportunities

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More than ever, green bonds are the focus of attention and the curiosity they are arousing is equalled by the questions they have raised. These instruments, which are geared towards "green" projects, have emerged as a market segment of their own at a time when questions about the integrity and sustainability of investments are becoming increasingly pressing.

At the heart of discussions are market size and composition, liquidity and above all the greenium (a contraction of green and premium). The greenium - i.e. the yield that investors concede to companies issuing a green bond compared to the performance they would have required from these same companies for a conventional bond with the same maturity - was long perceived as volatile, hovering in one direction or another, before finally settling down visibly in 2020.

One cannot really talk about greenium without looking at the green bond market and the growing appetite of investors for it, and consequently, without taking into account the fact that demand far outstrips supply.

The greenium currently appears to be moderate (as of 20 January 2021, 2 bp yield/spread). It is therefore difficult to talk about overheating or a bubble per se. However, analysing it in great detail using a proprietary model, available in real-time, will put selection back at the centre of the management of these instruments. As it is heterogeneous, a greenium can indeed provide a source of added value in the context of arbitrages between securities.

Green bonds have historically been a source of performance and the study, based on the metrics we have analysed, provides what we believe is a clear overview:

→ The existing tension between scarce supply and ever-increasing demand results in a concession in the form of a greenium, which does not, however, result in a depletion of the liquidity and availability of green bonds. The liquidity of green bonds is even greater in some respects.

→ There is nothing homogeneous about greenium; it is more a question of

- seniority (anyone looking for a low greenium would better have have to target the most subordinated securities and give preference to hybrids),
- credit rating : the lower the credit rating, the lower the greenium,
- sectors (supply and demand partly dictate how sectors work: real estate, industry or chemicals are attractive) and
- maturity (long maturity means a higher greenium, owing to insurers...).

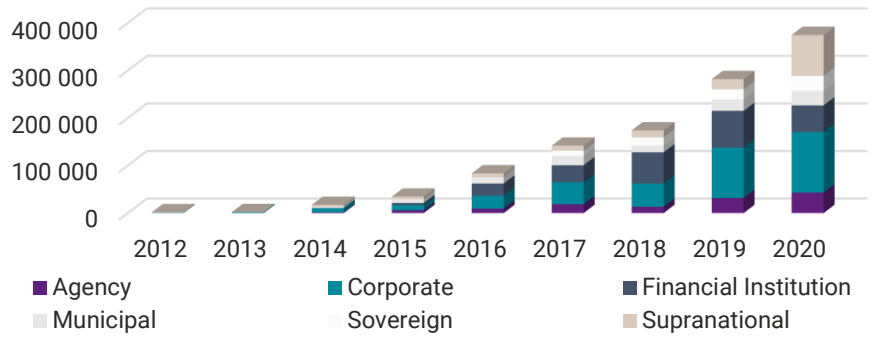
Accordingly, greenium are above all dynamic and therefore require constant monitoring if we are to reap their benefits in the management of our portfolios.

Unstoppable green bonds

Another record year ...

Green bonds are now worth more than $900bn (source: Environmental Finance, 31/12/20), and their enormous growth potential is not being undermined.
This green bond market, which is still in its infancy, stands out for its dynamism and even though it only represents around 2% of the bond market stock, it was responsible for almost 17% of flows in 2020, excluding sovereign issuers. (Source: Natixis CIB)

Green and sustainable emissions by year and sector (in $m) | Chart 1



Sources: Environmental Finance; Mirova as of 31/12/2020

2020 saw a record number of issues after a sluggish first half, disrupted by the pandemic. A catch-up effect of green bond issues was then observed in the second half of 2020, which is also historically more dynamic than the first. Issues therefore exceeded those of 2019, albeit by a small amount.

The "social" and "sustainable" formats ("green" and "social" at the same time), previously overshadowed by green bonds, have become the alternatives of choice for combating the effects of Covid-19, notably by financing the means to fight poverty or to promote access to financing or to essential services, to support SMEs and the real economy. 2020 was the year of the explosion of these formats, with a notable shift in issue requirements from green bonds to social bonds. 2021 should confirm the trend.

Sustainable Linked Bonds (SLBs) and Sustainable Development Goals-linked bonds (SDGs) pit environmental impact against financial return by offering, in most cases, an additional return if environmental targets are not met.

We therefore remain very cautious about these new formats, while systematically analysing them in order to judge whether the objectives are sufficiently ambitious and achievable.

Thus, clear, ambitious and achievable objectives will improve the rating and the opinion of the internal ESG analysis team on the issuer's overall energy transition strategy.

