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Exploring the Dynamics of Junk Bonds and Green Bonds in Financial Markets

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Abstract

The focus on junk bonds, which have an inferior credit rating and are associated with more risk, and green bonds which are intended to fund ecologically beneficial projects, has increased in recent years. The dynamics of these two bonds and their effects on financial markets are examined in this article. This work investigates the formation mechanism and determining factors of these two bond types by a thorough comparison analysis. Furthermore, it examines the ways in which certain characteristic of each class of financial instrument impact the nominal values and prices of these bonds.

Keywords: green bonds, sustainable financing, environmental policies.

JEL Classification: G18, Q56.

1. Introduction

There are two independent territories within the bond market: junk bonds and green bonds, with their own functions and characteristics. Green bonds are instruments of debt raised to finance projects that relate to environmental sustainability. Typically, they finance projects in clean transportation, sustainable water management, energy efficiency, and renewable energy. They are key instruments for the realization of goals set by global sustainability. Junk bonds are high-yield bonds with a reduced credit rating and increased risk of default. Thus, they offer higher returns to compensate the investors for their increased risk.

The study of green bonds is important because it indicates an emerging increased importance of ESG considerations in making investment decisions. Bonds will help to be able to have both practical and ethical aims avoiding climate change and

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promoting environmental sustainability. On the other hand, junk bonds help out the financial markets in that they open companies to cash they otherwise would not get. This ability to raise financing encourages economic activity, restructuring, and expansion of businesses despite a higher risk profile.

Green bonds represent the ingenuity of the market in finding ways to address environmental issues, while junk bonds exemplify the myriad options in financing available to firms across a wide array of industries.

2. Problem Statement

The European Investment Bank launched the green bond market in 2007; the World Bank followed in 2008. The market for green bonds grew substantially in the following years, thanks to these early issuances (World Bank, 2015; Climate Bonds Initiative, 2020).

Generating money for environmental sustainability-related projects is the main goal of green bonds. These programs usually focus on sustainable agriculture, pollution avoidance, energy efficiency, renewable energy and climate change adaptation (Ning et al., 2023; Azhgaliyeva, 2019). Green bonds give investors the chance to support eco-friendly initiatives and maybe receive a return on their investment (Baker et al., 2018).

The research into the performance of green bonds indicates that due to the strong demand from investors, it is often the case that they trade at a premium, referred to as the "greenium". There are studies by Zerbib (2019) and Ehlers & Packer (2017) indicating that the yields on green bonds were either marginally below those of comparable conventional bonds or very close in yield. According to Flammer (2021) issuing green bonds can improve the holistic corporate performance and green image of a firm. Green bonds have also been found to reduce the cost of capital for a firm (Gianfrate and Peri, 2019).

Junk bonds are fixed-income securities rated less than investment grade, that is BBB – by S&P or Baa3 by Moody's. In the 1970s and 1980s, the market for junk bonds expanded to a great extent due to Michael Milken at Drexel Burnham Lambert, who demonstrated that the capital markets are open to the funding of riskier companies through high-yield loans (Altman, 2000; Fraser-Sampson, 2011).

Compared to investment-grade bonds, junk bonds are more sensitive to economic cycles and have a higher chance of default. According to studies by Fridson and Garman (1998) and Altman (1998), junk bonds have higher default rates during recessions and higher return rates during an expansion in the economy. The trade-off between risk and reward is further re-emphasized by Campello et al. (2008). He stresses that even though junk bonds might offer sizeable rewards, careful assessment and management of risk is very important.

The historical context of junk bonds is marked by their crucial role during the leveraged buyout boom of the 1980s. In particular, junk bonds were able to alter corporate finance strategy by providing important funds for company acquisitions and restructurings (Kaplan and Stein, 1993; Hotchkiss and Jostova, 2007). These

studies highlight the pros and cons of high-yield debt and its relation to financial stability and corporate governance.

There is not much research that makes a comparison of junk bonds vs. green bonds. While these two types of bonds have different uses and tend to attract different investor bases, such a comparison may still be useful in shedding light on the two instruments' risk profiles, relative performances, and market dynamics. Early examples of comparative studies include those by Hachenberg and Schiereck, who, in 2018, compare the financial performance and volatility of green bonds with conventional bonds, particularly high-yield bonds.

Literature regarding the combined analysis of junk bonds and green bonds is rather scarce. Most of the works merely refer to their definitions, historical development, objectives, and achievements. Further research is required to be able to understand the potential trade-offs and synergies between the two bond market groupings.

