The CNO proposes an analysis of the yield spread between green and non-green government bonds. This study focuses on Eurozone sovereign issues. The yield spread incorporates the notions of "greenium" and liquidity spread, as green issues are generally much smaller than benchmark bonds.

Background information

In theory, investors are inclined to pay more for green issuances[1] compared to other issuances of the same sovereign issuer. This phenomenon can result in the emergence of yield differentials between green bonds and bonds along the conventional sovereign curve. This study will focus on the phenomenon termed the "green premium" or "greenium"[2], denoting the yield differential between green securities and comparable bonds issued by sovereign entities within the Eurozone.

Analysis of the green premium in European sovereign bonds

In this article, we have examined the yield spread (the 'spread') between green securities issued by European sovereigns and similar non-green securities with close maturities.

This study does not intend to evaluate the difference between "greenium" and liquidity effects but confines itself to the observation of the actual spread in the bond markets. Therefore, the spread represents a gross spread, encompassing both "greenium" and the liquidity effect, which significantly contributes to the pricing disparity in the market.

The interpolation method used is linear interpolation, the same approach has been applied for all markets. The computation of the green premium, is based on a straightforward difference (without specific adjustments) between green bonds issued by European states and conventional (non-green) bonds. This reveals that green bonds had offered higher yields relative to conventional bonds before year 2021. This may possibly be attributed to lower liquidity factor and also a lack of investor knowledge about this type of product.

A clear turning point has been observed since years 2021-2022, when the price of sovereign green bonds has increased, sometimes significantly. Investors are willing to pay a higher, and occasionally much higher, price for a security due to its 'green' nature. The scope of the analysis is presented in the table below :

[1] Green bond issuance increased significantly in the EU between 2014 and 2022, from 0.6% to 8.9% of total bonds issued.

[2] To simplify our discussion, we will use the term "greenium" instead of ESG yield spread.

Average “greenium” since 1st Jan 2022 (in bps)

Country	Bond	“Greenium” in bps
Germany	Germany 2025	-7
	Germany 2030	-2
	Germany 2031	-2
	Germany 2050	-2
France	France 2039	-5
	France 2044	-3
Belgium	Belgium 2033	-6
Netherlands	Netherlands 2031	-2
	Netherlands 2040	-1
Italy	Italy 2045	-7
Spain	Spain 2042	-1
NGEU	NGEU 2033	-1
	NGEU 2043	-4
	NGEU 2048	-5

Source: Bloomberg

Note: We have labeled “greenium” on all the following graphs; however, it only represents the gross spread between various green and non-green bonds.

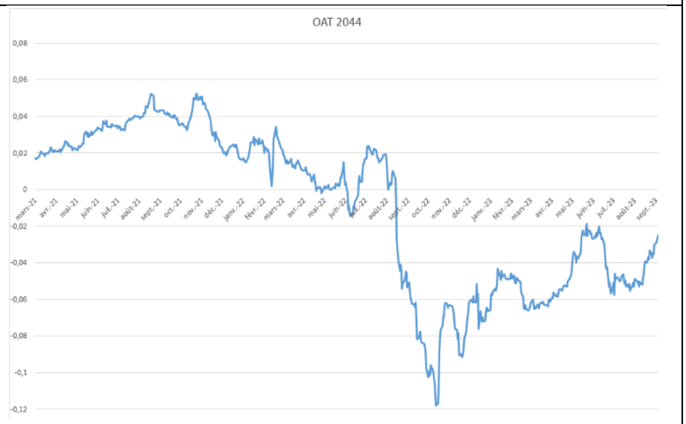
Case study of the green government bonds in France, Spain and Netherlands

Spanish and French green securities exhibited a positive spread relative to their respective sovereign curves before 2022. The green sovereign bonds of both countries experienced a significant increase in 2022. The have traded more than 10 basis points above the so-called conventional bonds. The situation has since normalized, although green securities still yield higher returns than their non-green counterparts.