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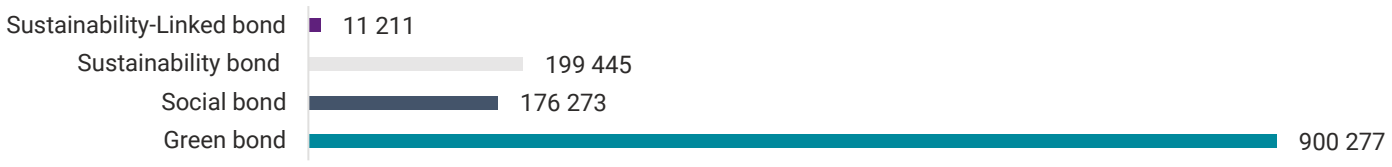
Outstanding sustainable issues (in $m) by format - At end of 2020 | Chart 2



Sources: Environmental Finance; Mirova as of 31/12/2020

* Source: Environmental Finance; Mirova as of 31/12/2020

Highlights in 2020

Increased diversification has occurred through the private corporate sector. However, any green bond manager has to deal with the historical biases of this segment, i.e. a lot of utilities, banking and real estate securities and public issuers (agencies, supranational, regions).

While the market started with these more 'obvious' issuers, 2020 saw the emergence of green bonds from cyclical companies that issued more than usual.

We will focus here on the main highlights of 2020 on benchmark-size (above €500m or $500m equivalent) and public green bond market, without claiming to have covered this vibrant market comprehensively.

Car manufacturers gearing up*

Daimler, Volkswagen and Volvo have joined in, following the Toyota and Hyundai captives. Their relative scarcity, like that of the sector within green bonds, is a source of greenium.

Forests turned into green paper*

Tornator, UPM, Stora Enso are supplementing the green bond offer in the cyclical sector.

Luxury and textile industry dressed to the nines*

Chanel, Burberry issued (classified as ineligible because the environmental impact of their projects was insufficient according to Mirova (OpEx). In textiles, VF Corp and Adidas also made a grand entrance.

European Sovereigns: getting started

Germany, Hungary and Sweden have launched their first green bonds after Belgium, France and Ireland. After Italy, the UK is expected to follow suit.

Emerging green bonds... already developed

Mexico and Chile, with multiple strains (emerging OECD countries) have supplemented Indonesia's offering. Brazilian banks also entered the market in early 2021.

Subordination: priority to green bonds?*

The bulk of HY issues remains concentrated on subordinated instruments and very little on senior debt (which is mostly denominated in $, in emerging countries or in the Americas) on the one hand with hybrid bonds of non-financial companies such as EnBW, EDP, Orsted, etc. and on the other hand with financial subordinates (banks, insurances) i.e. AT1/CoCo with BBVA, Kookmin, Shinhan and QNB or Tier 2 with Generali, Kookmin, De VolksBank, AIB, inter alia.

High yield: could do better!*

Getlink, the operator of the Eurotunnel under the English Channel, and VZ Vendor, a telecoms and media group, have been added to the list of HY issuers, which are still few and far between, stuck at less than 5% of green bonds, as in the conventional market.

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Google searches for green, Visa plays its card*

Both of these technology issuers have raised substantial amounts of bonds over the summer. They supplement the existing offer alongside Apple. However, they are not considered as eligible by Mirova because allocation of funds was deemed too vague by the SRI research team.

Mass-market consumption, conspicuous by its absence?

This is normally the non-financial business sector that accounts for the largest share of traditional indices. It includes the pharmaceutical industry (generally social vocation), mass consumption and household equipment.

The non durable goods consumer sector, as the name implies, has fewer green projects. The financing required is less suitable for the green bond format as it is still allocated to mostly operational expenditure.

Banks: more and more*

The banking sector continued to develop. New issuers entered the green bond segment. As mentioned earlier, BBVA (Banco Bilbao Vizcaya Argentaria) issued a contingent convertible bond (CoCo) in green bond format.

2021: another record in sight?

The expected return to normal health conditions in 2021 should be a breath of fresh air for companies. They will be more inclined to issue green bonds in this context. In addition, stimulus packages aimed at financing the energy transition will probably be financed by "sustainable" bonds.

2021 will therefore be another year rich in green and sutainable bonds, which is why it seems appropriate to envisage $550bn in issues, i.e. an increase of 52%. Sovereign wealth funds and similar bodies will be more active, such as KfW or the EU, which is planning €250bn, or the UK, Spain, Austria, Slovenia and Denmark, which should issue their first green bonds. Expansion to the cyclical and consumer sectors also seems to be on track.

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The greenium under the microscope

Sudden conversion to SRI

The greenium, or the percentage of performance that investors concede to issuers, has long been seen as volatile, moving seasonally in one direction or another, and finally settling down visibly in 2020.

The greenium is the result of a search for integrity that has become systemic; in other words, a number of funds are suddenly converting to SRI, thus initiating an increased search for green bonds. However, the transformation of funds into SRI funds is taking place much more quickly than the implementation of corporate sustainable development strategies and therefore the development of the green bond market, hence the supply-demand tension already mentioned.

Schematically, 26% of Euro-Corporate funds and 16.7% of Euro-aggregate funds are now investing in green bonds, which account for less than 3.5% and 2% of the benchmark indices. This dichotomy alone is enough to justify the greenium. (source Barclays /EPFR)

The subsequent scissor effect (as much supply as in 2019, around $300bn, for more demand than in 2020) naturally resulted in a greenium.

Mitigating the greenium

This study by market segment, based on several breakdowns using a proprietary green bond valuation model that we have developed, analyses the greenium according to several criteria.

