

So what is a greenium and how do we get to it?

The existence of a greenium is mostly justified by higher demand for green bonds. We estimate the greenium for each curve separately, ensuring it is not polluted by other factors such as sector or maturity



London's Canary Wharf financial district

The theory behind the greenium

One of the peculiarities of ESG (aka "Green") issuance is the capability to trade at a premium versus regular (aka "Vanilla") bonds. There is no theoretical reason that this should be the case. Green bonds are just as likely to be repaid as Vanilla bonds, or in other words there is no greater or lesser default risk attached to them (from the same issuer, and without subordination).

Green bonds are just as likely to default as Vanilla bonds are, so why the premium in green?

So if Green bonds command a premium, it must reflect a prevalence of demand over supply. The issuance of Green bonds has soared in recent years, but demand has outstripped it. The so-called

“greenium” reflects this through a lower yield being attached to Green relative to Vanilla bond issuance.

But also there is a longevity rationale. Sustainability should mean avoidance of existential risk, and to that extent we could or should expect to see a premium being attached to such product.

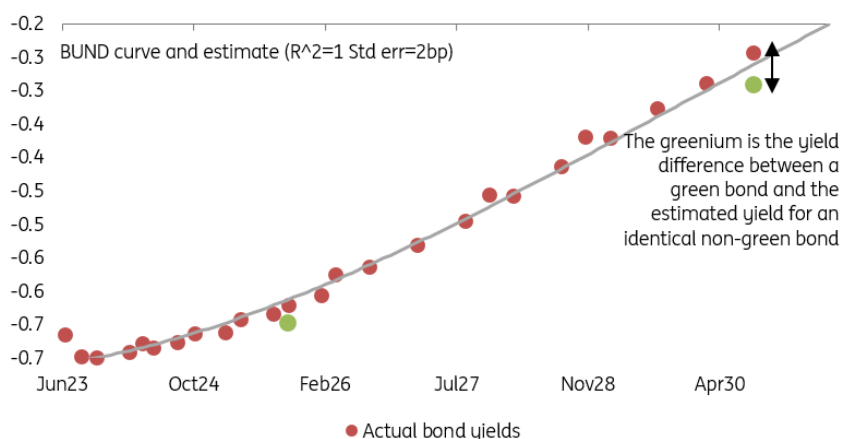
What is a Greenium, our methodology in a nutshell

We have quantified the pricing difference between green and non-green bonds (the greenium in its purest sense, as a price differential). There is more than one way to approach this issue. There is rarely a green and non-green bond sharing exactly the same characteristics (coupon, maturity, size, issue date, currency, sector, etc.) so direct comparison is almost never an option.

We calculate the greenium using a curve model. Its agnostic to circumstances and fair.

One approach is not to try to correct for these factors at all and just compare the average yield between green and non-green bonds. The advantage of this method is that it doesn't rely on any model, but the greenium estimate is liable to be drowned out by other factors (eg, maturity). At the other end of the spectrum, one can resort to a curve model and estimate the greenium for each issuer in order to avoid the measure being 'polluted' by other factors. This is our approach.

The greenium is the spread of a green bonds to the issuer's non-green curve



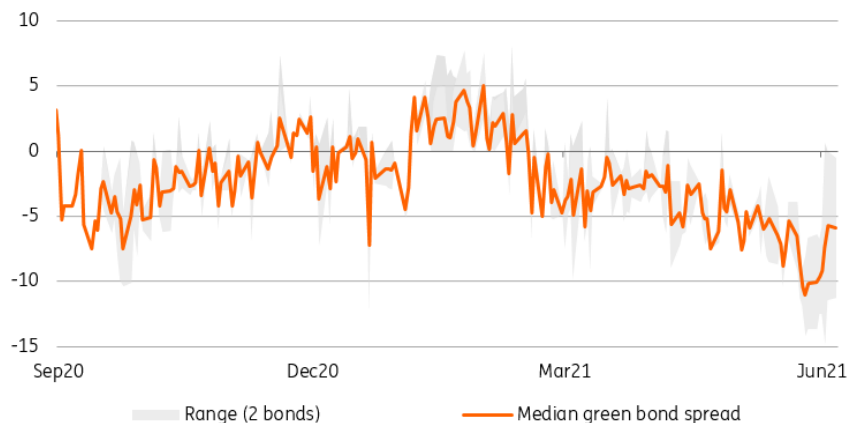
Source: Refinitiv, ING

To achieve this, we build two curve models for each issuer with a sufficient number of green and non-green bonds (3 and 10 respectively): one with a green factor, and one without. In the first case, the value of this green factor is simply our greenium estimate. In the second, the median model residual of all existing green bonds is our estimate. The two approaches are very similar but the second tends to be more robust for curves with only a small number of bonds, so we use both.