France 2039

Timeline: November 2020 - September 2023

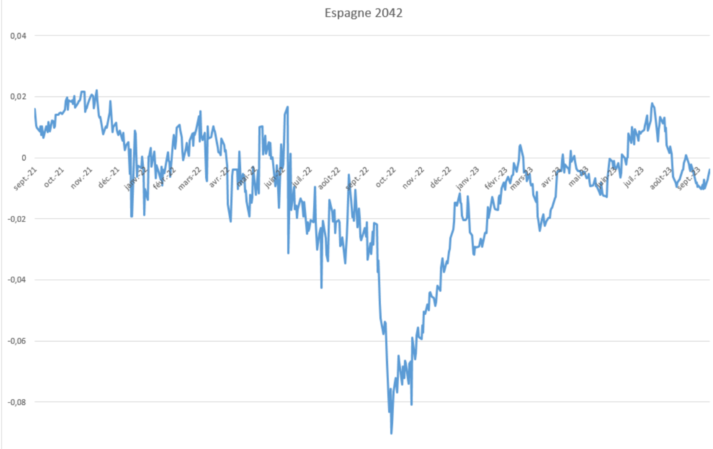
France 2044



Timeline: March 2021 - September 2023

Source: BBG

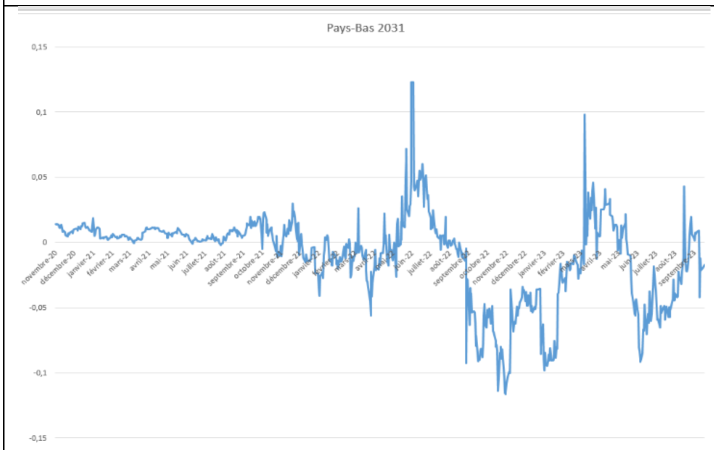
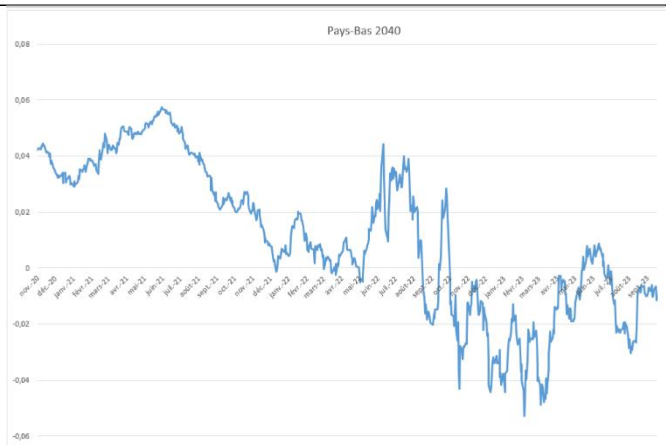
Spain 2042



Timeline: September 2021 - September 2023

Source: BBG

Dutch green securities traded above the sovereign curve until 2022. They were relatively cheaper than conventional bonds. In late 2022 they became more expensive than non-green securities and have since been trading at similar levels.