This provides numerous keys for interpretation, with different degrees of detail to fine-tune the deciphering of the greenium. Based on these elements, the model appears to be able to deliver arbitrage opportunities to turn market inefficiencies into a strength.

Our model performs an analysis by issuer, sector, credit rating, Mirova's internal SRI ratings (i.e. integrity) and even liquidity. In order to meet a minimum market depth and data availability, the model estimates bonds denominated in euros.

On 20 January 2021, according to our internal model, the greenium is not high, a yield/spread of 2bp or 0.15% of surplus (par) value for an 8-year duration bond. Investors are therefore behaving with moderation. **For these reasons, we cannot talk about green bond "bubbles", not to mention the fact that the greenium is neither permanent nor homogeneous.**

A greenium is not a foregone conclusion either. Today it is being fuelled by excessive demand, but it will eventually dissipate as the market grows in size.

A proprietary model

Mapping & Greenium Valuation Model | Chart 3

The Greenium in a few words...

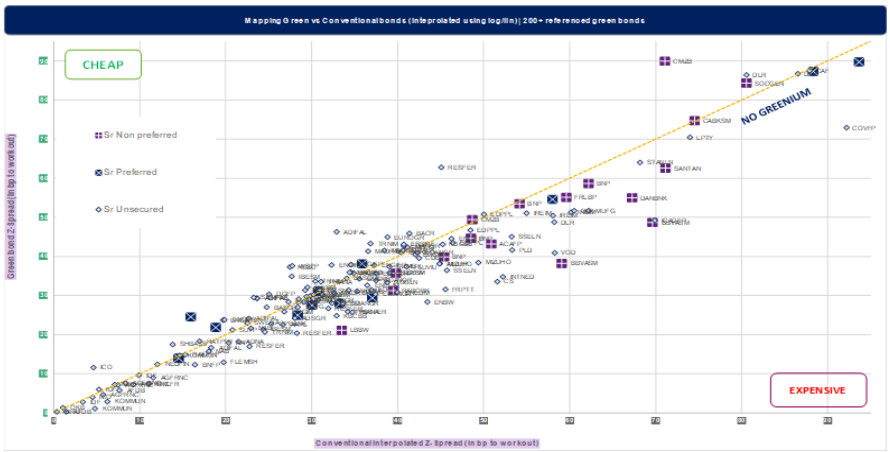
Available and updated in real time

Calculated by sector, seniority, issuer and combining 2 methods: **linear** and **logarithmic**

Base of over **500 green bonds**

Calculating 375 greeniums based on over 6,7000 conventional strains (07/12/20)

By universe and by company



Key	Crncy	Maturity	Workout	Actual Z-spread	For Chart	Model Z-Spread (linear)	Slope	Intercept	Model Z-Spread (logarithm	Model Z-Spread	# of Green	# of Comp	Greenium
SOCGEN - Sr Non Preferred	EUR	22/09/2028	7	85	85	78	13	35	81	81	1	12	- 4
UBIIM - Sr Preferred	EUR	10/04/2024	3	45	45	44	28	11	41	41	1	2	- 4
ADIFAL - Sr Unsecured	EUR	30/04/2027	6	30	30	27	13	6	24	24	5	3	- 5
DLR - Sr Unsecured	EUR	15/03/2030	9	87	87	82	9	33	81	81	4	4	- 6

Sources : Bloomberg , Mirova

Yield irregularities within the green bond and conventional curves are smoothed out over the entire bond portfolio so as not to exacerbate price distortions.

Capturing the complexity of bond features | Chart 4

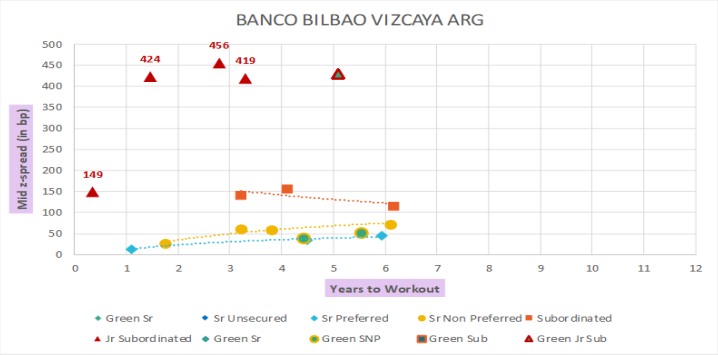
Technically, the greenium...

Captures the complexity of each issuer's instruments and their subordination

Splits the universe into conventional and green bonds

Distinguishes entities belonging to the same group

An indispensable daily management tool providing the opportunity to select the best instruments base on curve arbitrage



Sources : Bloomberg , Mirova

Our approach in detail

The sector is a determining factor.