Below are some examples of greenium calculations.

Example of generic greenium in Verizon USD

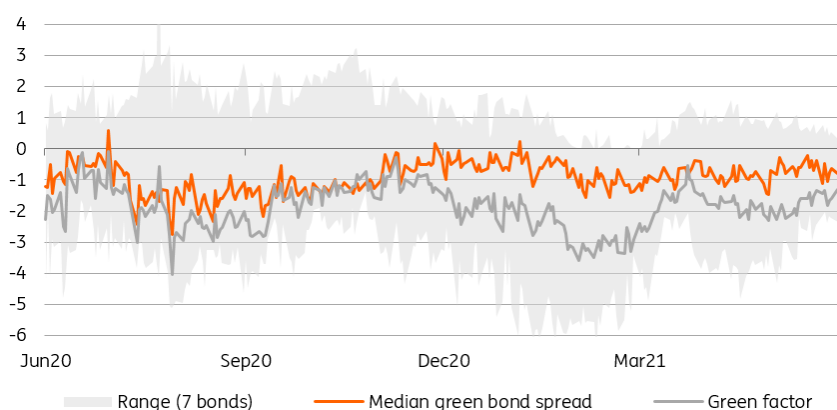
Spread to VZ non-green curve (bp)



Source: Refinitiv/ING estimates

Example of generic greenium in e.on

Spread to EONGI non-green curve (bp)



Source: Refinitiv/ING estimates

Author

Padhraic Garvey, CFA

Regional Head of Research, Americas

padhraic.garvey@ing.com

Antoine Bouvet

Head of European Rates Strategy

antoine.bouvet@ing.com

Disclaimer

This publication has been prepared by the Economic and Financial Analysis Division of ING Bank N.V. ("ING") solely for information purposes without regard to any particular user's investment objectives, financial situation, or means. *ING forms part of ING Group (being for this purpose ING Group N.V. and its subsidiary and affiliated companies)*. The information in the publication is not an investment recommendation and it is not investment, legal or tax advice or an offer or solicitation to purchase or sell any financial instrument. Reasonable care has been taken to ensure that this publication is not untrue or misleading when published, but ING does not represent that it is accurate or complete. ING does not accept any liability for any direct, indirect or consequential loss arising from any use of this publication. Unless otherwise stated, any views, forecasts, or estimates are solely those of the author(s), as of the date of the publication and are subject to change without notice.

The distribution of this publication may be restricted by law or regulation in different jurisdictions and persons into whose possession this publication comes should inform themselves about, and observe, such restrictions.

Copyright and database rights protection exists in this report and it may not be reproduced, distributed or published by any person for any purpose without the prior express consent of ING. All rights are reserved. ING Bank N.V. is authorised by the Dutch Central Bank and supervised by the European Central Bank (ECB), the Dutch Central Bank (DNB) and the Dutch Authority for the Financial Markets (AFM). ING Bank N.V. is incorporated in the Netherlands (Trade Register no. 33031431 Amsterdam). In the United Kingdom this information is approved and/or communicated by ING Bank N.V., London Branch. ING Bank N.V., London Branch is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. ING Bank N.V., London branch is registered in England (Registration number BR000341) at 8-10 Moorgate, London EC2 6DA. For US Investors: Any person wishing to discuss this report or effect transactions in any security discussed herein should contact ING Financial Markets LLC, which is a member of the NYSE, FINRA and SIPC and part of ING, and which has accepted responsibility for the distribution of this report in the United States under applicable requirements.

Additional information is available on request. For more information about ING Group, please visit www.ing.com.