Netherlands 2031	Netherlands 2040
	
Timeline: November 2020 - September 2023	*Timeline: November 2020 - September 2023*

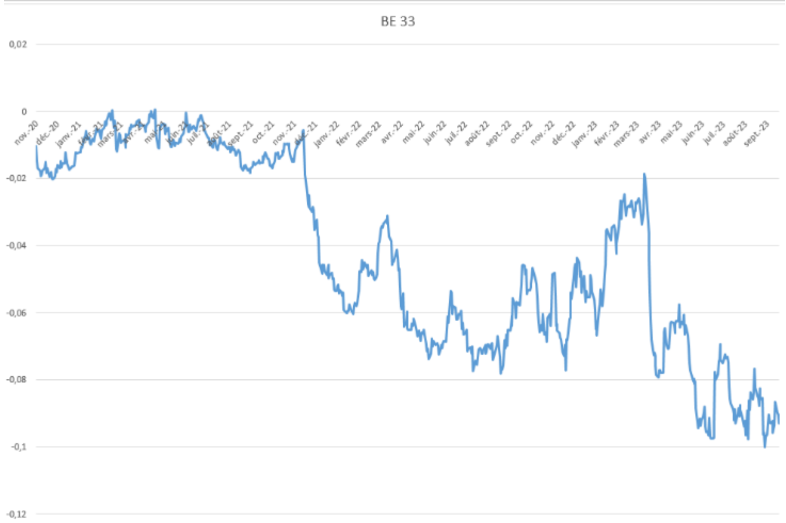
Source: BBG

In the graphs above, we observe green premiums that “surge” in certain quarters. This may suggest that scarcity phenomena in the face of “urgent” demand could have occurred in 2022, in connection with the substantial flows of investments in ESG funds.

Case study on the Belgium market

The Belgian green bond maturing in 2033 also appreciated significantly in 2022 compared to the Belgian curve, but this trend continued into 2023, unlike France, Spain, and the Netherlands. This indicates that there is a true “greenium” in this market, prompting final investors to focus on this segment.

Belgium 2033



Timeline: November 2020- September 2023

Source: BBG

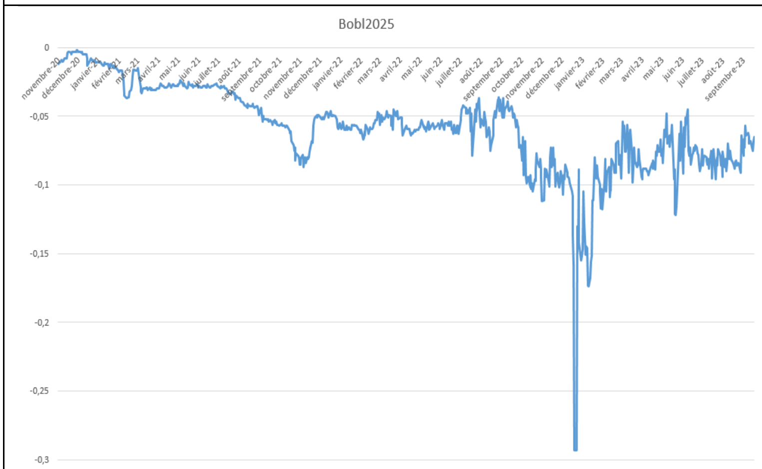
The specific case of German green securities

The German case stands out due to the twinning of issuances (a green security paired with a non-green security of identical maturity), allowing for direct market observation of the disparity between the two issuers.

The Bobl 2025, for instance, has shown a gradual appreciation against its non-green counterpart. In contrast, German securities with longer maturities experienced a gradual depreciation relative to their non-green reciprocal issues in 2022, deviating from the trend observed in other green sovereign bonds within the Eurozone.

The behavior of this market is challenging to explain representing a distinctive case within the European context.