Sectors are analysed here according to this methodology: subordinated instruments, of which there are 20*, are excluded; only senior debt is studied. It appears that:

- Real estate companies, chemical companies, certain industrial companies and transport companies show a slightly negative greenium, in favour of the investor. Natural gas extractors (mostly Engie green bonds) and covered bonds are flirting with a zero greenium because they are both "mature" green bonds whose valuations have had time to converge towards those of their traditional counterparts.
- Focussing on specific green projects, and thus ensuring a certain environmental impact, logically generates a greenium as more investors are likely to buy them. This is the case for sectors such as the automotive, telecommunications and consumer sectors (where, most importantly, the scarcity effect comes into play) and therefore present a significant greenium (>7 bp),
- Among the most represented sectors, banks (multiple controversies limiting interest in buying conventional debt) or utilities such as "Electric"** and "Natural gas"** (renewable energies vis-à-vis conventional power plants) show a moderate greenium (~2 bp).

It should be noted that the calculation is becoming increasingly difficult for utilities as these companies are replacing their conventional bonds with green bonds and comparison to their conventional curve is becoming more difficult.

Greenium by sector | Chart 5

Sources : Bloomberg , Mirova

** The reported data reflect the situation as of the date of this document and are subject to change without notice.*
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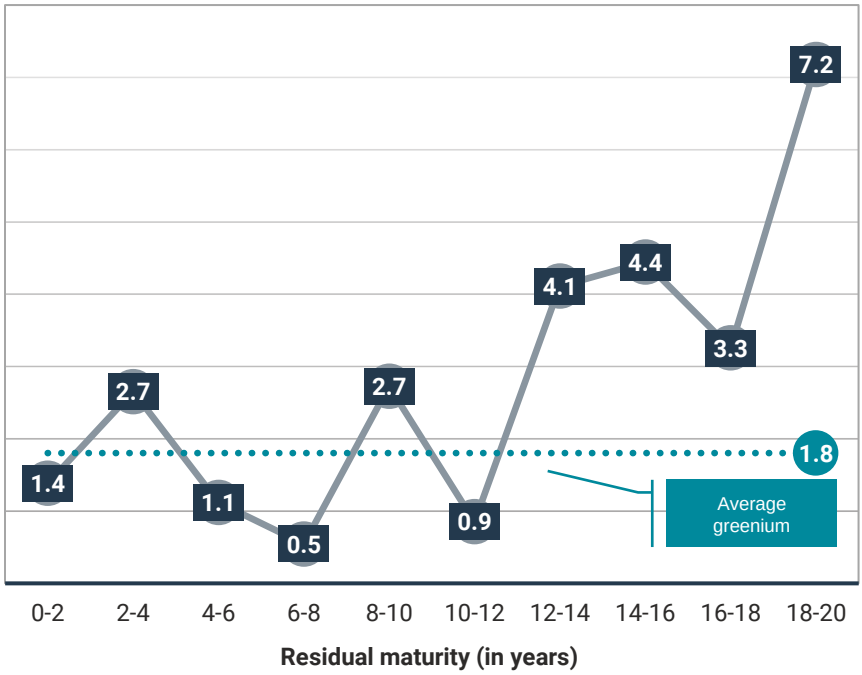
The greenium is increasing with maturity.

Combined with a frequent search for duration and simply for yield by other investors, the greenium can only but increase with the maturity of bonds.

Insurers, some of whom, notably the French, are required to "decarbonise" their investment footprint, are looking for long-dated bonds for reasons relating to regulation, solvency, asset liability management and of course yield levels. The consequent demand from insurers is being felt at the long end of the curve from 9-10 years.

Greenium by maturity band (Jan-01) | Chart 6



Sources: Bloomberg ; Mirova as of 20/01/2021

Inaugural issuers, frugal issuers?*

Generally speaking, inaugural issuers, which are also world-renowned and have significant outstanding bonds, command a higher greenium. This was the case for Daimler or Volkswagen. Conversely, companies with that are less well known are more generous to investors. They use green bonds to enhance their reputations, to capture a larger investor base, and therefore greater demand, while raising green bonds. Conversely, inaugural green bonds also mean a negative greenium, as in the case of the real estate company Cofinimmo or the forestry company Tornator.

Ratings/Seniority/Yield: Upgrading?

The greenium is clearly evident when ratings are between A- and BBB- (S&P), i.e. IG bonds subject to the hunt for yield, which is moreover positive, in a low interest rate context. The A- ratings and above show a slightly negative greenium; the same applies to HY ratings, although on a reduced sample. Here, the scarcity of supply does not outweigh the company's fundamentals. Issued more recently, high-yield green bonds have undergone tougher market phases, justifying issue premiums, and therefore a negative greenium, and so an opportunity gain for investors. Less market depth and reduced liquidity also make the equation less straightforward.