3. Research Questions / Aims of the Research

The paper seeks to probe into the dynamics between junk bonds and green bonds in financial markets. This study will seek to compare junk bonds with green bonds and further proceed to examine what shapes their development, market behavior, and determinants. Besides an analysis of the pricing and nominal values of these bonds and the behavior of investors in them, it also tries to assess their impact on financial markets and attempts to identify the principal variables which may influence their nominal values and prices. It will, further, try to observe their risk-return profiles, market dynamics, and participation of these bonds in global sustainability programs.

4. Findings

4.1 Influences on Prices and Nominal Values of Green Bonds and Junk Bonds

Hence, environmental laws and policies have strong connections to nominal values and the price of green bonds. Tightening environmental regulation and policy would incentivize more investment in green projects, thereby lengthening the market for green bonds. The concern – increasingly taken by governments and companies toward sustainability – has a positive effect on the pricing of the green bond.

Two of the most critical variables are demand and investor sentiment. Increased awareness and demand by investors for green investments have raised the price of the green bond because of the rising demand. It is not uncommon for investors to accept lower yields for financing ecologically beneficial initiatives.

Green bonds prices are similarly impacted by interest rates. The price of green bonds is negatively correlated with interest rates, much as other fixed-income instruments. Green bond prices usually decrease as interest rates rise and vice versa. Policies of central banks have a big influence on these rates.

As such, the nominal value of green bonds is affected by the reputation and credit ratings of an issuer. In that respect, because credible issuers with higher ratings attract more investors, which pushes the price higher and subsequently lowers the yields, credibility of the issuer is a factor.

Market liquidity has an impact on the prices of green bonds. Green bonds allow for liquidity in the secondary market, hence making them more attractive to investors. Higher liquidity bonds usually fetch better prices.

The two most critical factors that affect the nominal values and prices of junk bonds are credit risk and default rates. In essence, the price for a junk bond is significantly linked to its heightened credit risk and possibility of default. When the rate of default rises, there is a corresponding drop in the prices of bonds.

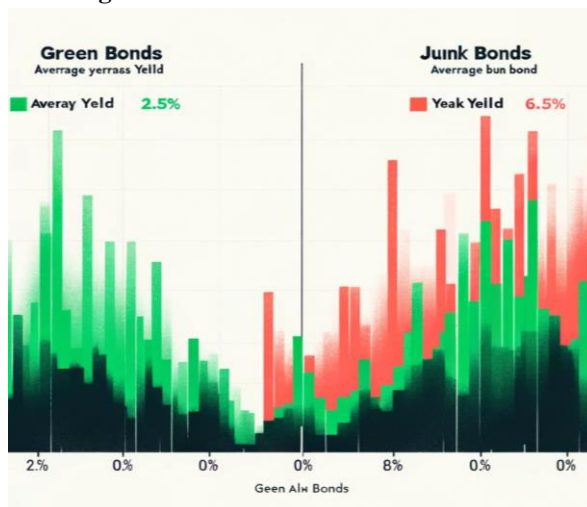
State of the economy also plays a part. The prices of junk bonds are dependent on the following macroeconomic factors: inflation, economic growth, and unemployment rates. The prices for junk bonds drop when the economy is not great and there is greater chance of default.

In the case of junk bonds, like green bonds, interest rates have an impact on their pricing. The prices of junk bonds move inversely to interest rates; however, due to a higher yield in the case of junk bonds, this trend may be more prominent.

Prices for junk bonds are largely determined by market sentiment and risk appetite. The attitude of investors and their willingness to take risks often play a huge role in determining junk bond prices. As the market becomes optimistic, investors become more ready to take on more risks, hence driving up the prices for junk bonds.

The prices of junk bonds are also determined by factors specific to an issuer. More importantly, the financial standing of the company issuing the instrument should be considered, together with its business prospects and industrial circumstances. In general, bonds issued by businesses in a collapsing sector or with unstable finances are usually lower in price.

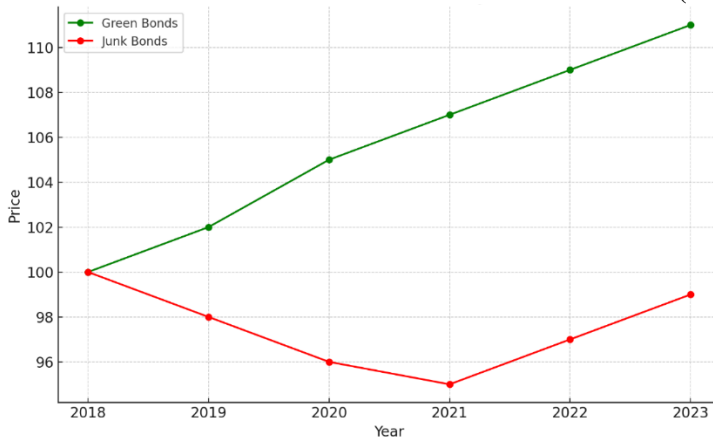
Figure 1. Average Yields of Green Bonds versus Junk Bonds (2023)



Source: Climate Bonds Initiative, 2023, and Moody's Investors Service, 2023a.