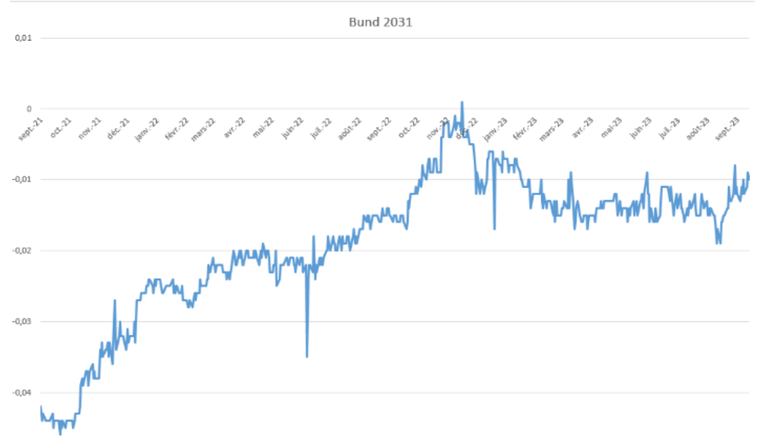
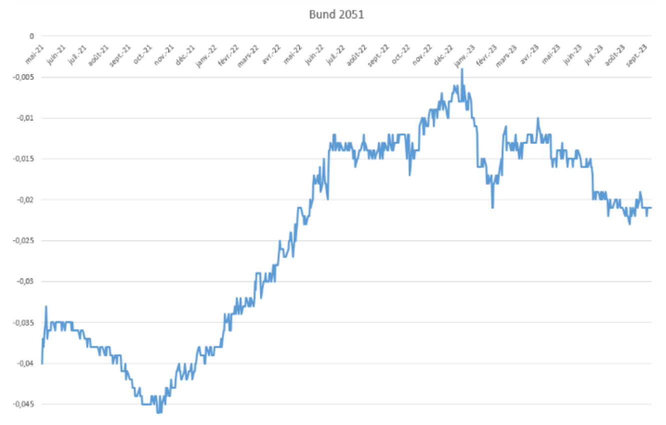
Bobl 2025



Timeline: November 2020 - September 2023

Bund 2030

Timeline: September 2020 - September 2023

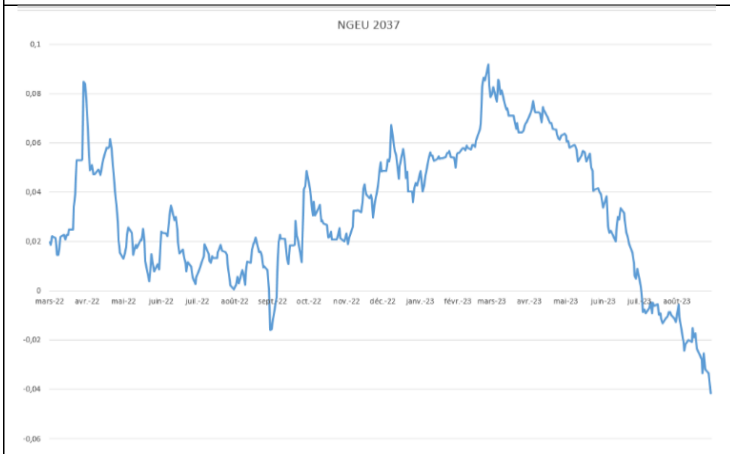
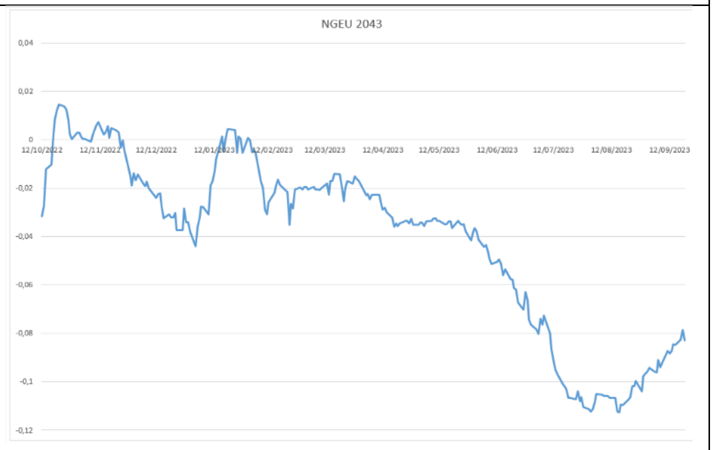
Bund 2031	Bund 2051
	
Timeline: September 2021 - September 2023	*Timeline: May 2021 - September 2023*

Source: BBG

The Unique Dynamics of NGEU Securities (European Union Debt)

The NGEU securities, issued recently, experienced significant appreciation primarily in 2023.