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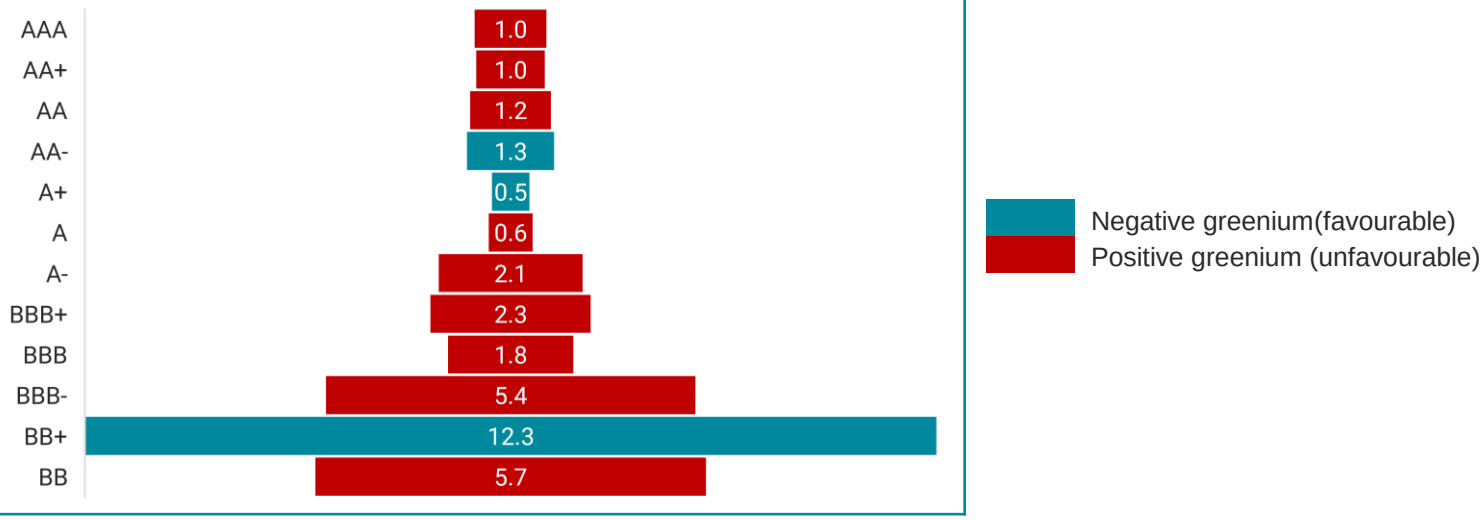
Greenium by S&P rating (Standard & Poors) | Chart 7



Sources: Bloomberg ; Mirova as of 20/01/2021

It seems that investors are finding it more difficult to derive and concede a premium for senior and subordinated bonds.

Here we look at the greenium against the total spread of the issue to measure it as a percentage (%) and thus put this premium into perspective with respect to the level of the spread (e.g. 1 bp of greenium on a 50 bp spread (2%) which we compare to 4 bp of greenium on a 200 bp spread), in the belief that we are willing to concede a larger greenium when the spread is wider.

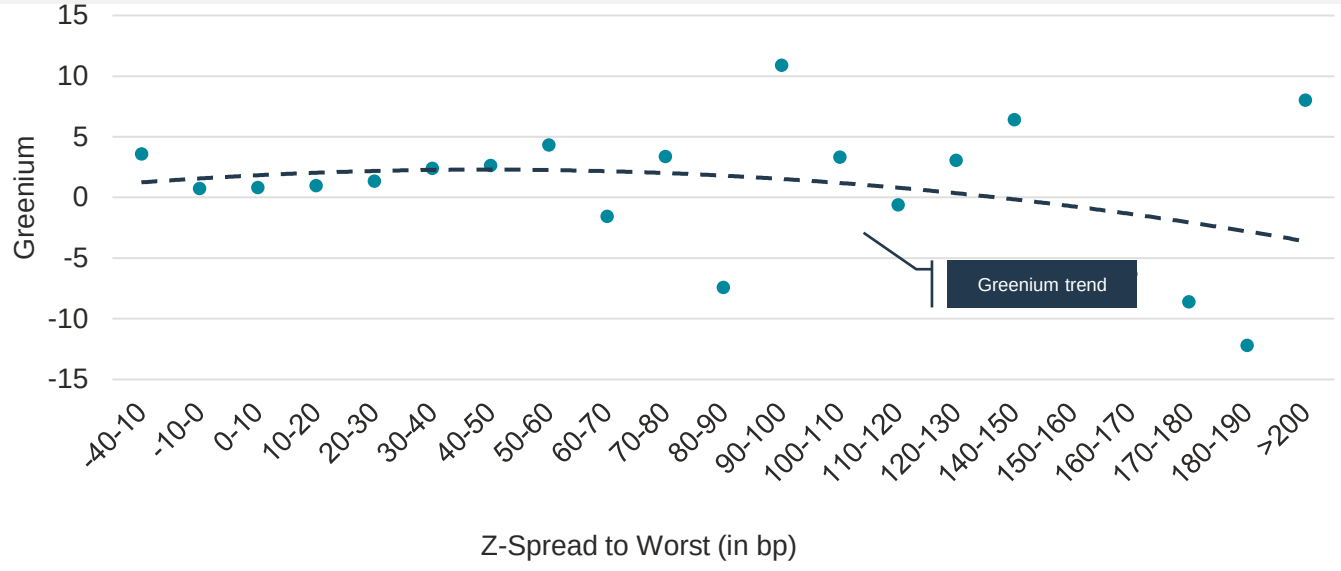
Senior green bonds are widely accepted and, according to our internal model, present a premium (4 to 4.6% of the spread). **The greenium of subordinated bonds such as juniors or Tier 2s represents "only" 2.6% of the spread, which is easy to offset, if only with a higher rate of return.** This is not the case for subordinated bonds which

- → remain more sophisticated (prepayment options, perpetuity, step-up coupon, regulatory value, capital treatment, intrinsic value and distinct terms),
- → leave room for inefficiencies that can be exploited and
- → thus present economic values that are more difficult for everyone to estimate

Similarly, we observe that the greenium tends to decrease as the spread increases, suggesting that the additional risk taken, reflected in a higher spread, logically tends to make the greenium disappear.