Figure 1: The yield on junk bonds far outweighs that on green bonds, thus showing varying degree of risk tolerance and investor needs. In 2023, the market had \$500 billion in volume of green bonds with an average yield of 2.5% and an average credit grade of A. For junk bonds, there were a total of \$1.2 trillion in issuance, an average yield of 6.5%, and a credit rating of BB.

Figure 2. Historical Price Trends of Green Bonds and Junk Bonds (2018-2023)



Source: Bloomberg, 2023b.

Figure 2: Green Bonds Steadily Rise from 100 in 2018 to 111 in 2023. From the graph, the steady price rise is noticed for green bonds from 100 in 2018 to 111 in 2023. This means there was a high demand for sustainable investments at lower risk. Junk bonds exhibit increased volatility. Their values denoted a higher risk and even greater vulnerability to the ups and downs of the economy, ranging from 100 in the year 2018 to as low as 95 in 2021 before reverting back to 99 in 2023. Therefore, this smoothness of green bonds comes in contrast to the risk-return trade-off depicted by junk bonds, thereby giving evidence of different investor preference and market dynamics.

Factors Impacting Junk Bonds and Green Bonds The investors and the governments have to understand various factors impacting the junk bond and green bond nominal values and their pricing. The major factors impacting the green bond are the market liquidity, interest rate, credit rating, investor sentiment, and the environmental regulations. While the price of the junk bonds is impacted by market sentiment, issuer-specific factors, interest rate factors, credit risk, and economic factors. It is in this regard that by considering these variables, investors will make very informed selections, balancing return-risk trade-offs in their bond portfolios.

4.2 Determinants of Green and Junk Bond Prices

Below is a feature comparison table between green bonds and junk bonds. The summary is in respect to what holders and potential investors can make out of

these two types of bonds in regard to their purpose, issuers, credit ratings, and as investment instruments.

Table 1 compares green bonds with junk bonds on the basis of their principal characteristics. It summarizes, in crystal form, major differences between these two kinds of bonds so that stakeholders and potential investors may understand the difference in terms of goals, issuers, credit ratings, and investment attractiveness.

Table 1. Comparative Characteristics of Green Bonds and Junk Bonds

Characteristics	Green Bonds	Junk Bonds
Purpose	Financing environmental projects (renewable energy, clean water, pollution control).	General corporate financing, often for companies with lower credit ratings.
Issuer	Governments, corporations, financial institutions.	Corporations with higher default risk.
Credit Rating	Typically high, often investment-grade.	Below investment-grade (BB+ or lower).
Investor Appeal	Ethical investment, lower volatility, potential for lower returns.	Higher yields, higher volatility, greater default risk.

Source: personal computation.

Because they are supported by companies and projects with steady cash flows, green bonds have been associated with lower credit risk. This stability reduces the volatility of green bonds, giving them appeal for long-term investors who value sustainability. However, it is probable that the still-developing green bond market may cause problems with liquidity.

On the other hand, junk bonds are issued by businesses with somewhat less stable finances, raising the default risk. Since these bonds are more prone to changes in the market and in the performance of the company, they become more volatile. Junk bonds, though more established, are equally susceptible to shortages of liquidity in low markets. In return for being investments that are prone to a higher amount of risk, junk bonds must have higher yields in order to attract investors who are ready to take on these risks.

Table 2. Default Rates Data & Yield Comparison Data

Bond type	Default Rate (%)	Yield (%)
Green Bonds	0.5	2.5
Junk Bonds	3.5	6.5

Source: Moody's Investors Service, 2023b; Bloomberg, 2023a; Reuters, 2023.

To that extent, green bonds are of very high credit quality and backed by credible institutions, such as government programs or financially sound corporations that value sustainability. They will remain attractive to investors who value sustainability and are willing to take a lower return in exchange for environmentally friendly measures, given their average yield of 2.5%, which reflects their stable and low-risk characteristics.

The default rate for junk bonds is much higher, at 3.5%, because the companies that issue them have less solid finances and worse credit ratings. A considerably higher average yield of 6.5% offsets the increased risk of junk bonds and appeals to investors ready to take on higher levels of risk in return for greater yields.