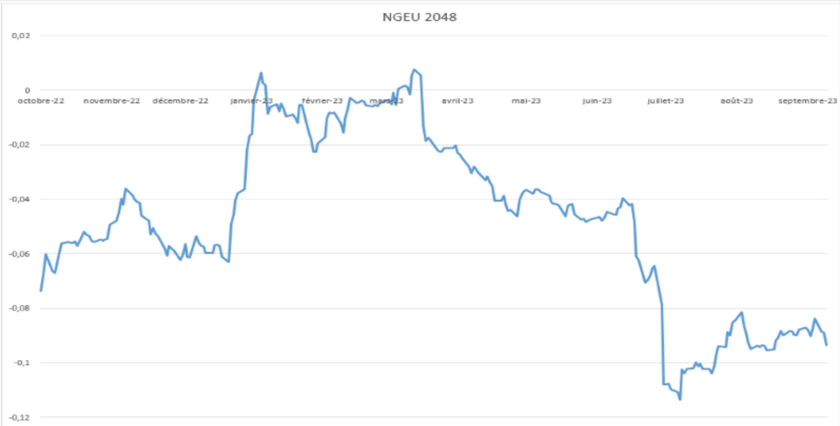
The NGEU program[3] is of substantial magnitude, totaling 750 billion in constant euros since 2018, equivalent to 5% of the EU's GDP. The issuances involve very large amounts. And it represents a nascent market, where transactions are frequently coupled with swaps or other derivative products.

NGEU 2037	NGEU 2043
	
Timeline: March 2022 - August 2023	*Timeline: October 2022 - September 2023*

Source: BBG

[3] *Faced with the unprecedented crisis of the Covid-19 pandemic, the European states reacted collectively by creating a specific programme dedicated to recovery and resilience: the Next Generation EU (NGEU) programme.*

NGEU 2048



Timeline: October 2022 - August 2023

Source : BBG

Conclusion : Recent developments that explain the appreciation of European sovereign green bonds in 2022 and 2023

The integration of green finance and, more broadly, ESG criteria within the world of financial assets has occurred gradually over the past decade.

And a notable acceleration of this trend has been observed over the past two years, particularly within the sector of sovereign bonds and SSAs (supranational, sovereign and agencies bonds), where the emergence of green assets is a more recent phenomenon. The implementation of ESG strategies by investors in these assets is also a relatively recent compared to other sectors such as equities or corporate bonds.

The investors' demand for ESG assets and the regulatory evolution in this sector have certainly served as catalysts as of 2021.

The SFDR (EU's Sustainable Finance Disclosure Regulation) regulation, in effect since 10th March 2021, has introduced the principle of funds classification into three categories:

- Article 6: Products without ESG objectives.
- Article 8: Products incorporating social or environmental characteristics without explicitly integrating these considerations into their objectives.
- Article 9: Products with explicit sustainability objectives.

Then the objective of fund managers is to comply with the classification, especially article 8 and 9, in order to respond to the growing demand for ESG products from both individual and institutional investors. This translates into a powerful lever influencing the demand for green securities. Given the enforcement of ESG regulation since March 2021, the full impact became evident during the course of 2022.

The global rise in interest rates that began in Europe at the end of 2022 may have played a triggering role in the evolution of spreads. With higher rates, the overall yield differentials always tend to increase. However, it is challenging to precisely quantify this effect.

Besides regulatory factors, the interest in ESG criteria of institutional investors such as Central Banks[4], which are naturally prominent in the sovereign debt market, has significantly grown during recent years.

Initially, driven by robust and persistent demand in this market segment, scarcity dynamics resulted in a significant appreciation of government green bonds (cf. above).

However, we believe that over the long term, green bonds should command a premium of only a few basis points.

Over an extended cycle, it is reasonable to expect the emergence of a steady, long-term “greenium” spread in the sovereign green bonds.

[4] *The Central Banks are mentioned here in their capacity as institutional investors.*