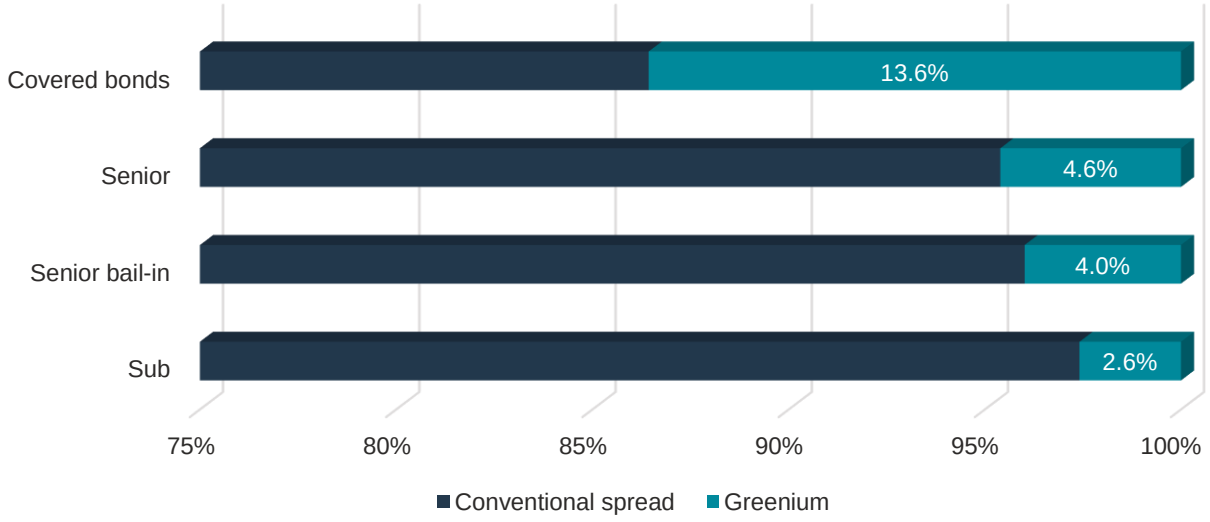
The tool developed internally enables us to monitor the valuation of green bonds and thus to invest the savings entrusted to us by our investors in the best possible way. Accordingly, despite the existence of a slightly positive greenium, our bond management always aims to reconcile meaning (environmental impact) and performance.

Greenium by z-spread band| Chart 8



Sources: Bloomberg ; Mirova as of 20/01/2021

Greenium as % of z-spread by seniority | Chart 9



Sources: Bloomberg ; Mirova as of 20/01/2021

Monetising the greenium

A source of arbitrage opportunities, and therefore of potential performance for asset managers, the greenium offers new possibilities for approaching an increasingly vast market without losing sight of the medium/long-term investment horizon (3 years). The investment process remains unchanged, still focused on environmental impact and the search for alpha.