Table 3. Performance During Economic Downturns Data

Year	Green Bonds Index (2019=100)	Junk Bonds Index (2019 = 100)
2019	100	100
2020	98	85
2021	101	95
2022	102	98

Source: MSCI, 2023; The Economist, 2023; Morningstar, 2023.

Table 3: Green bonds performance relative to junk bonds over the last few years. It indicates how stable green bonds are in terms of performance, compared to the volatility of junk bonds, especially at times of downturns like the COVID-19 epidemic.

Green bonds have been rather resistant to recessionary pressures. After a slight decline to 98 in 2020 due to the COVID-19 pandemic, the index resumed its positive growth trajectory to 101 in 2021 and then 102 in 2022, reflecting strong performance and investor confidence.

Junk bonds were very volatile. In 2020, their index dropped from 100 in 2019 to 85 in 2020, reflecting increasing default rates and volatile markets. Underlining the enhanced risk of junk bonds is the fact that the index did not return to 2019 levels, even if it did rebound to 95 in 2021 and 98 in 2022.

4.3 Motivations Driving Corporate Utilization of Green Bonds

Four broad categories of incentives – financial, reputational, regulatory, and strategic – may drive companies to issue green bonds.

Financially, this green bond connects investors to a broader source of potential buyers who are highly sensitive to environmental, social, and governance (ESG) factors. Costs of borrowing can be reduced due to the rise in demand. They also help in diversifying the investor base by bringing in long-term, institutional investors interested in sustainable initiatives.

By issuing green bonds, companies can establish their brand and enhance public perception of them as leaders in sustainability. This could increase clients' loyalty and regional authorities' and communities' collaboration. Moreover, it goes in line with the CSR strategy and demonstrates an organization's concern for the environment.

The regulatory incentives include awards and a possible decrease in the penalty risk, and they finally resonate with the current governmental and regulatory attitudes towards sustainable and climate change. To advance sustainable investment, local authorities can award the issuers of their green bonds with tax breaks or other benefits.

From a strategic point of view, the green bond enables the realization of a firm's strategic environmental objectives, such as carbon emission reduction or the improvement of energy efficiency. The bonds therefore play a role in long-term risk management through the reduction of environmental risks brought about by climate changes, which may, in turn, affect a firm's supply chain and operation. The green bond investment may also encourage innovation toward green technology and sustainable practices to keep the firms competitive in the constantly changing business environment.

Conversely, businesses must keep reporting and certification requirements in mind because they are required to ensure they reach standards established for green bonds, to give investors guarantees of transparency and accountability. The green bond market is relatively young, so the market trend, investor expectation, and regulatory landscape need consideration. Overall, green bonds create powerful incentives for business through monetary benefits, improved reputation, regulatory fit, and strategic benefits on environmental projects and corporate objectives.

5. Conclusions

The risk and return profiles of junk bonds and green bonds are radically different for investors because of the differences in their goals and issuer characteristics. Most green bonds finance initiatives with a beneficial environmental impact, are normally issued by reliable entities, and have generated steady revenues, instilling low credit risk and volatility. These bonds appeal to the long-term investor dedicated to making ethical investments, as they offer modest returns in line with their lower risk. On the other hand, liquidity concerns may be an issue in a developing green bond market. Junk bonds are issued by firms having lower credit ratings and underlying financial instability, increasing the chances of default and market volatility. Since such bonds pay higher yields to compensate for the higher risk, they are mostly attractive to investors who can take on more risk in hopes of large returns. Indeed, the junk bond market is a more mature industry, but it can still have problems with liquidity when the economy is down.

It is important to acknowledge the several constraints of this research. This study may not be representative, considering that only historical, publicly available data is used. It does not describe the current situation of the junk bond market or the process of green bond market development. Also, this study does not take into account the respective return and risk characteristics of those two types of bonds, nor some macroeconomic conditions and regulatory changes. Since large marketplace data is the focus of the study, local variations that may impact the generality of the findings are dismissed. The risk and performance profiles are assessed in a very short period, rendering the ability to consider long-term trends and the impact of economic events on the horizon impossible.

Further research could address these limitations and perhaps provide a more comprehensive understanding of green and junk bonds. It would be stronger research if the data sets increased to include more thorough information, up-to-date in other regions and other economic situations. A deeper analysis of investor behavior and

preferences might shed a light on what drives junk bond and green bond investment decisions. Comparing green and junk bonds to other categories of bonds or financial products can shed more light on their relative performance for the investor.

Further research in these areas can contribute to increased understanding of market dynamics with regard to green and junk bonds and, therefore, help investors and policymakers to make better decisions.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used Grammarly and Writefull in order to assist with language translation and to enhance the grammatical accuracy and overall quality of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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