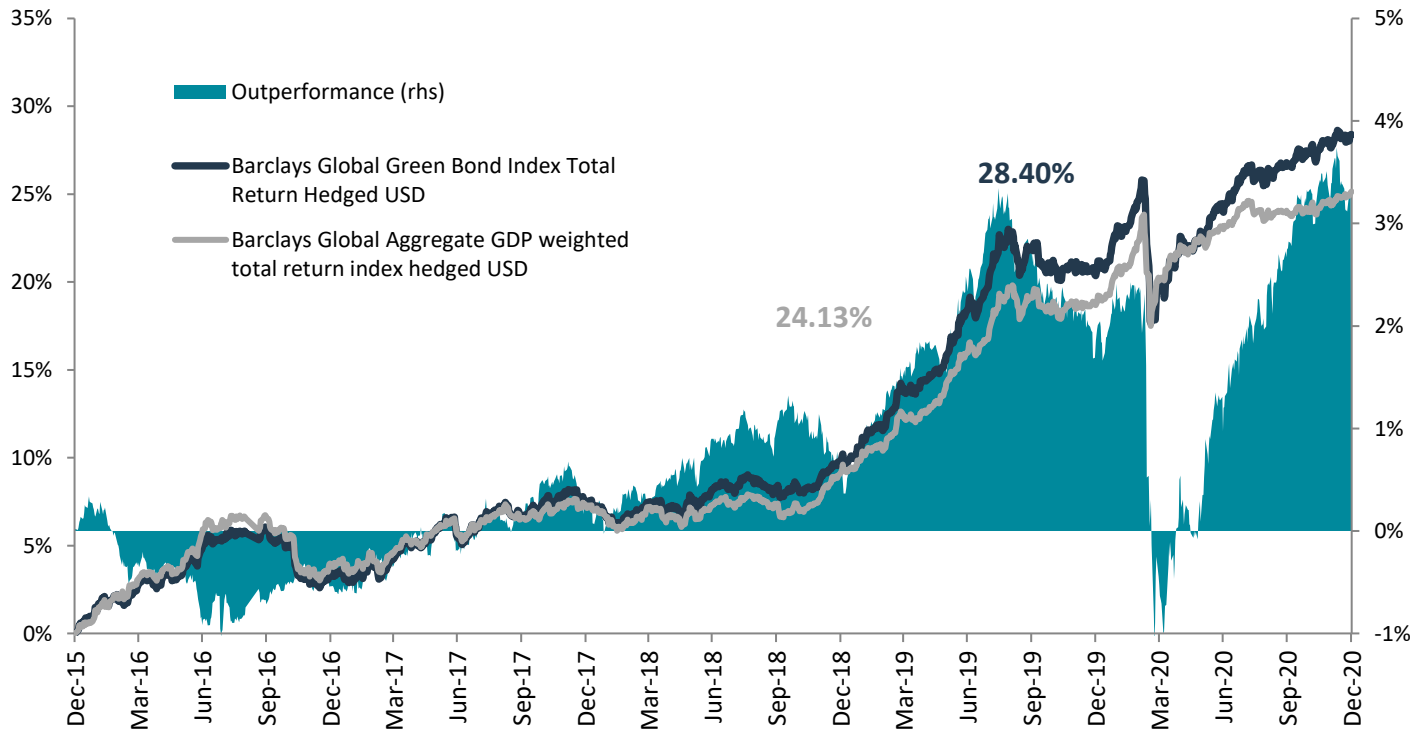
The sharp increase in the greenium makes it possible to carry out curve arbitrages between green and conventional bonds and vice versa.

It is not our intention to carry out these arbitrages frequently. They are conditional on maintaining a certain degree of SRI impact in our portfolios.

Guarantee of performance?

More defensive in composition, the green bond market naturally performed better during 2020 and the previous years, which were subject to risk aversion and volatility (market variations were rarely so rocky).

Historical performance of the Green bond index compared to the conventional index | Chart 10



Past performances do not anticipate the future performances.

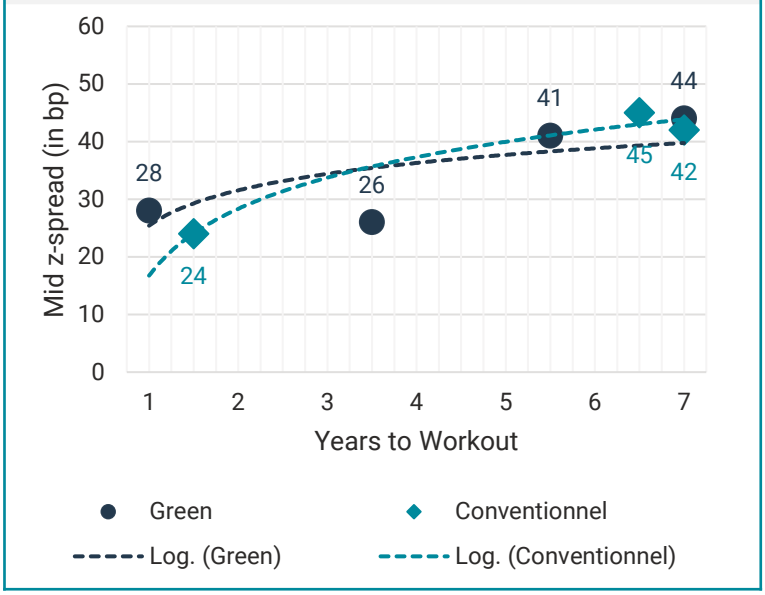
Sources : Bloomberg ; Mirova 31/12/2020

The greenium does not detract from the past performance of green bonds. **The greenium, notwithstanding its omnipresence, does not empirically hinder the overall performance of funds, as illustrated in the graph above.**

From tool to investment decision-making

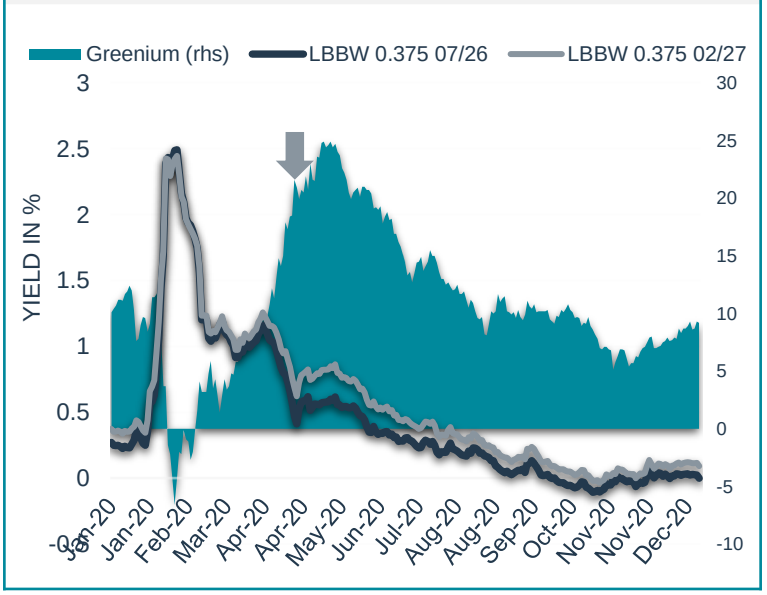
In the summer of 2020, we noted a high greenium on the senior non-preferred LBBW 26* bond in the portfolio, above a 15 bp yield spread, or about 0.75% price difference all other things being equal. This price differential is due to the coronavirus crisis, but this was not always the case; in the past, these two bonds traded at the same price. We therefore decided to sell the LBBW 26 green bond and buy the conventional LBBW 27. The issuer itself has a "Positive" rating (4 on a scale of 5) by our ESG research team**. A high degree of impact is therefore preserved in case of arbitrage.

Level of LBBW* spreads | Chart 11



Sources: Bloomberg ; Mirova

Relative performance LBBW | Chart 12



Sources: Bloomberg ; Mirova

Past performances do not anticipate the future performances.

Engie*, a utilities provider, has issued a plethora of senior bonds given the high level of its capital requirements. The issuer has a balanced, liquid and lively green bond curve, providing investment opportunities across all maturities from one to 15 years of securities. However, a price inefficiency appeared, which we turned to our advantage. We therefore carried out an arbitrage between these two green bonds.

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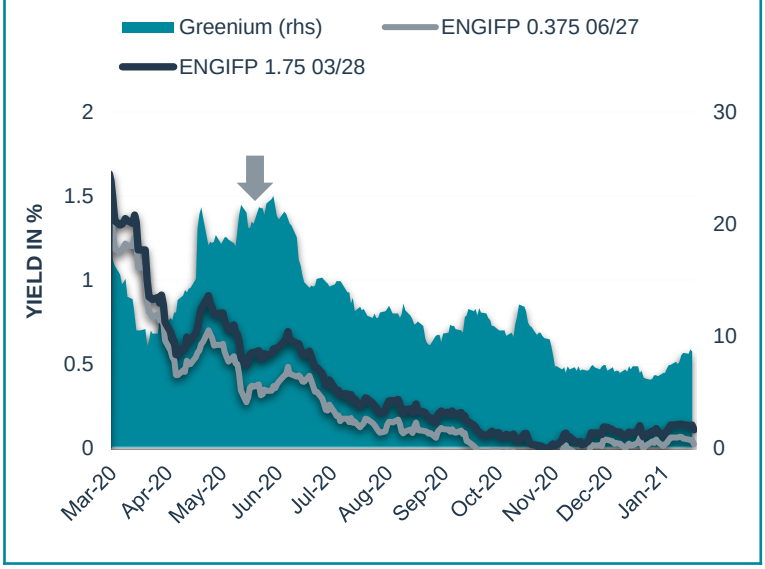
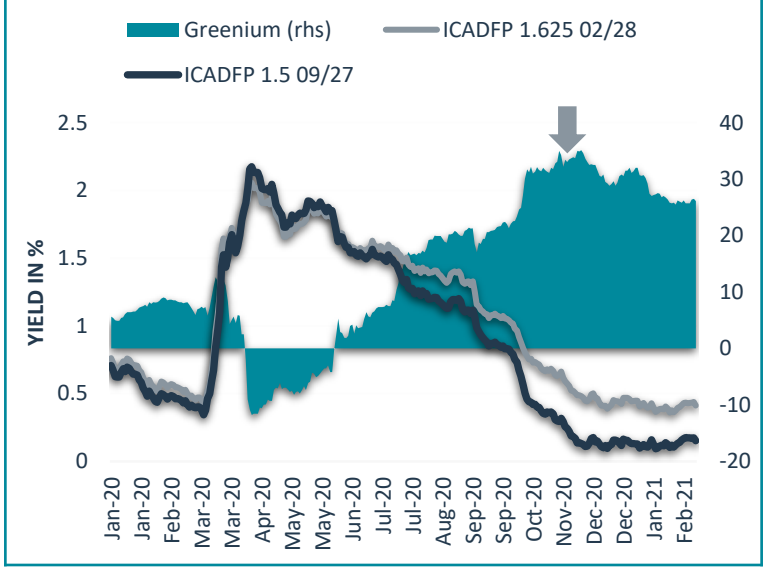
Engie relative performance | Chart 13



Sources: Bloomberg ; Mirova

Relative performance Icade | Chart 14



Sources: Bloomberg ; Mirova

Past performances do not anticipate the future performances.

Société Générale* issued a green bond at a premium to conventional debt, which we also took advantage of in October. Since then, the bond we purchased has outperformed otherwise similar Société Générale bonds.

The presence of a greenium can also motivate a decision on whether to acquire a new bond on the primary markets. For example, we refrained from participating in the latest Orange green bond issue, which was considered overvalued

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